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PAKISTAN

ROAD RESOURCES MANAGEMENT PROJECT

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INTERIM PROJECT PAPER REPORT

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Road Resources Management Project

INTERIM REPORT

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EXECUTIVE SUMMARY

At present road resources are not well managed in Pakistan. At all levels - national, provincial or district - there is a need and a demand for more and better roads. Implementing agencies strive to meet this demand by using their roads resources for new construction or reconstruction. However, since the existing road system is generally not well constructed, and has received virtually no routine or periodic maintenance, the implementing agencies find that they need nearly all their resources for rehabilitation and upgrading[1/] merely to keep the existing system operational; very little is left to pay for the politically desirable new roads, or the desperately needed road maintenance. The result is that the national road system is rapidly deteriorating despite the expenditure of millions of rupees each year.

In response to this problem, USAID/Pakistan has identified a sound approach to upgrading, expanding, and maintaining the rural road system for which the district governments are responsible, and for doing this in a cost-effective way that ensures control and manageability of recurrent costs. We believe that the approach can produce, sustain, and expand an improved road network at the district level and institutionalize the capacity to continue the process beyond the life of the project.

However, district roads are only the outer edge of the road network. They are linked to the provincial and national highways, and their efficacy ultimately depends on this larger network. To be truly effective, any investment in roads must deal with the constraints affecting the total system. We believe that the approach that we have identified for the district roads has potential applicability to other parts of the roads sector and, indeed, to other social services where recurrent costs compete with expansion of services.

Four constraints inhibit the development of a total road system serving Pakistan's needs. These constraints operate at all levels of the system, although they take somewhat different forms at the national, provincial, and district levels.

1. Less than adequately developed National and provincial policies that neither set clear priorities nor give adequate emphasis to maintaining the existing system.

2. Inadequate financing allocated for roads, and in particular for road maintenance. The distribution of these funds works against an efficient use of scarce resources by emphasizing upgrading of existing roads over other, more cost-effective and economically beneficial uses for the funds for the rural roads sector.

1/ These terms are defined on page iv.

3. Insufficient technical and managerial capacity at all levels, in both the public and private sectors to plan, implement, and monitor activities in the roads sector. Institutional reform is needed to correct the weaknesses of the current system, including: a lack of personnel trained in roads planning and management; poor standards of design, construction and maintenance; inappropriate planning of investments; inadequate management procedures; and, insufficient equipment.

4. A highly deteriorated road system that, because of poor construction and the lack of routine preventive maintenance is difficult, if not impossible, to maintain at an acceptable standard. Major rehabilitation is required on about 60% of the system before efficient maintenance is possible.

There is no systematic planning, no national strategy, no integrated and rational set of policies designed to achieve clearly articulated goals for the national road system. A lasting solution to the problem at all levels requires that all four constraints be addressed. Donor financing can provide resources to address the last two issues, but such assistance will only have a sustainable impact if accompanied by financial and policy reforms.

The budgeting process lies at the core of both these latter issues. The current process emphasizes equity and decentralization, but at a serious cost: there is no mechanism to shape local government decisions to meet national priorities; the federal government cannot gauge district or provincial performance in utilizing investments made in past years nor use this information to encourage or reward good performance; and investment decisions are taken in isolation, with no way to ensure that system expansion is accompanied by adequate maintenance of the existing network or that the expansion is sustainable.

UNLESS THESE PROBLEMS ARE ADDRESSED, INVESTMENTS IN AND EXPENDITURES ON THE ROAD NETWORK WILL NOT PRODUCE SUFFICIENT RESULTS TO JUSTIFY A USAID PROJECT. We have analyzed the options available, focusing initially on rural roads. We believe that real improvement can be achieved by making the following changes:

1. At the federal level: a) adopt a policy for rural roads that gives priority first to maintenance of the existing paved network and second to expansion to totally unserved areas, and delays upgrading of existing roads until they can be maintained; and b) encourage provinces to put this policy into practice through the budget process.

2. At the provincial level: a) establish ADP planning guidelines whereby districts would be permitted to spend provincial monies to upgrade roads only if all existing paved roads were being adequately maintained and every village with a population over 500 already had at least a katcha road passing within 2 km. of the village (the latter targets are illustrative); and b) establish a system to monitor district expenditures on road maintenance.

Similar changes will be needed in policy and financing for the provincial and federal highway systems in order to create an environment in which maintenance of the existing system is a precondition to expansion. Additional analysis is needed to identify these changes, however. We therefore propose to begin now by addressing the full range of problems at the district road level, while laying the groundwork for possible future programming for the roads sector as a whole. Specifically, we propose:

1. To finance implementation of a rural roads program in up to ten districts, directing assistance to all four areas outlined above. The program's feasibility depends on agreement by the federal government and at least one provincial government to implement the necessary policy reforms. We propose that a single province be selected as a testing ground for the program, in order to facilitate the necessary reforms in provincial and district procedures. Concentration in a single area will also reduce the requirement for expatriate assistance and simplify road construction and other assistance to the districts. Sind is the most logical province in which to begin this program, because it is the only province not receiving a substantial amount of assistance in roads under the proposed ADB project or other AID projects.

2. To finance an assessment of the provincial and federal roads system and continued analysis of rural roads, as well as training for federal and provincial policy personnel in the road sector, aimed at assisting the federal government to identify the investment priorities for the Seventh Plan period and the policy, financial, and other reforms needed in the road sector, as the basis for a possible major sector assistance program in the post-1987 period.

In summary, we are proposing a project, to be initiated this fiscal year with a planned budget of $43 million. The Road Resources Management Project will focus on national, provincial and district roads by initiating improvement of the rural road system and laying the basis for a broad policy assessment of the road sector in Pakistan. In participating districts the project will allow implementing agencies to meet the demand for new and/or better roads while demonstrating to the population the benefits of road maintenance. Overall, we believe that the approach outlined above will assist the Government of Pakistan to make major progress towards establishing the national road network on a technically sound and financially sustainable basis.

