

the Study were good choices, the many changes in the list after their finalization does suggest the possibility of influence being exerted to direct the allocation of project resources.

IV. GENERAL ASSESSMENT, ISSUES, LESSONS, AND RECOMMENDATIONS

A. General Assessment

1. Relevance of the Assistance

147. ADB's assistance in the road sector in Pakistan is reviewed at three levels to assess its appropriateness. First, the program of assistance is broadly reviewed against the Government's development goals, ADB's corporate objectives, and the overall needs of the sector. Second, the specific approaches embodied in parts of the program are compared with sector development strategies. Third, aspects of the design of specific project components are reviewed for appropriateness in relation to prevailing conditions. In addition to these three levels of appropriateness, relevance also considers the scale and significance of the support.

148. The broad development goals of the Government and ADB have been, and still are, dominated by poverty reduction, economic growth, and addressing the country's fiscal problems. The literature concerning transport and development shows a positive link between road development, growth, and poverty reduction—a link generally reiterated in the results for the socioeconomic surveys done as part of this Study. These surveys clearly showed that respondents served by project roads reported improvements in travel time, reliability, frequency of visits to towns, business opportunities, service delivery, and women's mobility significantly above conditions in control groups served by unimproved roads. Surveys also showed that improving the project roads brought increased economic activities in the areas served. Respondents reported that it was now easier to obtain goods and that competition among traders had increased, with most traders reporting that road improvement had helped their business. For the major roads, the national and provincial highways, which carry most of the traffic and facilitate the mass movement of people and freight, the link is obvious. But the benefits of RARs are no less important. This is because most people in Pakistan—and most poor people—live in rural areas, while not necessarily being farmers. Also, agriculture is viewed as having potential to spur growth by supplying raw materials for industry and export growth that will help to promote broader economic growth and correct fiscal imbalances.⁵⁷ For these reasons, agricultural development has been a major priority of both the Government and ADB. Better roads and connectivity to markets were viewed as essential to improve the enabling environment for agricultural development.

149. For rural Pakistan, where around two-thirds of the population lives, the significance of RARs is shown by a recent ADB study of rural Pakistan.⁵⁸ That study found that over 60% of rural households did not have any significant amount of farmland but relied mostly on off-farm employment, particularly self employment and in construction, for income and sustenance. For many of these rural dwellers, the ability to move daily, weekly, or seasonally to workplaces is important. The study comments, "Rural areas that are well connected with urban centers seem to be more prosperous."⁵⁹ The role that good access in rural areas can play in improving

⁵⁷ Government statistics for FY 2003 show that agriculture contributes 23% of the gross domestic product and 9% of export earnings, while employing 42% of workers. Agro-based industries accounted for 64% of industrial production in 2001.

⁵⁸ ADB. 2005. *Pakistan Resident Mission Working Papers Series No. 2: Agricultural Growth and Rural Poverty: A Review of the Evidence*. Manila.

⁵⁹ *Ibid*, page 18.

employment opportunities, and hence in poverty reduction, is relatively clear and has been documented in other evaluation findings.⁶⁰

150. Since the mid-1990s, ADB's development strategies for Pakistan have also highlighted human resource development. The mobility afforded by an improved road network nationally, provincially, and locally contributes to human resource development through improved access to markets, employment opportunities, education and health, and other social services.

151. ADB's early support for the road sector focused on RARs. This was consistent with the emphasis placed by both the Government and ADB on rural development as a key element of the development strategy. It was appropriate in view of the lack of rural roads at the time and the support from Pakistan's other development agencies, notably the World Bank and JBIC, for the main trunk routes. After an initial period, ADB's assistance evolved to include the improvement of selected provincial highways and the Sukkur Bridge in addition to rural access improvement. The importance of supporting all levels of the network is reflected in ADB's ongoing projects, which incorporate a mix of interventions for RARs and provincial and national highways.

152. ADB's investment in the road sector has included attention to key non-infrastructure needs of the sector, i.e., policy and institutional issues. These were mainly in regard to road maintenance and specific technical weaknesses in the early years, progressing to road safety and, under the ongoing projects, to more substantial institutional and policy reform.

153. Broadly considered, ADB's completed program of assistance has been reasonably appropriate and consistent with development strategies, needs, and other development partners' activities. With its mix of infrastructure support for all levels and attention to policy and institutional reform, the ongoing program shows even greater relevance from this broad prospective.

154. At the second level, the general approaches embodied in the program of road infrastructure investment was also sensible and appropriate. The inclusion of RARs as integral components of agricultural projects could plausibly be expected to stimulate agricultural output and provide complementary social benefits along with all-weather access. These are viewed as noteworthy features of the rural access development program. The roads selected for support are located in many different districts, ensuring that the benefits are widespread, and most were sensible selections. The roads were selected from among alternatives identified by consultants using pre-established criteria, were generally designed to minimum standards, and had to demonstrate acceptable returns before selection. Although this approach may not be as applicable in the future, as lack of access is not as serious as it was during the 1980s and 1990s, it maximized the spread of benefits around the country and afforded relatively easy implementation. Some discrepancies occurred, but overall the approach was sound.

155. The highways supported by ADB form part of the provincial highway network identified in the JICA-funded 1988 Highway Master Plan. However, the specific sections for improvement were not selected through the application of technical and economical optimization studies of alternative sections and treatments. Notwithstanding this, with the exception of the Sambrial-Daska link in Sialkot District of Punjab, which does not form part of any major access route, the project sections are part of the core network in each province. Given the poor conditions of the

⁶⁰ These general findings are in line with the findings of OED. 2002. *Impact of Rural Roads on Poverty Reduction: A Case Study-Based Analysis*. Manila.

roads prior to the project and the traffic levels, the project selected road sections rationally and fulfilled a useful role in improving provincial transport. The Sukkur Bridge was a sensible investment for improving connectivity among various parts of the network and was one of the 1988 master plan priority investments.

