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Rural Access and Mobility in Pakistan: A Policy Note

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This note presents a number of policy options to improve basic access and promote the mobility of Pakistan's rural population in support of the Government's Poverty Reduction Strategy. This is achieved through more focused and community driven interventions to meet the direct needs of the rural population. The current state of rural accessibility and mobility are examined together with their effect on both the social and economic dimensions of rural poverty. Key challenges and constraints to reform are identified. The note contributes to the current debate within Pakistan with regard to the better targeting of interventions to assist the rural poor. It should also be of interest to policy makers in other countries concerned with how rural transport policy may be developed to meet the Millennium Development Goals.

The Note benefited from comments and suggestions by Navaid Qureshi, Simon Thomas, Amer Durrani, John Hine, Paul Amos, and Hernan Levy. It draws heavily on a study carried out by the World Bank Pakistan Transport Team in 2002 (coordinated by Ayaz Parvez), and its subsequent report on Rural Access and Mobility in Pakistan (World Bank 2003a and 2003b).

SUMMARY

The Challenge

Rural areas in Pakistan are home to 100 million people or two thirds of the total population; they are also home to more than three quarters of the poor or 42 million people living below the poverty line. One in every five villages, where 15 percent of the population live, is still not accessible¹ by all-weather motorable roads. Combined by a lack of transport services in three of every ten villages, a large proportion of rural Pakistan lacks motorized access to markets, basic services, as well as physical, social and political opportunities. Poor people and poor communities in rural Pakistan are least likely to have access to transport infrastructure and services. At the same time, low accessibility to roads and transport services are associated with lower human development outcomes. For instance, the data suggest that girls' net primary school enrollment rate is 50 percent higher in communities with all-weather motorable access. These communities also have higher incidence of pre-natal medical consultation for women, a higher proportion of childbirths attended by skilled personnel, higher incidence of post-natal consultation, and a lower probability of births at home. Without adequate transport accessibility, it is difficult to reduce vulnerability to natural and man-made disasters, a fact that has become painfully obvious in the aftermath of the October 2005 Earthquake. Within villages, rural households and, to a large extent, rural women bear a very high transport and travel burden associated with basic and social needs as well as economic activities.

Rural roads expansion over the last two decades, averaging over 2,000 kilometers per year, shows that Pakistan has made significant progress in connecting rural communities to the rest of the country. However, like many other countries, Pakistan is struggling to meet with limited resources the growing demand for transport infrastructure, and in many instances it makes inefficient use of the very limited resources both in terms of allocative and technical efficiency. Resource allocation favors investment over maintenance, and the growth of the network has been concentrated on the provincial highway and district council road categories, with a clear bias towards the paving of roads. Since the rural transport system lies at the lowest level of Pakistan's transport system hierarchy, it usually receives less attention than the rest of the network, and when interventions are decided to improve it, it is treated in line with the same standards, procedures and practices used for the rest of the transport system. Hence, many government programs have been planned to address the immediate rural accessibility problem without a carefully designed policy and institutional framework to ensure the sustainability of the programs. These programs very often tend to focus on physical connectivity instead of services, and their implementation is subject to heavy political influence. The 2001 Government devolution policy has handed over ownership and management of rural roads to local governments, but implementation of this policy is still experiencing a large set of problems from technical and financial constraints, especially at the district level.

In addition to transport infrastructure and services, rural areas in Pakistan are also lagging behind the rest of the country when it comes to other infrastructure services such as potable water, sanitation, and electricity. The Government's poverty reduction strategy (GOP, 2003) emphasizes thus the need to achieve economic growth particularly in the rural areas, and to bring the poor and

¹ See definition of accessibility and its measurement in Box 1.

vulnerable and backward regions into the mainstream of development. It calls for the simultaneous provision of social and economic services and infrastructure, creating job opportunities, and improving governance as essential elements of the strategy. Improving the performance of the transport sector is one of the top priorities on the poverty reduction agenda. Aligning public interventions and investments in the sector with the strategy's goals needs to be enhanced.