DEFINITION OF TECHNICAL TERMS

1. Road Maintenance

As used in this document, the term road maintenance applies to a group of operations necessary to keep a road in an operational condition and to prevent deterioration. It consists of the following three activities:

a. Routine Maintenance: Basic maintenance activities, such as pot-hole patching and shoulder repair, that are carried out on an ongoing or day-to-day basis to keep the road in an operational condition and that can be planned and programmed in general terms.

b. Periodic Maintenance: Larger maintenance activities, such as resurfacing of a paved road, that are not required every year, but that can be scheduled in advance.

c. Emergency Maintenance: Emergency activities, such as snow removal, repair of bridges and road surfaces after flooding, and so on.

2. Construction

In this paper, the term "construction" is applied to all of the following activities. It should be noted that some of these activities, particularly rehabilitation, are often called "maintenance" by the district engineers.

a. Rehabilitation: Resurfacing and other major repairs to a road that has fallen into disrepair due to a lack of maintenance, carried out to return the road to the previously existing operational condition.

b. Upgrading: Improvements to an existing road to raise the standard of performance. This activity includes both betterments that improve the road's design so as to raise its maintainability (such as construction of drainage structures) and those that raise the road's standards (such as paving of an existing gravel road).

c. Reconstruction: Construction of what is in effect a new road to replace a road of a lower standard, built within an existing right-of-way and possibly using some of the existing alignment.

d. New construction: Building of a road along a new alignment where previously a road did not exist.

Frequently, construction activities may combine several of these categories, since the difference among rehabilitation, betterment, and reconstruction is largely one of degree. Some stretches of an existing road may only require rehabilitation, while others require betterments as well, and some stretches require complete reconstruction.

I. SUMMARY PROJECT DESCRIPTION

A. Background: Transportation in Pakistan

1. Overview of the National Road Network

Pakistan's system of rural roads, national and provincial highways, and other roads is central to the country's transport system. While efforts are underway to build up rail transport, particularly for bulk freight, the existing pattern of increasing dependence on roads and rapid expansion in road traffic is expected to continue.

At the time the Sixth Five-Year Plan was prepared in 1983, Pakistan had a total of about 91,100 kilometers of National highway, and provincial and rural roads, of which 33,400 were paved and the remaining were gravel ("shingle"), brick-soled, or earthen ("katcha") roads. The rural and provincial roads account for approximately 85 percent of the total national road system. This system has five major components:

a. National Highways, consisting of six main routes totalling 4,900 km. All national highways are paved and some are dual carriageway (divided highway).

b. Provincial Highways, including about 34,000 km. of roads. Almost all of the provincial highways are paved, although some routes in the sparsely populated, mountainous regions are gravel surface.

c. District Roads, consisting of approximately 43,000 km. of roads of which roughly 10 percent are paved (metalled), 10 percent are shingle (gravel), and the remainder are katcha (earthen).

d. Municipal Roads, primarily surrounding the larger cities and totalling approximately 9,200 km.

e. Other Roads, including canal roads belonging to the irrigation departments, roads in federally-administered areas, forest roads, military roads, and other routes not generally open to the public. The government plans to convert approximately 20,000 km. of canal roads to public use over the next five years.

This project will focus primarily on the first three elements of this system.

The road network is regarded by the Government of Pakistan as seriously inadequate to the country's needs. The Government estimates the unmet need for roads at 247,000 km., a "huge deficiency [that] can be made good only through a long-term construction programme stretched over many Plan periods."

As of 1982, Pakistan had 1.3 million vehicles, 15 per thousand persons. The number of vehicles has been growing rapidly, however, as both economic activity and incomes have expanded rapidly in the past decade. Although the government hopes to shift more of the bulk transport to rail, commercial road traffic growth rates of over 10 percent are likely to continue in the future.

The practical result of the inadequacies of the roads system are higher transport costs throughout the economy. In particular, the weaknesses of the rural road system are reflected in higher prices for agricultural inputs and products, reduced access to markets for goods and services, and a generally slower integration of remote areas into the national economy. Only 14 percent of Pakistan's villages are situated along all-weather roads and only 30 percent are served by an all-weather connection. Most of the remaining villages are served by a dry-weather road, but many villages, particularly those in sparsely populated or hilly areas, are totally without a road connection of any kind.

2. Previous and Planned Government Response

The federal government has concentrated on expansion and upgrading the road network. Thus the Sixth Plan proposes the following allocations, which represent a doubling of the 1973-78 levels of investment.

	Rupees	Dollar Equivalent *
National Highways	8.5 billion	531 million
Provincial Roads	5.5 billion	343 million
Rural Roads	2.1 billion	131 million

The amount allocated to rural roads does not include the almost Rupees 2 billion that it is estimated will be generated at the district level for local development activities over the plan period. The Sixth Plan cites a two-fold increase over the previous plan period in local financing for development projects, particularly roads.

The federal budget for 1984/85 includes $ 269 million for investments in the transport sector, 16.7 percent of the total. The recurring expenditure allocation for the transport sector, however, is only $ 2.9 million, only 0.07 percent of the total operating budget and just over one percent of the investment programmed.

A somewhat greater emphasis on recurrent expenditures is evident at the provincial level. In Sind province, the FY 1984/85 maintenance budget was stated to be 90 million Rupees ($5.6 million), up 27 percent from FY 1983/84. This maintenance budget amounts to 30 percent of programmed expenditure on road programs. Most maintenance work apparently consists of rehabilitation, although budgets showing details of spending on manpower, materials and equipment, expenditures by location, etc. are not available.

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* Exchange rate: Rupees 16 = $1

Nation-wide figures are not available for local revenue spending by the local bodies, but the emphasis is on new investment. In Rawalpindi district, for example, approximately 8 percent of the district engineer's budget is allocated for road maintenance ($ 8,000) as against 54 percent for road construction ($ 51,000).

The official budget allocations and plan figures, however, considerably overstate the allocation to new investment. In fact, a very large percentage of the investment expenditure is a form of deferred maintenance in which roads that have totally deteriorated are replaced with an essentially identical road. The deterioration is due in approximately equal parts to poor standards for the initial construction and a subsequent lack of routine and periodic maintenance.