156. There were weaknesses in the appropriateness of ADB's assistance in the detailed design of the non-infrastructure components. First, the attention to maintenance and institutional reform was slow to evolve into a truly meaningful program. While ADB identified at an early stage of its involvement in the sector a need to address road maintenance, road safety, and institutional reform, these early efforts lacked scale, did not address all necessary aspects, and did not produce sustainable or significant results. Generally, the approach was to fund the hardware and technical aspects, the latter through consultants, while the difficult issues of ensuring the provision of adequate funds for road maintenance were largely ignored or treated as unsuitable for ADB's intervention. It is only through the later ongoing projects that more comprehensive and substantial efforts to address maintenance, road safety, and institutional issues were initiated. This is not to say that the earlier weaknesses have been fully overcome. The old hardware and technology approach is still found, for example, in the components dealing with truck axle load control in the Punjab Road Development Sector Project, for which weighbridges are seen as the major answer. Hardware and technology have a definite role, but experience so far indicates that these investments must be part of a broader approach encompassing non-investment activities and management reform.

157. A similar situation exists with ADB's attention to governance in the road sector. ADB's earlier support was framed with due recognition of governance issues but attempted to work around the core issues without directly addressing them. While some specific governance measures were included, such as limiting the road length that could be changed during implementation of the rural road projects and incorporating objective selection criteria and procedures, these measures did not attempt to address the deep-seated aspects of the issue and did not always work. In the main, ADB's interventions generally relied upon standard anticorruption safeguards. There is no evidence that ADB made concerted efforts to address corruption in the road sector.

158. ADB's completed projects have upgraded 5,500 km of RARs out of a total of 90,000 km nationally, some key provincial highways, and the Sukkur Bridge. Government funding to improve rural access has significantly exceeded that of ADB. The World Bank and JBIC have provided support for highways, and the Government of the Republic of Korea has supported motorway development. Nevertheless, ADB's contribution to Pakistan's road infrastructure has been significant and comprises more than half of external development assistance to the road sector (excluding funds channeled through agricultural sector projects). ADB's ongoing program of support achieved added significance with the approval late in 2005 of a \$773 million multitranche financing facility for national highways. ADB's assistance has been quite widely spread throughout the country and has not focused just on the most densely populated areas, where traffic volumes and the economic benefits from road improvements would likely be the greatest. In this way, the program has achieved a reasonably equitable spread of benefits.

159. ADB's contribution to institutional strengthening in the road sector has not been very significant. ADB could, and should, have done more. However, this is being corrected under five ongoing road sector projects.

160. In summary, ADB's support has been relevant to the Government's and ADB's development strategies and to sector needs. The infrastructure components have been

appropriate from all perspectives—i.e., national, sector, and detailed design—and significant in scope. The main assistance program weakness is the inadequate scale and poor design of the non-infrastructure components.

2. Effectiveness and Other Success Criteria

a. Effectiveness

161. The main outputs and outcomes for the completed road projects and components are described in Chapter III. The FMR1, FMR2, RAR Project, and road components of the nonroad sector projects successfully achieved their main outcomes, namely improving rural access and reducing transport costs. Although information is incomplete, it appears that, as a result of RAR building over the past few decades, including that under the ADB-supported projects, more than half of all rural communities now have all-weather motorable access. Almost all villages in Punjab outside of those that are inherently difficult to get to, such as those in deserts or flood-prone areas beyond the protection of levees, are accessible year round. In NWFP, most villages in the lowlands are accessible; lack of access appears largely related to hilly areas. Sindh, however, still has a substantial number of unconnected lowland villages, as does Balochistan, the latter because of the long distances between many settlements and low population densities.

162. The survey undertaken for this evaluation was not able to show conclusively, in the sense of a rigorous impact evaluation, that the change from fair-weather to all-weather status, i.e., the ability to travel by a normal vehicle such as a car, pickup, or van throughout the year, is an important outcome of the rural road building program; the comments received from respondents and other results suggest that this is so. Although access can also be explained in terms of transport costs, the actual price of transport to road users is of secondary concern. That is, compared with no road, a bumpy road is still appreciated and used, provided that it is all-weather, even though the fare may be higher than if the road were smoother. In this respect, ADB-funded projects and components for rural access roads got it right, as their focus was on access.

163. The two components under the FMR1 and the FMR2 for supplying equipment were only partly successful in achieving their aims, and the institutional strengthening components under these projects were unsuccessful. Success was lacking because project design failed to address some details of the constraints and needs.

164. While the PHP was successful overall, the good overall result masks major differences between the infrastructure investment and the TA components. The investment components achieved their stated objective of improving transport efficiency. In contrast, the TA components did not produce any major tangible improvements in road maintenance or road safety, although they did address with mixed success some blackspots and contributed to establishing the motorway police. If some extra effort is applied, the RMUs may eventually help improve road maintenance. The road maintenance and road safety components were not adequately designed to overcome key weaknesses. The design focused on technological and physical input needs and ignored the changes in funding and bureaucratic systems that are necessary to enable the systems to operate.

165. The Sukkur Bridge and related works were completed as planned and brought the desired reduction in traffic congestion and a better-than-expected improvement in freight transport efficiency. The weighbridges for axle load control and automatic counting equipment for monitoring toll collection are not used and did not improve operations. Revenues from tolls

exceed O&M needs and contribute to NHA's overall financial resources, thereby improving the likelihood of national highway and bridge maintenance and project sustainability.