Key Recommendations

This policy note outlines a few key options and offers recommendations for further discussion and Government consideration.

- ❑ **Policy and strategy formulation.** Develop a national rural transport policy and strategy. The policy should be consistent with the Government's overall plans for rural development. The policy should recognize that any sustainable approach has to be owned by the beneficiaries. Strategies supporting this policy and programs translating it into practice have to be simple, gender sensitive, and consistent with the technical, managerial and financial resource base of owners, providers, and regulators.
- ❑ **Institutions, ownership, responsibility and financing.** Improve the current institutional arrangements for ownership, management and financing of rural transport system in accordance with the new devolution reality. Local governments should manage the core rural roads and be provided the capacity and skills for doing this efficiently. Communities and farmer associations would choose which roads and paths they will own; the private sector will sell management services to the local road agencies and carry out physical works as well as provide transport services.
- ❑ **Funding.** Mobilize additional resources and allocate funding more cost-effectively by targeting investments in ways that more directly benefit the poor; shift available resources from construction and paving of existing roads to expansion of basic motorable access and maintenance of existing networks, through partial spot improvement and rehabilitation. Maintenance also helps provide jobs for local population.
- ❑ **Cross- sectoral linkages.** Whenever possible design and implement development programs in rural areas that cost-effectively reduce the need to travel. These would include village water and energy supply, schools and health clinics, etc.
- ❑ **Infrastructure.** Promote community involvement in planning and managing transport infrastructure improvements that respond to their needs. These improvements include upgrading of key paths and tracks used for the collection

of water, firewood and fodder; and improve-ing the village street and drainage systems.

- ❑ **Intermediate means of transport.**² Promote the use of IMT to reduce the workload associated with basic household needs, especially for women, and improve key paths and tracks.
- ❑ **Motorized conventional transport services.** Take active measures to remove constraints and promote service coverage in presently unserved rural areas. This should be done on a case-by-case basis especially in areas with low population density and high cost of providing the service, where public interventions might be suitable including targeted subsidies when necessary and affordable.

THE CURRENT STATE OF RURAL TRANSPORT

The exact state of rural transport infrastructure and services in Pakistan is not known with any precision. There have been some specific studies carried out by the Government or donor agencies, but they usually were either driven by specific projects or focused on a few regions. Overall, the total road network in Pakistan for example is estimated by the Federal Bureau of Statistics at about 252,000 km, including National Highways, Provincial Highways and Roads, district roads and municipal and cantonment roads (Table 1). A study (JBIC, 2004) estimated that there are also about 50,000 km of irrigation department inspection paths, but it is not known how much of this network is open to public use. District Council and irrigation department networks comprise the main local road system. In addition, there is an undesignated network of roads, tracks, trails and paths, which have no recognized ownership and have developed largely through use. Maintenance is usually on ad hoc basis by communities. The 2001 Government devolution policy has handed over ownership and management of intra-district roads to local governments, but the question of ownership is still not clear as the implementation of the devolution policy is still at its early stage. Road-based freight and passenger transport in Pakistan are deregulated, and except from setting rates for inter-city and urban passenger services, Government has no involvement in the provision of services.

While in 1990, Pakistan's overall network was evenly split between paved and unpaved roads, paved roads have grown at a much greater pace than unpaved ones, and they represent currently some 60 percent of the total network. Less and less unpaved roads are being constructed, and the network's condition is deteriorating continuously due to a severe lack of maintenance. This trend is most acute for the rural infrastructure. On district council roads, most new developments are directed toward paving existing unpaved roads rather than improving access to non-connected communities.

² Intermediate means of transport include low-powered motorized vehicles such as derivatives using motorcycle or small diesel engines as well as non-motorized means of transport such as bicycles, handcarts, animals, etc.