3. Government Organization for Roads

In Pakistan, the construction and maintenance of public roads is a government function shared among the federal, provincial, and local levels. In recent years, the local levels have begun to assume a progressively greater share of the responsibility for rural roads, including not only tertiary roads (also called collector, farm-to-market, and feeder roads), but to some extent provincial or secondary roads as well.

At the national level, the road system is implemented by the National Highway Board, under the Ministry of Communication and Works. Policy guidance is provided by the National Transport Research Center in the Planning Commission.

At the provincial level, the Planning and Development Department sets policy for the provincial highways and controls the budgets allocated to both investment (the ADP) and recurrent expenditures. The Communication and Works Department (called the Highway Department in some provinces) has implementing responsibility for the provincial roads. The structure of C&W differs somewhat from province to province.

At both levels, most construction is undertaken by private sector contractors. Maintenance operations, are nearly always executed by force account. However, the GOP is currently testing whether private contractors would be more cost effective than force account maintenance, by offering maintenance of a stretch of the Multan - Lahore highway for private sector bids.

Like the provincial structure, the organization for rural roads also varies somewhat from province to province. Provinces and districts have considerable autonomy in setting up internal management systems throughout the country. The key factor regarding the rural roads structure is the division of responsibility among the three principal levels of government:

a. Federal level: Federal funds provide roughly half of the finances for rural roads, passed to the districts through the provincial Departments of Local Government and Rural Development (LGRD/P) through the Annual Development Plan. The Rural Roads Engineering Cell of the Ministry of Local Government and Rural Development (MLGRD/FRREC) is responsible for technical support to rural roads programs nationwide and for coordinating federal and donor assistance in the area. Other federal ministries have virtually no involvement in rural roads.

b. Provincial level: The role of the provincial Highways or Communication and Works Departments (C&W) is limited to managing the larger provincial roads system and executing larger construction works for the districts on a contract basis. The LGRD/P supports both the district councils and its own offices, particularly in the implementation of road works funded under the ADP (the Rural Works or Rural Development Programs, or RDP). Provincial Planning and Development (P&D) and Finance Departments play only minor roles and do not at present assist in setting priorities at the district level.

c. District level: Since their revival in 1979, the district councils and, to a much lesser extent, the union councils have become increasingly influential in local development activities. The council members take responsibility for self-help projects, which constitute most of the construction and rehabilitation of earthen roads actually taking place. More importantly, however, the chairman of the district council chairs the District Development or Project Committee, which must approve any development project in the district, whether funded from ADP or local funds. The Committee allocates funds provided through the LGRD/P and takes overall responsibility for executing projects once the program has been approved. The district offices of the LGRD/P (LGRD/D) support the committee. In some cases, the entire rural roads program is carried out by the district engineering office (DEO), which is part of the district council staff and reports to the district council chairman. In other cases, the DEO executes only those projects that are funded from district funds, while engineers associated with the LGRD/P carry out works funded under the Rural Development Program. In a few cases (primarily in Baluchistan), there is no DEO and both district- and RDP-funded activities are carried out by LGRD/P staff working under the direction of the district council.

Figure 1 on the following page shows the organization for rural roads at the provincial and district level, as currently exists in Sind. However, the differences among the various provincial systems are superficial: in all cases the policy decisions regarding the allocation of funds are taken by the district council in cooperation with other local leaders, with the advice of the LGRD/D head (the Assistant Director or AD/LGRD), and executed under the direction of district engineering staff reporting to the chairman and located in the LGRD/D and/or the district headquarters. C&W and local private contractors are generally used to carry out the work itself. The Assistant Commissioner and other provincial administrative personnel continue to be influential at the local level, but have almost no involvement in rural roads.

B. Description of the Problem

1. Overview

Continued investment in the roads system of Pakistan has not resulted in rapid improvement. Although detailed information on the status of the country's national, provincial, and rural road system is not available, it is generally accepted that much of the system has actually deteriorated over the past ten years, as the pace of new construction, reconstruction, and rehabilitation has failed to keep up with the high rate of deterioration.