166. All of ADB's PPTA projects achieved their purpose and led to project investments, although the outputs of several in the mid-1990s were repackaged into four separate provincial projects. Although the ADTA projects were completed as planned and addressed specific, relevant sector needs, their impact on key sector concerns was unsuccessful.

167. Overall, ADB's assistance is viewed as effective, the shortcomings in the institutional and advisory activities being overshadowed by the successes of the much larger investments in infrastructure. Nevertheless, the shortcomings in the institutional and advisory activities are significant, particularly as they relate to sustainability (a current focus) and social aspects such as road safety. The generally disappointing results point to a need for greater attention to design and implementation of such support in the ongoing and future program.

b. Efficiency Aspects

168. Economic analyses done for a sample of the completed RARs and provincial highways and the Sukkur Bridge show that the infrastructure investments represent an efficient use of development funds overall. This is despite reservations concerning sustainability for the RARs and, to a lesser extent, for the provincial highways. Two of the 23 reevaluated rural access roads had very low EIRRs and another two had EIRRs of around 9%. These low results were predominantly due to low traffic volumes, highlighting a weakness in the detailed design selection and evaluation process for rural access roads. Characteristics of successful road projects that broadly apply to ADB's operations in the Pakistan road sector (Box 2).

Box 2: Characteristics of Successful Road Projects

1. Adequate levels of traffic used the completed roads; traffic growth reflects economic growth.
2. Vehicle operating costs and travel times were reduced and transport services improved.
3. Continuity of engagement in a country's road sector and of the Asian Development Bank (ADB) staff involvement contributed to project success. Reform initiatives were often pursued through a dialogue spanning several lending and technical assistance operations, sometimes covering a decade.
4. Good quality project formulation and design incorporated lessons from previous projects.
5. Government ownership was evident when ADB-supported road investments were in the medium-term investment plan.
6. Executing agencies performed well, were sometimes supported by supervision consultants, and often had a track record of having previously handled similar projects.
7. Executing agencies, consultants, contractors, and ADB jointly solved problems during implementation.
8. Supervisory consultants and contractors performed satisfactorily.
9. Regular ADB supervision missions were a consistent feature of successful projects, particularly during the first 2–3 years after loan approval, when ADB missions can be of most help.
10. Adequate maintenance is essential for project success and sustainability.

Source: Annual Evaluation Review, Operations Evaluation Department.

169. Neither overall economic rates of return nor other efficiency measures were calculated for the various projects. However, the non-infrastructure investments are relatively small in monetary terms compared with the infrastructure investments, and their inclusion would not

substantially reduce the efficiency rating despite the general lack of success of the policy and institutional components in achieving positive outcomes. Efficiency was adversely affected by implementation delays, which was common to all components and projects. ADB has initiated a study under ADTA to investigate causes of early delay in its infrastructure projects. Overall, ADB's program is rated efficient.

c. Sustainability of Achievements

170. Chapter III showed that ADB-supported infrastructure was receiving some maintenance but that this was generally minimal. Except in the case of the Sukkur Bridge—which, because of the nature of its construction, will not require any major maintenance for quite some time—this has resulted in many of ADB-supported roads deteriorating to rough but trafficable condition.

171. In the case of RARs, the generally high construction standard helped to slow the rate of deterioration under the limited-maintenance regime. Given that the major benefit from these roads is the all-weather access they provide, even a poorly maintained and bumpy road generates benefits and is appreciated by the communities it serves. While this could be construed as an argument for limited maintenance of such roads, without a certain level of maintenance they eventually will revert to fair-weather-only condition, losing the main benefit until reconstructed. Generally, reconstruction is more costly over the longer term than providing adequate maintenance.

172. Because of the importance of the provincial roads, it is unlikely that they will be allowed to fail, and some continuing future maintenance can be expected. Nevertheless, some of the roads are likely to remain in rough condition. The major source of benefits from these roads comes from having a faster, smoother ride and consequently lower VOCs. Rough surfaces and other deterioration that slows traffic and increases vehicle wear and tear represents a loss of potential benefits.

173. Overall, the sustainability of benefits from the infrastructure investments is rated likely. This is mainly because the high initial quality of the RARs is likely to enable them to last longer than their design lives and because the recognized importance of the provincial highways will ensure that they will be kept trafficable. Nevertheless, poor maintenance will result in loss of benefits that could be achieved by longer road lives and better driving conditions (smoother surfaces, fewer shoulder problems, and so on). Eventually, inadequate maintenance will result in the need for costly reconstruction. Maintenance is an issue despite the rating. On the positive side, the Sukkur Bridge is tolled, and the toll income exceeds bridge maintenance requirements. These revenues contribute to NHA's income for maintaining the bridge and other assets.

174. The poor results achieved by ADB's non-infrastructure support makes the sustainability of policy and institutional achievements largely moot. Indeed, the weak result in these components is one reason why maintenance of the physical infrastructure is inadequate.

3. Overall Assessment of Completed Projects and TA

175. Most of ADB's support involved new and rehabilitated road infrastructure. This was relevant to sector needs and the strategies of both the Government and ADB, was effective in achieving stated outcomes, and represented an efficient use of resources despite delayed implementation. Some issues that raise concerns about sustainability are being addressed under ongoing projects. There were only minor environmental and social problems and few unintended institutional impacts. However, some outstanding resettlement issues under the

Sukkur Bridge Project need to be resolved. The project components and TA aimed at institutional strengthening, including road maintenance and safety improvements, were formulated to address key sector issues but inadequate in design and scale and largely ineffective. Road maintenance and traffic safety remain as major issues. All of the completed PPTA led to projects. Overall, because of the relative size of the infrastructure developments compared with the non-infrastructure support, ADB's program of assistance for the road sector is deemed successful when assessed on the bases of relevance, effectiveness, efficiency, and sustainability (Table 6). Each of ADB's completed projects was also rated successful (a summary of the ratings for individual projects is in Appendix 9).

