

EXECUTIVE SUMMARY

This sector assistance program evaluation (the Study) reviews the contribution of the Asian Development Bank (ADB) to the development of Pakistan's road sector over the period 1985 to 2005. It is also designed to provide an input to the forthcoming Pakistan country assistance program evaluation (CAPE).

Sector Background

The transport sector contributes over 10% of Pakistan's gross domestic product. Over the past 2 decades, as in other parts of Asia, the growth of vehicle numbers has been dramatic. The number of registered road vehicles in 2004 was 2.94 million with a further 3.01 million motorcycles and rickshaws. The combined fleet is growing at 9% annually, nearly double gross domestic product growth of about 5%. Since 1991, road transport in Pakistan has grown annually by 10.6% for freight and 4.4% for passengers. Road transport is the dominant transport mode, moving about 95% of inland freight and 90% of passengers. ADB's cumulative lending to Pakistan reached \$15.035 billion at the end of 2005. Of this, \$2.098 billion was directly for the road sector, accounting for 14% of the total lending. Other than ADB, the major funding agencies are the World Bank and the Japan Bank for International Cooperation (JBIC). There are a number of other funding agencies involving various countries and agencies. The Paris Declaration on Aid Effectiveness provides a framework for further improving funding agency coordination, partnerships, and harmonization of future ADB operations in Pakistan. It remains to be seen whether the benefits expected from the Paris Declaration are realized in the road sector in Pakistan.

Pakistan's roads can be grouped to reflect both function and administrative structure. At the core of the network are the main trunk routes formed by the national highways and motorways, which are administered by the National Highway Authority (NHA) of the Government of Pakistan (the Government). The provincial highways form key local and regional routes or links to the main trunk routes and are administered by each of the four provincial road departments, now known as the Works and Services Department (WSD) and formerly as the Construction and Works Department (CWD). The lowest rung of the network, comprising the largest functional group, are the rural access roads (RARs) administered by district governments. The RAR network includes many former provincial roads, and district administrations now employ many former WSD/CWD staff, as a result of Pakistan's general devolution of powers and assets to districts in 2001. Many of the main trunk routes and key provincial highways are in satisfactory condition. Overall, however, Pakistan's road network is deteriorating as a result of inadequate past maintenance and sometimes poor design and construction, compounded by rapid traffic growth and large numbers of trucks being loaded beyond permissible axle load limits.

Historically, the construction and management of the road network was done exclusively by the public sector and quasi-government organizations such as the military. The private sector's involvement was limited to consultancy and construction contracting. In contrast, transport services—both freight and passenger—are dominated by the private sector.

Since 1985, the Government's broad sector strategy has emphasized (i) expanding the road network to reach more villages and (ii) maintaining and rehabilitating the main trunk roads. The latter reflects the limited availability of funds and the need to preserve road assets, and the former the importance of agriculture as a cornerstone of the Government's development strategy. With the rapid growth in vehicle numbers and travel over the past decade, the

Government's road sector strategy also supports capacity augmentation on major routes and greater private sector participation in road development and management.

Key issues in the sector include (i) the need for additional RARs, (ii) inadequate road maintenance, (iii) a poor road safety record, (iv) institutional inefficiency, (v) weak governance including corruption, (vi) insufficient private sector involvement, and (vii) the need for greater connectivity with neighboring countries. Poor road maintenance is a complex issue at all levels of the government. Despite asset preservation being part of the Government's stated strategy, in practice this has not been achieved in the road sector. Inadequacies exist in funding, planning (including design), execution (including construction quality), and the control of truck axle loads.

ADB's Strategy and Assistance

Achieving macroeconomic stability and promoting structural adjustment in Pakistan were early concerns of ADB starting in the mid-1980s. In parallel with the Government's development thrusts, ADB's country strategies were designed to stimulate private sector development, exports, and general economic growth. These strategies translated into loan and technical assistance (TA) projects for rural development, energy, industry, and selected aspects of infrastructure, as well as for urban and social services. Since 2000, poverty and social equity, governance, human resource development, and social justice became important elements of ADB's operations in Pakistan. Since the mid-1980s, when the first country strategy was written, improving the road transport sector has been a key part of ADB's country strategies.