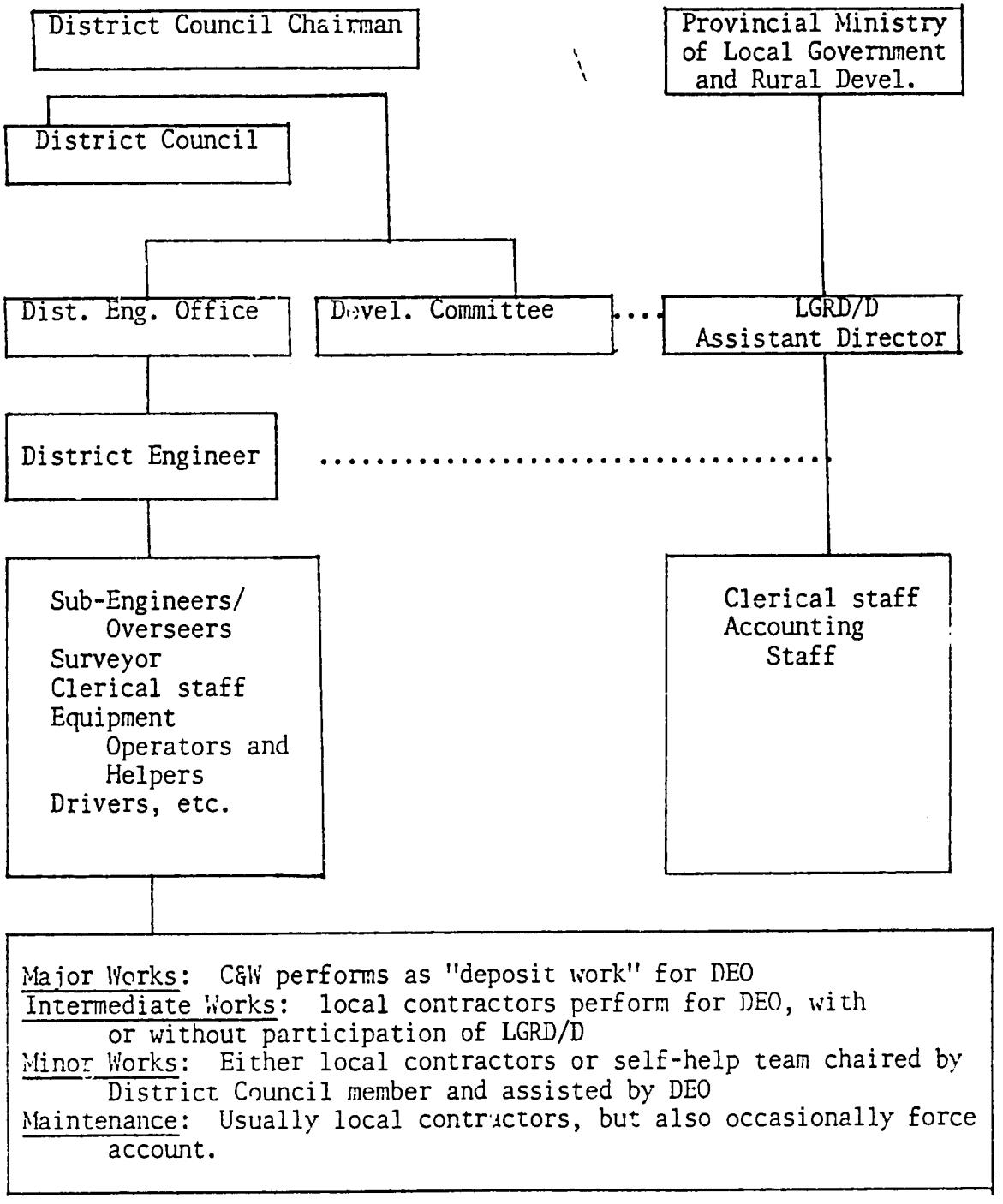
This rapid deterioration is the result of rapid traffic growth on roads that were neither designed nor built to sustain such use. Even at the national level, initial construction standards and subsequent maintenance have been far from adequate. A large portion of the rural road network consists essentially of tracks that have been widened and perhaps built up somewhat with little or no attention to the alignment or other design considerations. Such roads fall rapidly into disrepair, even where traffic volumes are low.

This situation is due to three closely related problems:

a. Inadequate technical and managerial capacity, particularly at the provincial and local levels, to plan and carry out an adequate program of road construction and maintenance. This shortfall is equally serious in the public and private sectors.

b. Inadequate financial resources are available to carry out the construction activities needed to achieve the government's stated goals for expansion of the major roads and the rural roads system, while simultaneously maintaining the existing system at the minimum acceptable service level.

Figure 1
Organization for Rural Roads
Sind Province



c. The resources available are misallocated, with too great an emphasis on upgrading, reconstruction, and major rehabilitation of existing roads, at the expense of routine and periodic maintenance on the existing road system and new construction of rural roads to reach unserved villages. Monitoring of the national and provincial system is weak and there is virtually no planning or monitoring of the district's road program, either to ascertain its current status, to program maintenance activities or to determine present and future needs in order to allocate investment monies to their most productive use.

While these problems are typical of the roads sector in many developing countries, they have been exacerbated in Pakistan's case by a policy which gives inadequate recognition to the very real limitations on resources available and the priority that should be attached to operating the current system, rather than expanding it beyond the country's institutional or financial capacity. This policy effects performance and results at all levels of government.

Over time, these deficiencies in policy and practice have resulted in a rural road system that, in a technical sense, is not maintainable. (Additional analysis is needed to determine the extent to which this statement also applies to the national and provincial systems, but it is believed that the problem may not be as severe at those levels.) Only some 40 percent of the paved roads and 45 percent of the total network has been built and maintained to a technical standard that permits cost-effective maintenance. Most of the remaining roads either cannot be maintained or only at excessive costs not justified by traffic volumes. It is virtually impossible to maintain an earthen road built at the level of the surrounding land, for example, beyond filling the occasional pothole. Any effort to smooth the surface will simply dig the road deeper and deeper with each pass, increasing drainage problems and accelerating deterioration.

Even when the formation has been built up somewhat and the road surface paved, it is extremely expensive to maintain when it has not been built to proper standards. In most cases, the pavement is too narrow to carry the heavy trucks that increasingly use the rural roads, with the result that the edge of the road is continually broken. In addition, the formation is usually inadequately compacted and provision is not made for adequate drainage. As a result, there is insufficient lateral support to the pavement and rapid deterioration occurs in both the road surface and the supporting formation, particularly in periods of heavy traffic or high rainfall.

At the federal and provincial level, the main constraints to effective maintenance are believed to be organizational and financial, rather than physical (although additional analysis is needed to confirm this conclusion). Even at the district level the problem is greatly exacerbated by the funding and implementation of the existing roads program. Districts have chosen a strategy that favors rehabilitating those roads in the worst condition in any given year, over maintaining all roads on a continual basis. As a result, most of the roads continue to deteriorate while the district repairs the remainder.

In this situation it is not sufficient simply to improve the maintenance practices used by the district engineering offices. In fact, given the limited resources available to the district engineers and the poor condition of the existing road stock, such an approach could well be less effective than the current strategy of periodic reconstruction.

Additional analysis is needed to determine why the maintenance performance is inadequate at the federal and provincial levels, despite the greater technical capacity existing at those levels and the relatively greater access to financial support. Since this analysis has not been carried out, the remainder of this section will focus on the rural roads system only. Many of the statements made regarding problems at this level, however, are believed to be applicable in large measure to the national and provincial systems as well.

2. Rural Roads Policy at the National and Local Levels

Although the rural roads problem is most readily apparent at the technical level, where it takes the highly visible form of insufficient maintenance and low construction standards, the problem actually originates at the planning level. Although very large amounts of money are allocated for rural roads (Rs. 2.1 billion ($ 131 million) of federal funds in the Sixth Plan, plus an additional Rs. 2 billion ($ 125 million) projected to be provided by the localities themselves), very little money is available for routine and periodic maintenance from either source.