Table 6: Summary of Road Sector Strategy Performance

Core Criteria, Ranking	Score	Weight	Total
Relevance, relevant	3	0.25	0.75
Effectiveness, effective	3	0.25	0.75
Efficiency, efficient	3	0.25	0.75
Sustainability (infrastructure components), likely	2	0.15	0.30
(non-infrastructure components), unsuccessful	1	0.10	0.10
Overall Score: Successful			2.65

Source: Study estimates.

176. The main weakness in the program was the inadequate scale and design of the components and ADTA aimed at policy reform and institutional strengthening, including road maintenance and road safety improvements. These were largely ignored or treated as unsuitable for ADB interventions.

177. An additional weakness was inadequate feasibility studies of RARs, leading to cases of under- and overdesign, the former causing cases of premature road deterioration and the latter resulting in excessive costs to achieve a road standard higher than necessary.

4. Project Identification and Formulation

178. ADB based its project and TA selection and policy advice on sector studies that were undertaken at frequent intervals. Generally, this sector work was undertaken as part of the work of PPTA and implementation consultants rather than as standalone studies. The first major piece of sector work was a 1989 transport sector study done under PPTA for the PHP. This was followed by similar study in 1994 under PPTA for a second highways project,⁶¹ supported by an ADTA study of the private sector and the requirements to involve it more in road development, also in 1994. A subsequent study done under ADTA in 1999 focused on Punjab institutional arrangements, which provided general guidance on policy and investments in institutions. Staff consultancy was used in 2000–01 to complete another Pakistan transport sector study. The recommendations from these studies did not always flow through to investments but did contribute to forming policy advice, such as on equipment leasing to contractors and limiting public sector transport operations. The PCR for the Rural Roads Project noted that because “the cumbersome procedures of federal and provincial governments delayed disbursement of funds, which caused cash flow problems for the contractors, some had to slow down or halt work.”⁶²

⁶¹ This project did not proceed in the prepared form but contributed to all four ongoing road sector projects.

⁶² ADB. 2003. *Project Completion Report on the Rural Roads Project*. Manila (Loan 1401-PAK[SF]).

179. Project designs and the formulation of the terms of reference for most ADTA arose from PPTA and implementation consultants. There were 14 PPTA projects in 1984–2005. All of ADB's projects have included implementation consultants for detailed design, and some of these consultants also completed other studies. Consultants for each phase of project preparation and implementation were selected through a new request for proposals regarding feasibility studies, designs and civil works supervision. Although ADB consultant guidelines provided for direct selection if necessary in the feasibility/detailed design/construction supervision cycle, this flexibility was not used. The same consultant was rarely selected to do more than one of the three activities.

180. Given the appropriateness of ADB's support for the sector and its success in general, ADB's approach to assistance identification was rated satisfactory. Nevertheless, the inadequate scope and scale of attention to road maintenance and safety issues, the disuse of weighbridges, and the failure so far to get the private sector involved in road financing and development point to some weaknesses. However, the evaluation concluded that only some of these shortcomings arose for lack of study of these problems, which became evident only with hindsight. Increased sector study would help to improve understanding of the private sector and transport operations. Studies of axle overloading and road safety, for example, are in progress under ADB's ongoing road sector projects. Perhaps the more important shortcomings, however, are part of the development process in general, which until recently failed to directly address aspects such as lack of funds for maintenance and governance issues. Addressing these issues requires continuing dialogue with the Government and other development partners and efforts to build local ownership and capacity.

181. The 2005 Paris Declaration on Aid Effectiveness proposed a set of monitorable actions to reform how aid is managed. The objective is to increase aid effectiveness and support developing country's efforts to strengthen governance and improve development performance. ADB's program displays several good design traits, as there has been a large degree of harmony in approach with that of other development agencies, and ADB's program has complemented rather than overlapped with the work of other agencies. The expectation going forward would be that funding agencies will place more emphasis on partnerships and harmonization than has traditionally occurred in the past.

182. The completed road projects and most of the completed agricultural projects with road components were administered from ADB headquarters. With the exception of the 2003, 2004 and 2005 projects for national highways, the ongoing projects are administered from the Pakistan Resident Mission (PRM),⁶³ which opened in 1989. PRM now maintains one implementation officer dealing specifically with transport—an input that is perhaps small in relation to the size of the ongoing program. Two important implementation interests of recent years, and for the program going forward, include preventing implementation delays and encouraging the reorientation of government services. ADB has ongoing ADTA to look into ways to reduce startup delays. In implementing any recommendations, ADB staff will have to tread a fine line to provide detailed support while avoiding the micro-management of EAs.