Since 1985, ADB has lent a total of \$2.1 billion to the road sector, more than half of all external assistance provided to the sector. In addition, since 1984, a total of \$6.3 million grant has been provided by ADB for 24 TA projects. ADB's projects were prepared to complement the assistance of the other funding agencies. ADB's entry point into the sector was to support the expansion of the rural road network as a means of fostering agricultural development. Three projects in the road sector were approved for this, in 1985, 1990, and 1992. ADB's support for rural roads has continued to the present time. In line with the need to address the deterioration of the provincial and national road networks, ADB's road program expanded to include rehabilitating provincial and national roads and bridges. ADB has financed one project for upgrading provincial highways and another for constructing the Sukkur Bridge on the national highway network. These, plus the three rural road projects, have been completed. The five ongoing ADB-supported road sector projects comprise one for each of the four provinces and one at the national level. These ongoing projects provide a range of support for national, provincial, and RAR infrastructure, as well as non-infrastructure support. Since 1977, 16 of ADB's projects in agriculture and related sectors have contained components for improving roads, specifically RARs. Additional support to the road sector is included in ADB's country strategy and assistance pipeline.

ADB has provided 10 advisory and 14 project preparatory TA in the road sector during the review period. Advisory TA has supported the formulation of ways to improve (i) institutional service arrangements, (ii) private sector involvement in road development, and (iii) transport policy formulation, investigating implementation delays and a range of specific sector topics. Assistance was also provided as consultancies under the various projects, particularly on aspects of road maintenance and road safety. A significant road safety effort under the provincial highways project was cofinanced by the Nordic Development Fund.

Relevance of ADB's Program of Assistance

By supporting new RARs and the rehabilitation of provincial and national highway infrastructure, ADB's assistance has been relevant to the development strategies followed by both the Government and ADB, namely improving rural communities' access to spur agricultural development and upgrading the main road network to stimulate general economic development. The early focus on RARs complemented the assistance given at the time by the World Bank and JBIC for the major trunk routes. ADB's program evolved in relation to the need to address other parts of the network, given the importance of all categories of roads to economic progress. Such broad support continues in ongoing projects. Overall, the scale of ADB's support for road infrastructure has been significant.

With a few exceptions, the roads selected for support were appropriate. The completed provincial roads and the Sukkur Bridge were identified as priority developments in the national road master plan and form parts of important national or regional routes. National and provincial highways in the ongoing projects are similarly important. In the case of RARs, candidate roads were proposed by local governments. Political influence in the selection process is likely to have occurred, but there was a broad need for more roads at the time and, in general, all selected roads appear appropriate. Construction was generally to the required standard, which helped avoid unnecessarily high standards and losses through weak governance, but the formula approach did lead to cases of under-design. 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 paved roads) should be considered. Greater care will be needed in the selection process.

ADB's support in non-infrastructure areas also was consistent with the needs of the road sector, addressing key problems such as road maintenance, safety, institutional service orientation, and efficiency beginning quite early in the program. Nevertheless, the design of this part of the program was inadequate, focusing too narrowly on technological and hardware concerns.

In summary, ADB's support has been relevant to the Government and ADB development strategy and sector needs. The infrastructure components have been appropriate at all levels of consideration—i.e., national, sector, and detailed design—and significant in scope. The main weaknesses were inadequate scale and poor design of the non-infrastructure components.

Effectiveness of the Completed Assistance

In general, ADB's completed road projects and road components successfully achieved their main outcomes, namely the improvement of rural access and reduction in transport costs.

In total, around 500 separate RARs with an aggregate length of about 6,356 kilometers (km) were built or upgraded with ADB assistance. The supported roads are spread throughout the country, located in all four provinces and 57 of the country's 102 districts. Additional RARs are included under ADB's ongoing projects. The baseline study done for this evaluation included project roads and nearby unimproved (control) roads. In comparison with control roads, villagers served by the improved RARs were found to make more trips of greater length, at a lower cost, and with shorter travel times. There were increased volumes of goods transported and more village facilities and other social benefits. The major generator of these benefits appears to be the creation of all-weather access and the time savings derived from the introduction of faster

motorized service where no, or limited, service had previously existed. Lower transport prices, while welcome, appear less important than the ability to travel by normal vehicle, such as a car, pickup, or van, whenever needed throughout the year. On the negative side, the number of accidents, including fatal accidents, increased after the completion of the road works. More effort is needed to address traffic safety.