At the federal level, a part of the investment budget (Annual Development Plan or ADP) is allocated to the provinces, which in turn allocate a portion of it to the districts to finance the Rural Works or Development Programs. At the district level, these funds are allocated among projects ("schemes") proposed by council members and other local representatives. Thus, funds made available to the districts from the provincial (and, ultimately, the federal) level are part of the investment budget and are viewed as such throughout the system. Policy and political interests at all levels strongly favor use of these funds for new construction or major rehabilitation projects, not for the routine maintenance of existing facilities. While the localities could in theory insist on using the funds for maintenance if they wished, it is not surprising that they do not choose to do so.

The project, by providing participating districts with a new source of finance for highly visible major rehabilitation activities, on condition that all other funds are used to maintain the paved roads system, will allow a period of time during which the public will learn to appreciate the less visible benefits of having well-maintained roads.

At the local level, the funds raised through local taxes are allocated through the political process, under the overall direction of the District Council Chairman. GOP policy places the responsibility for recurring costs at the local level, and localities are officially encouraged to allocate an amount to maintenance that is proportional to the ADP allocation for roads (typically 8-10 percent). Even were this

policy followed to the letter, the recommended maintenance allocation is barely sufficient to meet the maintenance needs of the roads constructed in the year in question; it is wholly inadequate to maintain roads built in previous years. The Berger Report[1/] estimates that the maintenance cost requirement of the existing maintainable rural roads is $2.1 million compared to about $1.4 million of current available funds.

Most of the district's own funds, moreover, are also used for reconstruction. The decision-making process at the local level strongly favors highly visible investment projects over expenditures on routine maintenance. In most districts, the available monies are simply shared out to cover as much as possible of a priority list prepared by the district council members. Villagers who lack a road or whose road is in total disrepair clearly command a higher place on this list than those who are confronted by a few potholes. Since the total pool of resources falls well short of meeting the perceived needs of the first two groups, only the bare minimum is budgeted for true maintenance activities. Under these circumstances, it is clear that training and other support for the technical staff will only solve part of the problem.

What is required is a recognition at all government levels that the provision of services is dependent on the availability of resources rather than an abstract determination of need. While it is clearly desirable for all Pakistani villages to have an all-weather connection to a paved road, there are unsufficient recurrent budget funds at the district level to keep such roads in an all-weather condition. Recognizing the limitations of available resources, the USAID project will focus on promoting district maintenance of the paved system only, with a modest katcha road construction program in some districts.

3. Technical Capability for Rural Roads

The shortage of technical capacity at the local level constitutes a second major deterrent to effective design, construction, and maintenance of the rural roads system. The problem is not that operation of the system lies beyond the technical competence of the district staff assigned to the task; the senior personnel in the district engineering offices are generally well trained and the technical aspects of rural road construction and maintenance are not complex. In most cases the problem lies in the lack of management procedures, equipment, supporting staff, and local contractors needed to carry out the work.

a. Management Procedures for Maintenance. Standard procedures for maintenance used by the districts do not include regular planning and scheduling of maintenance works on the district's main roads. The procedures necessary to operate an effective maintenance management system, such as regular inspection of the system, monitoring of contractor performance, and so on, are not in place.

1/ Louis Berger International, Report on Recurrent Maintenance Costs, Institutional Analysis, and Financial Resources Analysis, March, 1985, p. 6-18.

b. Equipment. Very few of the contractors used for road work have equipment of their own. Instead, small equipment such as rollers and asphalt mixers is rented from the district engineer or C&W. The stock of such equipment available for maintenance is not sufficient to carry out a district-wide maintenance program, whether or not reconstruction activities are discontinued.

c. Supporting staff. Whereas larger works such as periodic maintenance, rehabilitation, and reconstruction are suited to performance by contractors, routine maintenance must be performed directly by the district engineers by force account. The DEOs do not have enough staff to contract for the larger maintenance works needed, while also assigning sufficient technical and managerial personnel to carry out the force account work. It will be the responsibility of participating districts to make funds available for the needed additional personnel.

d. Local contractors. A limited number of Pakistani contracting firms exist with the technical and managerial capacity to carry out road maintenance without close supervision, but they have little interest in small contracts. The smaller contractors generally used for district road work are basically labor contractors, with no equipment and only very limited technical expertise. They do not have the capacity for periodic maintenance activities, such as resurfacing of paved roads, without close supervision. Their efficiency is also reduced by a lack of working capital, inappropriate equipment, and poor management practices.

4. Financing for Rural Roads

The construction and maintenance of the roads under the district councils are financed from local revenues and federal funds provided through the provincial ADP for the Rural Works Program. The district's own funds would not be sufficient to pay for full maintenance of the roads under its responsibility, even if all of its funds were used for maintenance rather than rehabilitation and reconstruction. In fact, almost all of the district's funds are used for the latter.

The shortfall varies considerably among districts, since some districts are much more successful in raising revenues than are others. The situation in Rawalpindi District (Punjab Province) is reasonably typical of that found throughout the country. Table 1 shows the sources and uses of funds available to the district council for the 1984/85 fiscal year.

Table 1
Sources and Uses of District Funds
Rawalpindi District, Punjab
(Rupees '000)

Sources		Uses	
Carry-over from past year	800	Development Expenditures	15,226
Local tax revenues	24,104	Non-Devt. Expenditures	7,750
Transfer to LGRD from Prov. ADP*	15,200	Rural Devt. Program*	15,200
		Carried over to next yr.	1,928
TOTAL	40,104**		40,104**

Source: Figures provided by Rawalpindi District Council
* Estimated ADP figure.
** At an exchange rate of Rupees 16 to the dollar, the district's annual sources and uses come to about $2.5 million.

The district council allocates approximately 25 percent or Rupees 3.8 million of its own development budget for roads. With this budget, it must maintain approximately 245 km. of paved roads and 510 km. of earthen roads, as well as finance any expansion in the system not financed through the ADP. In 1983/84, the council scheduled construction of 12 km. of new paved roads.