5. Sector Strategy

183. The general assessment shows ADB's strategy and program as sensible and beneficial. An even more beneficial program would have been possible, however, with more and better

⁶³ Projects normally remain under the supervision of the division and staff member responsible for appraisal for at least 1 year or until major civil works contracts are awarded before administration is transferred to PRM.

support for the policy and institutional aspects of road sector development. The implication is that, with the incorporation of some improvements, the previous strategy and program could be beneficially continued into the future. Certainly, an argument can and has been made for keeping the same broad strategy of improving road infrastructure to support rural and general economic development. At the more detailed sector and project levels, ADB's strategy has not been static but has changed over time. Clarity is required as to which part of the strategy is preferred. The earlier strategy of umbrella projects encompassing all four provinces under a single project and focusing on a single road type gave way to projects focused on a single province or agency but covering a range of roads and other investments. This change is for the better, in the opinion of the study team, as the scope of the newer projects is better aligned with the sector agencies involved and sources of funds. ADB's future pipeline of support provisionally provides additional investment in RARs and provincial highways, plus TA. These are listed by road type but could be packaged with a focus on institutions, as was done for the 2005 multitranche financing facility and loan to NHA. A further beneficial change in ADB's sector strategy was the inclusion of direct support for private sector involvement in highway financing and development. While this type of transaction has not yet materialized, ADB and other development partners in Pakistan are working with the Government to develop appropriate instruments for private sector involvement. ADB's future lending pipeline is designed to support this as well.

184. The continued devolution of authority and accountability has implications for the road sector. Two other aspects of relevance to ADB's future sector strategy concern whether and, if so, how to support district governments and how to encourage government agencies to take a greater role in project planning and preparation.

185. District governments are responsible for RARs. While more RARs are needed, their poor maintenance indicates a need to enhance district government management capabilities. Most of the issues that apply provincially concerning service orientation and fund constraints also apply to districts, with the added constraint that many districts have small staffs, which can limit their ability to maintain specialized skills. Nevertheless, elected councils theoretically should be able to make better decisions on local priorities. District governments require support, and ADB must determine appropriate approaches for how to package this support into project design. Some partnering of skills between provincial and district governments has been noted and could be incorporated into project designs, as was done in a recent ADB project.⁶⁴

186. The Government's road sector agencies have skilled and dedicated staff and could be beneficially supported to undertake more project preparation activities, allowing ADB to concentrate on appraisal and checking for compliance with safeguards. This approach parallels the change from works to service orientation being fostered under ADB's ongoing projects. A start on this strategy has been made through the ADB-funded TA for infrastructure development,⁶⁵ which is designed to enable the Government to hire consultants and undertake studies to identify and prepare infrastructure projects including roads. The TA will also support public-private partnerships.

⁶⁴ ADB 2005. *Report and Recommendation of the President to the Board of Directors on a proposed Multitranche Financing Facility and a Proposed Loan to the Islamic Republic of Pakistan for the National Highway Development Sector Investment Program*. Manila (Loan No. 2231-PAK for \$770 million and Loan No. 2210[SF] for \$3.0 million, approved on 15 and 13 December respectively).

⁶⁵ ADB. 2005. *Report and Recommendation of the President to the Board of Directors on a Proposed Technical Assistance Loan and Technical Assistance Grant to the Islamic Republic of Pakistan for Infrastructure Development*. Manila (Loan 2178-PAK[SF], for \$25 million, approved on 18 August).

B. Issues and Lessons

1. Rural Access Road Investment

187. Continued investment in RARs is warranted because not all communities are connected by all-weather roads. Lack of access is most acute in Sindh and least so in Punjab. Several issues are related to continued investment: (i) road functionality and network planning, (ii) the balance between network expansion and the ability of various levels of government to define design standards and maintain the roads, and (iii) the road selection process.

188. The RAR program in the past involved the selection of new roads (as opposed to rehabilitating or expanding existing roads) and building the new roads to a similar general standard design. Subprojects were selected from long lists of candidates prepared by provincial CWDs. This has been a formula approach, the key variable being the length of road and a required condition was that the investment generate an EIRR of at least 12%. As existing roads were few at the time, and the need for additional roads was vast, this was a simple and reasonable approach to solve this basic need. It enabled the development of a rural road network and, with it, motorized public transport services for rural communities. While the need remains for more RARs, decisions must be made in an environment where many more roads now exist. Rather than continue with the formula approach, it would be desirable to have (i) new roads planned as part of a network and (ii) investment programs planned to incorporate a wider range of subproject types, not only those that increase the number of roads but also those that improve the existing road network. This approach recognizes that some roads have higher-order functions, acting as connector roads within local networks, as opposed to a simple farm-to-market function, and may need to be built to a higher standard.⁶⁶ In addition, with a relatively extensive network now in place, particularly in Punjab and parts of Sindh and NWFP, overall access might be improved by doing different types of subprojects, such as rehabilitating or upgrading existing paved rural access roads, rather than just building more rural access roads. Still other investments may include supplying or improving structures such as bridges.

189. Two other aspects of road selection and planning warrant attention. First, following devolution, the nomination of RARs for development is left to district governments. However, if some of these roads with connector functions run over district boundaries, their proper planning may require the involvement of the provincial WSD. Provincial WSDs should take an overview of the network and suggest broader improvements for inclusion in district programs. Planning and funding of connector roads is an issue that deserves attention.

190. The selection of RARs for inclusion under road-building programs appears to have been subject to pressure from influential people. The criteria for selecting roads have been sufficiently broad that almost all roads could be included on the long list. In practice, the long lists were, and continue to be, lists of roads proposed by district and provincial governments without any transparent, objective basis. This is not to say that the proposed roads were illogical or bad choices, but rather that the process was subjective and open to influence. This area of project design could be improved to provide a more equitable distribution of benefits and a better fit

⁶⁶ Symptomatic of this is the Crop Intensification Program, in which the original selection of roads was changed and, instead of roads that link villages to a sealed road, connector roads were built. However, the roads were built to the original design standard, which is inadequate for the level of traffic and type of vehicles common to connector roads. Early deterioration of some roads was noted in the PPAR for the loan. In contrast, some of the roads in the hill areas under the NWFP Barani Area Development Project were built to too high a standard and cannot generate the benefits commensurate with the cost of such standards.

between investment and sector needs. The screening criteria for shortlisting roads also allow substantial flexibility, but so far the process has been done by consultants, which has minimized subjectivity and placed a higher weight on technical factors rather than the dynamics of political decision making at the lower levels of government.