As a result of the Government's rural road building over the past few decades, including the ADB-supported projects, more than half of all rural communities in Pakistan now have all-weather motorable access. The corresponding figure in 1985 was less than 15%. 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 North-West Frontier Province (NWFP), most villages in the lowlands are accessible, and lack of access is an issue now 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.

The Provincial Highways Project improved 11 roads totaling 528 km in length—seven roads in Punjab, two in Sindh, and one each in NWFP and Balochistan. Although some pavement failure has occurred, considered to be a result of excessive truck axle loading or poor construction, in general the pavement has performed as expected and travel times have been reduced.

The construction of the Sukkur Bridge had multiple positive outcomes. Relief of congestion in crossing the river, the main project objective, was achieved. The removal of restrictions on vehicle size crossing the river at Sukkur allowed larger, more efficient trucks to divert from other less direct routes. The bridge contributes significantly to the structure of the national highway network, forming a key link across the Indus River.

In comparison with the generally good achievements from infrastructure investment, ADB's support for addressing aspects of the sector not related to infrastructure, particularly road maintenance and safety and institutional efficiency, has achieved little so far. Road conditions and safety performance are generally poor, and road agencies remain oriented toward works, as opposed to service. Although the need to address these issues was identified at an early stage, this part of the program lacked the necessary scale and was slow to evolve into a meaningful line of support. Importantly, it did not address key weaknesses related to the availability of funds for maintenance and safety works; institutional attitudes; and the political, bureaucratic, and related aspects of reform. Rather, the attention was on providing hardware and addressing technological matters. ADB's ongoing projects continue to address these key sector issues, however, and offer scope for improved performance and impact in the future.

Overall, ADB's assistance is viewed as effective, the shortcomings with the institutional and advisory activities being overshadowed by the successes of the much larger investments in infrastructure. Nevertheless, the shortcomings with the institutional and advisory activities are significant, particularly as they relate to sustainability, a major current issue, and social aspects such as road safety.

Project Efficiency and Sustainability

Economic analyses done for a sample of the completed RARs, the provincial highways, and the Sukkur Bridge show that the infrastructure investments represent an efficient use of development funds overall. The few RARs with low rates of return had low traffic volumes,

highlighting some weakness in the selection and evaluation process for rural roads. Given the much larger investment in infrastructure compared with expenditure on non-infrastructure components, ADB's program is rated efficient overall, despite the lack of success in the policy/institutional non-infrastructure components. Efficiency was also adversely affected by implementation delays, which was a common problem in all projects.

So far, the ADB-supported road infrastructure has received only minimal maintenance. Except in the case of the Sukkur Bridge, which because of the nature of the structure will not require major maintenance for quite some time, this has resulted in ADB-supported roads falling into a rough but trafficable condition. More needs to be done to fully address maintenance.

The generally good construction standard of the RARs helped to slow the rate of deterioration under a limited-maintenance regime. As the major benefit from these roads is the all-weather access they provide, even poorly maintained and bumpy roads generate benefits. While this could be construed as an argument for limited road maintenance, without a certain level of maintenance they eventually would revert back to fair-weather-only condition, losing this key benefit until reconstructed. Reconstruction is more costly over the longer term than providing adequate maintenance. Generally, the limited maintenance for RARs so far practiced represents a loss for the country.

Because of the importance of the supported provincial roads, it is unlikely that they will be allowed to fail, and some continuing future maintenance can be expected. Nevertheless, historical performance suggests that they are likely to remain in rough condition. The major source of benefits from these roads comes from allowing higher speeds and a smooth ride, thus lowering vehicle operating costs. Rough surfaces and other deterioration that slows traffic and increases vehicle wear and tear represent a loss of potential benefits.