The district's maintenance program consists of periodic resurfacing and rehabilitation on the paved road system, with the aim of servicing 45 km. of paved roads each year, that is, approximately one-fifth of the paved network. Minor maintenance is performed on about 10 percent of the katcha network annually.

The districts' road budget is insufficient even for this modest program, which leaves 80 percent of the paved roads and 90 percent of the unpaved roads untouched. If the district places first priority on new construction, at a cost of approximately Rupees 500,000 ($31,000) per km., its 12-km. program can in fact not be covered under its existing roads budget. The road rehabilitation program costs approximately Rupees 175,000 ($11,000) per km. For the district to carry out this program in full would thus cost Rupees 7.8 million ($487,500) per year, more than double the funding available for the entire roads program, even assuming cancellation of the construction program.

Annex A, pp. 6-21, provides the cost-benefit analysis of rural roads activities that is the basis of the proposed strategy, described in the next section. The analyses demonstrate the favorable results of the proposed strategy.

C. Project Strategy and Rationale

1. Overview of Proposed Strategy for Road Sector Assistance

Various analyses of the rural roads system in Pakistan have convinced the Mission that the maintenance issue can only be addressed within the larger context of policy and financing for the rural road system, and, indeed, for the road sector as a whole. The current shortfall in maintenance performance is largely the result of inappropriate policies, low standards and poor financial planning, problems that affect the entire road sector.

A strong road system would benefit Pakistan in two vital ways: first as an economic life-line bringing village-produced food to urban markets and returning services and consumer goods, and second as a network of national integration that serves to link the ethnically diverse population of four very different provinces.

While the GOP has certainly recognized the value of a good road system, it has lacked the impetus to break out of the vicious cycle of new, poorly constructed and unmaintained roads becoming unmaintainable in only a few years, and requiring costly rehabilitation. Further, donors have tended to perpetuate this cycle by making funds available for such major rehabilitation efforts.

The Road Resources Management project represents one option for breaking the cycle; its district level pilot project strategy represents a series of experiments in which Pakistan's implementing agencies can test whether regular, inexpensive routine and periodic maintenance of rural roads is socially, politically, economically and financially feasible. USAID believes that full feasibility can be demonstrated.

Meanwhile, the project's federal and provincial strategy will focus on instituting the policy changes that will be required to move from a pilot project in one province to a nation-wide effort to improve the entire road system.

The proposed project strategy for the rural roads sector is based on several basic propositions, which are also broadly applicable to the entire road sector in Pakistan:

a. Maintenance of district roads is wholly inadequate. This poor maintenance performance is partially due to technical problems, such as insufficient equipment, but the fundamental problem is a failure to allocate sufficient funds for this purpose. A strategy based on training, provision of equipment, etc., will not be sufficient, therefore, unless it also addresses funding.

b. Political and other pressures at the local level tend to favor construction over maintenance, and, specifically, paving of existing roads or rehabilitation of paved roads, rather than maintenance of the existing roads in good condition or expansion of the katcha road network to remote communities; thus a sound program of maintenance and service delivery can only be established on a sustainable basis if the availability of funds to expand the paved network is linked to delivery of service to remote communities and adequate maintenance performance on existing paved roads.

c. The source of the funds allocation problem does not lie wholly at the local level, however, but is reinforced by priorities set by higher levels in the government (and, indeed, in the donor community). The preferential provision of funding for projects to expand or rehabilitate the paved network reinforces the desire at the local level for visible investment programs. (For more discussion, see Annex A pp. 19-21).

d. It is not appropriate for AID or, in AID's view, the GOP, to fund construction of all-weather roads in the rural areas if the existing roads are not being maintained in fact and particularly if the districts do not have the financial or technical capacity to maintain the existing network. At the same time it is not reasonable to ask the districts to allocate scarce funds to maintenance of roads that are not technically maintainable.

e. Use of donor funds for recurrent costs does not encourage the appropriate governmental unit to assume this responsibility, either during the project or after it; only a policy (and its implementation) of GOP funding of such costs provides the basis for continuation of maintenance after the project.

These fundamental propositions underlie the strategy developed for the project. Two additional propositions of a more practical nature underlie our proposed technical approach for the rural road sector, and indeed for the road sector as a whole:

a. An effective maintenance program for rural roads requires an identifiable unit whose primary responsibility is maintenance of these roads, rather than construction (or maintenance of other roads, such as the provincial highways), and whose location within the government structure encourages responsiveness to local needs, access to local funding, and adequate technical performance.

b. An effective system also requires a division of responsibility between the public and private sectors that makes the most effective use of their respective capabilities and areas of comparative advantage. While road maintenance is clearly a public function, greater use should be made of contractors for the actual performance of major works in both maintenance and construction.

Based on these propositions, a strategy has been identified that addresses both the technical and financial aspects of the maintenance problem in the rural roads sector. This strategy has two main elements: a technical strategy and a financial strategy. The former incorporates organizational and managerial reforms to address the institutional capacity problem, while the latter focuses on the policy, planning, and budgetary reforms needed to achieve sustainable improvement.

2. Strategy for the Rural Roads Sector

a. Technical Strategy

The proposed technical strategy consists of three elements identified as necessary to bring district maintenance capacity to the necessary level:

i. development of local government capacity for maintenance,

ii. physical upgrading of district roads to a maintainable standard; and,

iii. support to the private sector contractors who carry out construction and periodic maintenance work.

In the first element, an essentially conventional approach is taken: provision of training, technical assistance, and commodities to the districts to enable them to establish Road Maintenance Units (RMUs) within the existing District Engineering Offices (DEOs).

Consideration was given to transferring the responsibility for rural road maintenance to the provincial level, where technical and managerial capacity for road construction and maintenance are greater. However, balanced consideration of the advantages and disadvantages of such a transfer led the Mission to conclude that the current arrangement, with appropriate support, would yield a better overall result. This decision was based primarily on the conclusion that the districts have a better chance of generating an increase in revenues for rural roads maintenance and are more likely in the long run to be responsive to local pressure for improved road service.