	Earthen	Shingle	Total	Paved	Overall
National Highways	-	-	-	8,479	8,479
Motorways	-	-	-	367	367
Provincial (C&W) Highways & Roads	8,114	18,254	26,368	74,470	100,838
District Council Roads	34,806	38,857	73,663	31,570	105,233
Municipal Corporation Roads	753	1,873	2,626	32,119	34,745
Cantonment Board Roads	-	127	127	1,872	1,999
Total	43,673	59,111	102,784	148,877	251,661

⁽¹⁾ Pre-devolution.

Source. Pakistan National Transport Research Center, 2000.

One in every five rural communities does not have access to an all-weather motorable road, and three in every ten communities have no transport service available. Communities without all-weather motorable access are on average smaller in size than those with such an access. While they represent 20 percent of Pakistan's rural communities in terms of numbers, they are home to 15 percent of rural population, or some 15 million people. In dry mountainous countries like Pakistan, seasonal inaccessibility is not a major problem for most parts of the country. However, communities are isolated instead by extreme roughness of driving over rocky terrain or the difficulties of driving through sand – which are much greater causes of inaccessibility and high transportation costs. Data from the Pakistan Integrated Household Survey (PIHS) conducted in 2001-02 also show that one third of rural population is not accessible by paved roads. Regional access differences between provinces reflect the country's geographic and economic diversity. Punjab province has the highest access rate among all provinces. Furthermore, 30 percent of rural population does not have a transport service available in the village, and the nearest transport service is, on average, 8.2 km away from the village (Table 2).

Policy implication: Government rural transport policy should on one hand aim at extending basic universal road access to all rural communities; on the other hand, the policy should aim at ensuring that adequate transport services are provided. The choice of institutional arrangements and technologies should take into account beneficiaries' needs and their ability to pay and manage their transport systems.

Box 1. Accessibility Indicators.

Road accessibility indicators used in this note are derived from the Pakistan Integrated Household Survey (PIHS) data. The PIHS community survey had three questions relating to road access: (i) Is there a motorable road to approach the village? If the answer is yes, then (ii) is it accessible during all months? And (iii) what is the type of the road: metalled, paved/bricks/stones, unpaved, or other type. Access to transport services is also measured using PIHS, where a question on the availability of a transport service in the village was included in the community survey.

	Proportion of rural population with all-weather motorable access	Proportion of rural population with motorable access	Proportion of rural population with paved access	Proportion of rural population with bus/wagon stop within village	Average distance to bus/wagon stop for rural population without stops within village (km)
Punjab	91% (92%)	95% (95%)	76% (78%)	66% (66%)	3.8
Sindh	84% (85%)	86% (86%)	63% (63%)	83% (83%)	4.1
NWFP	80% (82%)	86% (88%)	68% (70%)	62% (63%)	5.7
Balochistan	72% (64%)	86% (84%)	27% (23%)	74% (69%)	30.9
Other regions	57% (58%)	84% (80%)	31% (29%)	69% (73%)	4.9
Pakistan	85% (81%)	91% (89%)	68% (62%)	69% (70%)	8.2

Source. PIHS 2001-02. Numbers in () show data for communities or villages instead of population.

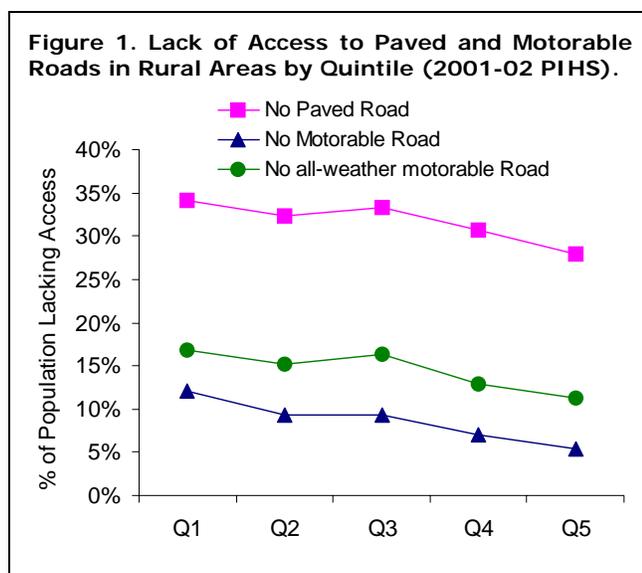
A quick cross-country comparison of rural roads accessibility shows that Pakistan's performance is at the high end of the spectrum (Table 3). However, this type of comparison should be used with caution as there are methodological differences in measuring rural roads accessibility as well as differences in the reference years.