191. A question in relation to the rural access road network is whether or not the network should be expanded if it cannot be maintained. Under current practices, roads are not maintained except when emergency repairs are needed to keep them open to traffic. Routine maintenance, such as filling potholes and cleaning drains, is rarely attended to; nor is periodic maintenance, such as sealing cracks and resurfacing. The condition of the RARs gradually deteriorates over time, becoming rough and bumpy. It can be argued that, if emergency repairs to washouts and damaged culverts and bridges are attended to, roads continue to provide all-weather access and, hence, benefits. Continued expansion of the network despite subsequent poor maintenance would therefore be reasonable. Nevertheless, shortened travel times and lower VOCs are also important benefits. As travel time increases with roughness and general road deterioration, a reasonable maintenance program is still required to prevent the loss of benefits. Moreover, without adequate maintenance, eventually the roads are likely to revert to fair-weather-only capability, thereby forfeiting the benefits of all-weather access. This question might be better framed as this: what is a reasonable maintenance regime for this class of roads? The Study can offer no solution, and perhaps this is one area for further study. However, it would appear that the answer lies somewhere between what is currently done and what is typically recommended in design reports. These reports tend to focus on the potential increase in VOCs from road surface deterioration—a condition that this Study argues is less important to beneficiaries than all-weather connectivity, particularly given the need for more RARs and inadequate budgets to both build roads and optimally maintain them.

192. If road maintenance is minimal, the argument could be made for building RARs to a higher technical standard so that they last longer in the absence of adequate maintenance. However, unless traffic volumes can be reasonably predicted, this approach may cause many roads to be overdesigned and so waste scarce resources. Thus, this approach is advocated only where proper network planning is done and traffic volumes can be predicted with some accuracy.

2. Road Maintenance Planning

193. A major weakness affecting road maintenance, namely the limited availability of funds, could be addressed in the future for Punjab and NWFP and nationally with better maintenance planning and the development of alternative funding sources such as tolls. If these planned measures materialize and have the desired effect in improving road maintenance, a major constraint to the adoption of objective processes for planning maintenance, such as was embodied in the RMUs supported by ADB and the Nordic Development Fund, will be removed for these areas. It is possible that, combined with the institutional reform measures supported in the current group of road sector projects, objective allocation of maintenance funds will follow. Such improvements can, however, be subverted if decisions are made to divert maintenance funds to other uses. The need to expand road capacities and mature the network by upgrading roads to a higher order of functionality will compete for access to scarce financial resources. Overall, the future holds some promise for the provincial highway networks in Punjab and NWFP and for national highways. Sindh and Balochistan will continue to be affected by shortages of maintenance funds large enough to make planning difficult. Sindh does, however, have the advantage of a partly functioning RMU.

194. The situation at the district level is less promising. Funds are provided to districts by provincial governments on the basis of a set amount per kilometer of road multiplied by the number of kilometers. The use of the funds is controlled by district governments and appears, in the case of road sector funds, to be directed mostly toward new road construction rather than to the maintenance of existing roads. This is an understandable decision given the presence of unconnected communities within a district. Without an increase in maintenance funds for district roads, improved maintenance planning at this level is moot.

195. Assuming that additional district road maintenance funds materialize (a major assumption that has not proven to be the case in the past), some form of objective maintenance planning and optimization would be beneficial. Ongoing projects provide for expanding the RMU concept, in simplified form, to districts. However, it is not clear how this would work in practice, as districts have only a few road engineers. Even a simplified version of a computer-based road asset-management system would require skills not likely to be available over dispersed district offices. An alternative arrangement may be to have the data processing and analysis done by a central provincial entity, such as the RMU,⁶⁷ if these units are revived, with the district staff engaged in collecting data and using the processed results. This would not be very different from the service arrangement that exists for RAR construction, whereby provincial CWDs or WSDs manage the works and hand over completed roads to districts.

196. An often-cited approach to solving some of the maintenance issues for rural roads is to involve local communities in executing works. Expected benefits include reducing the cost of maintenance, limiting the leakage of funds through corruption, and providing better responses to local needs as they arise. This approach was piloted under the RAR Project but was not sustained. It may be possible to adapt this approach for regular routine maintenance under paid contractual arrangements with local communities or small local contractors. Another arrangement aimed at ensuring an adequacy of funds, to be piloted under the ongoing road sector project for NWFP, is to include a maintenance contract for up to 10 years under the construction contract for new RARs. These alternative arrangements would appear worthy of further testing, as practical, sustainable ways to improve road maintenance must be found.