The second element in the technical strategy focuses on the roads themselves. Unless the roads under district responsibility are in a technically maintainable condition, it is clearly impossible to establish a sound maintenance program at reasonable cost. Currently only a portion of the all-weather roads network is maintainable, estimated at 40 per cent of the paved roads and 10 percent of the gravel roads.

The maintainable network must be defined in both physical and financial terms, however. There is no point in bringing a road to an all-weather condition if it cannot be maintained at this level. With limited funds, the most efficient allocation is to maintain the paved roads, which constitute the largest investment and carry the highest traffic volume, and then to apply funds to lower traffic roads, until the resources are exhausted. The financial analysis completed for this report and presented in Annex A, pp. 21-27, indicates that current funds available to Districts are sufficient to maintain the paved roads and some of the gravel roads, but that few districts could afford to maintain all of their roads with current funding, even if all roads were brought to a maintainable standard. The following Table shows the savings of the proposed strategy that would be available in future years to increase the percentage of maintained roads in a district.

Table 2

Savings from Improved Road Management Strategies*
(Rupees '000)

Proposed Strategy (1) compared to:		Strategy 2		Strategy 3	
		Per Km.	Total	Per Km.	Total
1.	Total savings (discounted)				
a.	Paved Roads	125	462,426	21	78,810
b.	Shingle Roads	51	229,680	3	15,120
c.	Katcha Roads	34	1,152,000	62	2,094,000
	TOTAL		1,844,106		2,187,930
2.	Annual savings (undiscounted)				
a.	Paved Roads	25	92,130	11	41,403
b.	Shingle Roads	4	20,250	-2	-9,450
c.	Katcha Roads	3	117,300	7	243,780
	TOTAL		229,680		275,733

* - Proposed strategy (1)-Construction, rehabilitation or reconstruction to a maintainable standard followed by continued routine and periodic maintenance for 20 year life.
- Strategy 2 - Construction to the current standard followed by rehabilitation every 3 year for 20 years.
- Strategy 3 - Construction to the current standard followed by rehabilitation every 5 years for 20 years.

A large investment will be required to bring even the initial, more modest network to a maintainable standard. This investment lies beyond the financial ability of the Government of Pakistan, whether federal, provincial, or local. It is this type of donor support which would make a more effective contribution to Pakistan's road system. It is a one-time expenditure of resources that must be made before a maintenance-based strategy can succeed. Once the transition to adequate and on-going maintenance has been made, this investment will not need to be repeated in any given district. Properly constructed and maintained, a paved rural road should have a life of 15 to 20 years under Pakistani conditions. Thus, only about 5 percent of the roads would need to be reconstructed in any given year, compared to the 60 percent now needing rehabilitation or reconstruction to reach a maintainable standard.

AID's proposed construction program will give priority to rehabilitation and reconstruction of existing paved roads and will also fund this work on as much of the remaining all-weather network as the participating districts are willing and able to maintain. If additional funds are available, they will be used to support the districts' program of staged construction of katcha roads to provide dry-weather access to as large a portion of the rural population as possible.

Although about 50 percent of the earthen roads are technically maintainable, the funds to maintain them are simply not available from any source. Even if all other work on the rural roads were halted, the funds required to meet the life-cycle costs of the earthen roads alone would exceed the total roads budget from district and ADP sources by well over 100 percent. However, under Pakistan's low rainfall conditions, these roads will remain passable for much of the year with virtually no attention other than emergency maintenance (e.g., clearing landslides).

The final element in the technical strategy is directed at the private sector. Experience in settings similar to rural Pakistan indicates that major maintenance work, like new construction, is best carried out by contractors who specialize in such work. The project proposes, therefore, to institute a maintenance management system wherein the districts perform routine and emergency maintenance on a force account basis, but periodic maintenance, betterments, rehabilitation, reconstruction, and new construction are performed primarily by contractors. (See the definitions of these terms on pages iv and v, as used in this document.) Private contractors will be provided assistance under the project to enable them to perform this work to an adequate technical standard. This assistance will take two forms: 1) channeling a reliable level of work to such contractors to encourage them to build up capacity; and 2) technical assistance. The need for additional assistance, if any, will be explored during the final design.

b. Financial Strategy for Rural Roads

The project's strategy for dealing with the financial aspect of the maintenance problem is two-fold. It consists of an immediate change in the incentive structure for participating districts during the life of the project, using AID's own funds, and a more gradual shift in policies to continue support for maintenance after the project's completion.

During the project itself, AID-supplied construction funds will be used to restructure the incentives facing the district governments, so that participating districts will use their own funds for maintenance of the maintainable paved network and expansion of the katcha network to unserved villages, while AID will provide funds for the rehabilitation of the paved network and part of the shingle network (or support for expansion of their katcha network, if this has a higher priority in the district than maintenance of shingle roads in an all-weather condition). If the project is successful, district leadership will have come to recognize the value of this approach by the end of the project.

It is recognized that a change in the attitude of district government officials will not be enough to overcome the political pressures within the district. Experience with maintenance programs elsewhere shows that expanded capacity for maintenance and demonstration of its value are necessary but not sufficient conditions for achieving a lasting reallocation of funds. This can only be ensured by a permanent shift in policies at the provincial and federal level.

Recent policy statements have begun this task by emphasizing the importance of maintenance and the role of the local governments in meeting recurrent expenses for local services. To make these policies operational, policy and budgetary reforms are needed to give the federal and provincial governments the ability to guide resource allocation decisions at the local level and monitor district performance against established guidelines. The principal impact of the proposed package of reforms will be to link the availability of funds for expansion or upgrading of the all-weather network to acceptable district performance in maintaining the existing all-weather system. The package of policy reforms is further outlined in Section D below. The provincial governments need to develop a means of monitoring district performance on maintenance and must be able to set guidelines for the use of funds--particularly funds provided by the provincial government itself--to ensure that investment programs do not displace or conflict with the needs of the existing system.

In the present system, such monitoring systems and planning guidelines do not exist. There are no effective links between district performance and ADP programming to encourage districts to meet existing maintenance needs, much less are there limits on ADP fund use to constrain them to do so. Such links would require a modification in the relationship between the district and provincial levels of government, which cannot be achieved overnight.