Overall, while it is likely that ADB-funded infrastructure improvements will generate benefits large enough, and over a sufficient length of time, to be considered efficient investments, with better maintenance the benefits could have been greater. Maintenance is weak despite the efforts of ADB and other development agencies to improve it. Such support was largely of a hardware or technological nature. The main impediments to improved maintenance appear to be (i) lack of funds, (ii) inadequate control of excess axle loads, (iii) inappropriate road agency orientation toward construction works (as opposed to asset preservation and road service capability), (iv) weak governance, and (v) insufficient adherence to a long-term plan of action. Overall, the sustainability of benefits from the infrastructure investments is rated likely.

On the positive side, under ADB's ongoing projects, institutional reform is being undertaken, and there are prospects that funding for maintenance nationally and in Punjab and NWFP may soon achieve a level approaching that required. Weighbridges on the national highways are being recommissioned, and work is continuing to reintroduce the ADB-supported road maintenance planning systems. Further study of truck overloading is also under way in one of ADB's ongoing projects and could lead to a more comprehensive solution to this problem, which is much needed. An additional and important aspect of overloading is its effect on traffic safety. The driver of an overloaded truck cannot react as quickly to dangerous traffic situations due to inadequate breaking ability, reduced maneuverability, and a propensity to overturn.

Implementation Concerns

The main issues have been implementation delays and the substantial changes that occurred in lists of selected RARs and the potential this afforded for poor governance in the distribution of benefits. Despite the latter issue, all ADB-supported roads appear to be sensible choices. More detailed subproject feasibility study might have detected RARs that would have benefited from being built to higher or lower standards. Resettlement related to the Sukkur Bridge Project has some outstanding issues concerning the handover of titles to affected people. Overall, however, project implementation did not have major concerns other than those related to delay. ADB has initiated a study to investigate causes of early delay in its infrastructure projects in Pakistan.

More broadly, ADB's process for project identification and sector study appears sound. This process relies heavily upon implementation and project preparatory consultants. The slowness with which ADB's non-infrastructure support grew into meaningful programs, and the weaknesses in their design regarding issues such as funding and good governance, are unlikely to have been improved by more detailed or more extensive sector work. It is unlikely that a larger program—or one concerned to a large extent, for example, with governance in the road sector—would have found favor with past governments.

Conclusions and Recommendations

The vast majority of ADB's support has involved new and rehabilitated road infrastructure. This has been, and continues to be, relevant to sector needs, the Government's national development plans, and ADB's country strategy. The completed road projects have been effective in achieving stated outcomes and represent an efficient use of resources despite delayed implementation. There are important outstanding issues concerning maintenance and sustainability, some of which are being addressed under ongoing projects. There were only minor environmental and social problems and few unintended institutional impacts. The project components and TA aimed at institutional strengthening, including road maintenance and safety improvements, addressed key sector issues but were inadequate in detailed design and scale and so were largely ineffective. 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 has been appropriate and, so far, successful. The main weakness in the program has been the inadequate scale and design of the components and advisory TA aimed at institutional strengthening, road maintenance, and safety improvements.

Going forward continued investment in road infrastructure is required, including the types that ADB has funded and is funding under its ongoing projects. The focus of the ongoing projects on a single major agency, e.g., a single provincial agency or NHA, appears to be appropriate. Greater attention to institutional efficiency is required, as is road safety and road maintenance. Within the latter key area of concern, the control of excessive axle loads, maintenance planning, and funding are important. Private sector participation in funding road works is needed to support the Government's initiatives to increase funding. These are not new issues; indeed, all are covered in part under the ongoing program. ADB's support should be long term in nature with the achievements being periodically reviewed while encouraging the program to evolve. ADB has started to encourage the Government to take on a greater role in preparing projects and could strengthen this approach as well.

Based on the findings of the Study, the following recommendations are made:

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	Following completion of the Pakistan CAPE and decisions made during preparation of the Pakistan CSP.
<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	Following completion of the Pakistan CAPE and decisions made during preparation of the CSP.
<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	Following completion of the Pakistan CAPE and decisions made during preparation of the CSP.

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 completion of the Pakistan CAPE and decisions made during preparation of the 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 completion of the Pakistan CAPE and decisions made during preparation of the 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.

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