3. Truck Axle Load Control

197. An issue concerning road maintenance is the control of excessive axle loads, which reduce road life. Despite the problem being highlighted in successive reports since the 1980s and the establishment of a number of weighbridges to provide a mechanism to help enforce axle load controls on both national and provincial highways, little has been achieved. Few of the existing weighbridges are currently operating. Check points can be bypassed, and corruption can hobble the system. To be effective, weighbridges must be kept in operation and sufficiently dissuasive penalties must be impartially and transparently enforced. The problem needs to be addressed in a comprehensive way, addressing both the reasons why truckers overload their vehicles and providing a well-thought-out and adequate program for detecting and penalizing overloaded trucks. Weighbridges should be located close to where overloaded trucks may enter the road network, which is not the case for several existing weighbridges on the provincial highway network. Rules are required governing how overloaded cargo is to be handled, i.e., offloaded and penalized or just penalized; if the former, supporting infrastructure is needed to hold offloaded cargo. Penalties need to be appropriate, incentives are needed to encourage to the use of multi-axle trucks, and the regulations need to be actively enforced. Lastly, corruption

⁶⁷ This has been done by the Sindh RMU for one district.

must be monitored and managed so that overloaded trucks do not circumvent the system by paying bribes.⁶⁸

198. Self-regulation by truckers is a necessary ingredient in any solution. Truckers recognize that smooth, well-maintained roads benefit them by lowering operating costs and travel times and that overloading causes road deterioration. Nevertheless, the trucking industry is so competitive that freight rates in Pakistan are already among the lowest in Asia, and margins for truck owners and operators so thin that truckers must increase loads to earn an adequate return. Individual action to self-limit overloading will not improve the situation. Solutions must be found that will enable the industry as a whole to better regulate itself.

199. Until a measure of self regulation can be developed, only the weighbridges on national motorways and some highways, and at control points such as border crossings and port and rail exits, have any chance of contributing to controlling axle weights. This is because traffic cannot bypass these checkpoints. However, corruption remains an issue, although much less so for national highways and motorways supervised by the National Highway and Motorway Police, as this force has a reputation for strictly enforcing regulations without corruption.⁶⁹

4. Institutional Strengthening

200. In addressing issues relating to institutional performance, such as those of road maintenance and safety and the selection of subprojects, the constraints that limited fund availability, inappropriate institutional orientation, and poor governance impose must be recognized and given appropriate importance. Reliance upon hardware and technological inputs to improve performance appears to have little chance of success where these aspects are not the real constraints.

201. Institutional strengthening is likely to emerge as a contentious issue for the ongoing road sector projects, particularly in Punjab. The issue also extends to how well the WSDs are performing and the quality of the advice coming from ADB and its consultants. Many in the Government believe that they have the required expertise, and their institutions have achieved a sufficient level of experience, to be able to manage the projects themselves without large infusions of outside expertise or supervision by ADB. In the opinion of the Study, this is partly correct. Pakistan's road institutions do have many well-qualified staff members, and not all consultants have performed to expectations. Nevertheless, corruption exists and the Government needs help maintain objectivity and transparency. This can come from fielding consultants to do such tasks as road selection, complete feasibility studies, review procurement, and make related decisions. In addition, at times, decisions such as those on tolls and the use of weighbridges have been reversed. The country's development partners need to help in maintaining consistent direction.

⁶⁸ An OED evaluation on the operation and maintenance of roads made the following observation regarding overloaded trucks: "What is needed, therefore, is for government agencies to sensitize truck operators, to change their attitudes and behavior, and to make them realize that profits and vehicle operating costs are directly related to the road condition and that vehicle overloading on poorly maintained roads increases vehicle operating costs so that they lose a sizable amount of their potential profit. Likewise, stiff penalties may have to be imposed on heavy vehicle owners rendering their profit from overloading less attractive." In Lao PDR the penalties for exceeding load limits include revoking the business permit and cancelling the vehicle license. In Thailand drivers are penalized by fine and imprisonment when arrested for overloading, although at the time of the report the Government was considering holding vehicle owners responsible. OED. 1998. *Special Evaluation Study on the Operation and Maintenance of Road Facilities and their Impact on Project Sustainability*. Manila (December).

⁶⁹ The National Highway and Motorway Police are paid wages about double those of equivalent provincial or city forces and are provided with high-quality vehicles and other equipment.

202. A more generic issue involves official corruption, whether real or perceived. For example, the World Economic Forum conducts annual surveys among corporate executives asking about the most problematic factors for doing business in Pakistan. Two concerns outranked all others. The first was corruption and the second was government instability and/or coups. Transparency International conducts similar surveys among the general population. In every year, Pakistan was near the bottom of the corruption ratings among the countries surveyed. The survey among the general population taken in 2001–2002 identified the police as being the most corrupt, followed by the power companies and taxation agencies. These are reasonable responses, as most people deal with these agencies on a regular and personal basis. The survey did not cover the government agencies involved in procuring large civil works. ADB's Office of the Auditor General, Integrity Unit (OAGI) has considered 47 cases of reported corruption associated with ADB operations in Pakistan, 19 of which were not followed-up because they were not within OAGI's scope of work, credible, material or verifiable. While many of the others were confirmed to involve corruption and appropriate action was taken, other allegations could not be proved. The main reasons for this lack of conclusive evidence were that (i) the problem had been resolved or (ii) the complainants either did not appear or were unable substantiate the allegation. There are many reasons why it is difficult to prove fraud, especially in large contracts. Some of the main reasons are given in Box 3.

Box 3: Possible Opportunities for Corruption during Project Implementation

Corruption can occur at each stage of the civil works project cycle. A few examples are given below. Because of the extent of collusion, corruption is difficult to identify and equally difficult to prove.

- At the project identification and design phase, some contractors may attempt to influence the needs assessment by exaggerating the need for the project.
- Once the decision is made that the project will go ahead, a contractor can influence project specifications in its favor.
- At the prequalification stage, some bidders may seek, in collaboration with personnel of the executing agency, to have potential competitors disqualified on technical grounds.
- Collusion sometimes occurs at the tendering and bidding stage, where a group of bidders, with assistance from the executing agency, attempt to put in coordinated bids in such a manner that one of them will win this project and others will be selected for future projects. All participants in the scheme benefit while the project becomes more expensive than it should be.
- During project implementation, several forms of corrupt practices may occur, including fraud in billing or holding up payments until certain bribes are forthcoming, affecting work in progress, right-of-way acquisition, and construction quality.
- During the operation stage, fraud can occur, but these are relatively minor in the road sector compared with the potential for corruption during the activities that precede it.