The second element of the financial strategy will therefore consist of continued policy dialogue with the provincial and federal governments, using the project's experience as the basis for demonstrating to provincial authorities the gains that can be achieved by encouraging districts to adopt a more efficient strategy for rural roads. The improvements in district organizational and financial management structures implemented through the project will provide the basis for establishing a planning and reporting structure within the existing budgeting system to enable the provinces to measure district maintenance performance and issue guidelines for the use of ADP funds. While the principle of local autonomy makes it unlikely that the provincial governments will be willing or able to adjust the total amount of funds provided to a given district, the budgeting system creates numerous opportunities for them to shape district ADP programs during both the planning and implementation stages. The project will assist them in making the best use of these opportunities through a variety of measures formulated in cooperation with the provincial governments, such as development of provincial guidelines for rural roads, improved monitoring of district performance, provision of indicative guidelines to the districts for preparation of their ADP submissions, and similar measures consistent with the existing system and division of responsibility.

The proposed reforms in the budgeting system and in district accounting practices cannot be achieved before the project begins implementation; however, the Mission believes that the project cannot go forward unless the federal government and at least one provincial government express their willingness to implement these reforms by the third year of the project (when construction will begin). These policy reforms will be binding for participating districts.

The Mission wishes to emphasize that these measures would represent a significant shift in the GOP's posture toward local government and toward maintenance in general. In particular, they would give added recognition to the importance of maintenance not only to the districts, where the responsibility lies, but also to the federal and provincial governments, which provide much of the funds for rural roads investment. We believe that changes such as those proposed are consistent with the policy of decentralized decision-making and promotion of rapid service expansion in the rural areas. These policy changes would help to establish the important principle that the districts must make the most efficient use possible of their share of Pakistan's scarce fiscal resources. AID's intention is to demonstrate the impact of this principle by applying it on a limited basis. If successful, this demonstration will provide the basis for developing a strategy leading to better resource use and higher service levels in the future, not only in rural roads but for the entire road system.

3. Relationship to Other Donor Programs

At this time, no other donor is actively providing assistance to the rural roads sector. The World Bank is funding upgrading and rehabilitation of certain provincial and national highways, however, and is also providing assistance to the GOP in the identification of potential sources of increasing revenues through user charges and other measures, directed at reducing the total government budget deficit. A Japanese program providing road equipment to the districts has been scaled back as a result of growing concern with the maintenance problem.

The Asian Development Bank is now in the process of developing a project to finance rehabilitation and upgrading of district roads in ten districts. Although the design for this project is not yet finalized, it is expected that the bulk of the ADB funds will finance construction. Some equipment will be provided, and local A/E and construction contractors will be used for the work. Tentative project plans call for the project to be coordinated by the FRREC and implemented by the provincial governments through their Planning and Development and Communications and Works Departments, in cooperation with the district governments. The project will also fund a review of the transport sector investments to be implemented with ADB assistance.

At the time the interim report was drafted, an ADB staff appraisal team was in country to review progress in preparing the project. The appraisal team met several times with Mission personnel to exchange information and to discuss the respective approaches under development. Although the approaches being taken by the two projects are substantially different, it is believed that they are compatible if the ADB strengthens its support to improved maintenance policies.

During final design, the Mission will explore further the policy dimensions of other donor activities at both the national and the local level, in order to enhance the prospects of improvement in the total road resource management system in Pakistan.

D. Proposed Policy Changes

1. Federal Level

a. Rural Roads Policy

i. Formulate and adopt a national policy for rural roads, setting out priorities for maintenance of the existing network, expansion and upgrading, in that order.

ii. Formulate and adopt a policy establishing a linkage between maintenance performance on existing paved (all-weather) roads and expansion of the system, backed up by guidelines to the provinces as part of the budget submission policy.

b. Resource Allocation

i. Establish a system to monitor district performance on rural roads, including their allocation of funds, their success in meeting maintenance needs, and their success in generating local resources for roads.

ii. Modify policy on ADP funds to clarify that ADP funds can be used for recurrent expenditures, and should be used for this purpose rather than expansion if the recurrent needs of the current system cannot be met.

2. Provincial Level

a. Rural Roads Policy

i. Establish provincial policies setting rural roads priorities (maintenance of the existing paved or all-weather network, expansion of the katcha network, and expansion of the all-weather network).

ii. Establish policies on user charges and revenue generation at the local level that emphasize the need to expand the resources available for recurrent expenditures and expansion and provide stronger support to district efforts to accomplish this aim.

b. Resource Allocation

i. Issue guidance to the districts on how these policies are to be reflected in the package of activities included in the ADP submission (Rural Works/Development Program).

ii. Establish a uniform accounting system (including a separate line item for maintenance) for district councils, and implement this system in participating districts.

iii. Establish a system to monitor district fund use (district revenues and provincial ADP funds), including both the allocation of these funds and actual expenditures on expansion and maintenance of infrastructure.

iv. Introduce substantive review of district ADP submissions, including a requirement that districts proposing to expand their paved network must demonstrate that: a) all villages have at least a katcha road, b) all of the paved network is currently being maintained, as shown by the expenditures on maintenance in the previous year, and c) funds exist to add the proposed roads to the maintained network. Similar provisions would apply to the addition of other all-weather roads to the all-weather network.

v. Require modification of ADP road programs submitted by districts under their ADPs that do not meet the above criteria. The practical impact of this policy is that there will be no expansion of the all-weather network for several years (although some shingle roads may be upgraded to paved).

3. District Level

a. Roads Policy

i. Establish policies for maintenance and road expansion priorities (maintenance of the existing paved or all-weather network, expansion of the katcha network, and expansion of the all-weather network).

ii. Establish Road Maintenance Units within the district engineering offices with planning and implementation capability.

iii. Establish policies on user charges and revenue generation to expand the resources available for recurrent expenditures and road expansion.

b. Resource Allocation

i. Establish separate annual budgets for road maintenance.

ii. Establish accounting systems for road development and maintenance programs.