The Asian Development Bank can help to minimize these practices by ensuring that all procedures are followed correctly and transparently. Even with safeguards in place, opportunities for corruption will be found when working in a culture where corruption is the rule rather than the exception. In such cases, systemic changes to reduce opportunities for corruption and increased transparency and public access to information can help to address this difficult issue.

Source: Study compilation.

C. Recommendations

203. Based on the foregoing, specific recommendations for ADB and the Government, including some in relation to ongoing road sector projects, are given in Table 7.

Table 7: Recommendations for Road Sector Assistance in Pakistan

Recommendation	Responsibility	Timing
<p>1. The effectiveness of ADB's road sector performance must be viewed in the context of ADB's overall program in Pakistan. This will be evaluated in the CAPE and the final judgment will be made in the next Pakistan CSP. Continued support to the road sector would be consistent with the findings of the evaluation (e.g., the relatively good performance of completed projects; the need for an improved road network; and rapidly growing transport demand).</p>	CWRD	<p>Following completion of the Pakistan CAPE and decisions made during preparation of the Pakistan CSP.</p>
<p>2. If the Government decides that ADB should continue to be involved in the road sector, ways must be found to address the defects noted in the planning, design and implementation of past road projects. In the future, new access road subprojects will become less readily identifiable and a wider range of subproject types (e.g., widening, rehabilitation, and bridges to replace fords, apart from just new roads) should be considered. Since devolution of large road responsibilities to the districts is being implemented, the requirements of the districts in all aspects of road responsibility including planning, design, implementation and maintenance must be considered in terms of funding and institutional capability. Also, while policy direction comes from the federal government, there currently is no means of coordinating their implementation at the provincial or district level. This aspect should be considered in the preparation of future assistance to the road sector.</p>	CWRD	<p>Following completion of the Pakistan CAPE and decisions made during preparation of the Pakistan CSP.</p>
<p>3. If ADB remains involved in the road sector, the sector roadmap in the CSP should include a clear set of steps to be taken by the Government, ADB, and other funding agencies to improve road maintenance. Elements of such an approach could include (i) clearly understanding the fiscal implications for road maintenance associated with the Government's increasing devolution of authority to district governments; (ii) instilling an attitude that recognizes the importance of maintenance and use of objective decision making within the district governments; (iii) expanding the computer-based road asset-management system, even in simplified form, to the district level; (iv) developing, as an alternative, the capacity of the provincial governments to process road-management data for the districts as an alternative if more sophisticated data is required to aid district decision making; (v) reviewing weighbridge proposals for provincial roads under ongoing projects and developing measures to make them more effective including making the police force more credible in enforcement and reducing the ability of truckers to circumvent the weighing points; (vi) developing a comprehensive program to address truck overloading built around measures to enhance self-regulation by truckers, information campaigns, detection, and enforcement of effective fines; and (vii) including a road maintenance and rehabilitation projects in the future program.</p>	CWRD	<p>Following the completion of the Pakistan CAPE and decisions made during preparation of the Pakistan CSP.</p>

Recommendation	Responsibility	Timing
<p>4. Road safety is a complex issue. A program to address road safety should include (i) introducing safety audits of ongoing project designs beginning in 2007; (ii) providing assistance for the implementation of the National Highway Safety Ordinance of 2000; (iii) upgrading the highway police at all levels; (iv) enhancing public awareness through a road safety awareness campaign using print, radio, and television and introducing road safety problems, procedures, and rules through the educational system; (v) improving signage; and (vi) identifying and removing blackspots where accidents frequently occur. A long-term commitment will be needed to address traffic safety issues. This effort would involve working with agencies of government not related to roads; this approach is necessary for good traffic management and safety practices. Other funding agencies are also involved in improving traffic safety. If ADB continues to be involved in the road sector, the sector roadmap in the CSP should include a time-bound series of actions that the Government, ADB, and other funding agencies will take to improve traffic safety involves working with non-road related agencies of government; such an approach is necessary for good traffic management and safety practices.</p>	CWRD	Following the completion of the Pakistan CAPE and decisions made during preparation of the Pakistan CSP.
<p>5. The financial needs to meet the demand for transport infrastructure are beyond the ability of the Government. The private sector is a potential source of such funds. The Government is taking a number of steps to ease the formation of public/private partnerships (PPPs). If ADB continues to be involved in the road sector, the sector roadmap should include policy and institutional support, as well as lending, to encourage greater private sector involvement in the road sector. Achieving this objective will require that the public and private sides of ADB work together.</p>	CWRD and PSOD	Following the completion of the Pakistan CAPE and decisions made during preparation of the Pakistan CSP.
<p>6. ADB needs to maintain a dialogue with the Government so that the resettlement program for the Sukkur Bridge is completed by resolving the payment issue between the NHA and the Sukkur Municipal Corporation. This would enable completion of the streets and other facilities in the resettlement sites.</p>	CWRD	2007

ADB = Asian Development Bank, CAP = country assistance plan, CAPE = country assistance program evaluation, CSP = country strategy and program, CWRD = Central and West Asia Department, NHA = National Highway Authority, PRM = Pakistan Resident Mission, PSOD = Private Sector Operations Department.