Table 3. Rural Road Access Indicators in Selected Countries, as of May 2004.			
Country	Rural Access Indicator	Survey	Year
Bangladesh	37%	IES	2000
Ethiopia	27%	PS	1998
India	69%	**	2001
Indonesia	94%	PODES	2003
Nepal	14%	IS	1995
Pakistan	80%	IS	2002
Vietnam	73%	IS	1997
Yemen, Republic of	50%	IES	1998

Source. World Bank, 2004a.
 IS: Integrated/Living Standard Measurement Survey.
 IES: Income/Expenditure/Household Survey.
 PS: Priority Survey.
 PODES: Village Potential Statistics Survey.

Rural Pakistan's accessibility is lowest for the poor. While 15 percent of rural population lacks access to all-weather motorable roads, PIHS' disaggregated data suggest that poor people and poor communities are less likely to have access to transport infrastructure and services (Figure 1). For instance, 17 percent of the people in the first quintile lack access to all-weather motorable roads, more than one and a half times that of the highest quintile. Regionally, access is highest in Punjab which is also the province with the lowest rural poverty incidence. The rural poor seem to be relatively constrained in terms of access, which in turn limits their opportunities and access to basic services.

Policy implication: Government rural transport policy should prioritize interventions that would improve basic motorable access for the poor and the vulnerable.



Travel and transport associated with basic household needs impose a considerable burden on most rural households with women physically carrying most of the traffic, especially for water collection, grain milling and the acquisition of fuel. Results of a transport and mobility survey of eight villages in Pakistan conducted in 2002 show that the total domestic travel demand associated with basic needs, namely water and fuel collection and grain milling, is around 2.7 hours per day per household or 970 hours per year with a corresponding transport effort of 110-165 kg-km per day per household or 40-60 ton-kilometers per year (World Bank, 2003a). Almost all trips are made by walking. Adult women undertake about three quarters of the demand and effort, while children and adult men undertake about 10 percent and 15 percent respectively.

Policy implication: Government rural transport policy should balance interventions aimed at reducing the need to travel whenever possible and cost-effective, and improving within village mobility especially for women and girls.

Travel and transport associated with economic activities hinders both farm and off-farm activities.

About two thirds of rural households engage in farming, but overall, rural households derive on average 44 percent of their income from non-agricultural sources, including non-farm wage earnings, non-farm enterprise income, remittances, and others (World Bank, 2002). Some 40 percent of rural population owns no land, and this proportion makes up 76 percent of the bottom quintile (World Bank, 2004b). In six of the eight surveyed villages in 2002, most activities require travel outside the village, and walking was the dominant transport mode for this purpose. At the same time, almost half of those who travel outside the village for off-farm activities incurred significant transport costs. Only in two villages were bicycles a significant transport mode, but animals were nowhere significant.

Policy implication: With the growing importance of off-farm economic activities, Government rural transport policy should aim at promoting improvements in personal mobility rather than just physical access.

As for farming, the surplus production of most farming households was relatively modest in surveyed villages. A few large-scale farmers who are able to command their own production and transport equipment produce much of the surplus. Marketing of farm produce was limited. Limited access to credit and cash flow constraints partly explain the high proportion of farm gate and near market sales. But the lack of transport services also contributes to this pattern of marketing. More importantly, production trips (to fields for instance) were mostly on paths and tracks that do not permit the operation of vehicles capable of giving economies of scale in movement. The condition of these routes and the constraints they impose on modal use may be just as significant in restraining output as problems of marketing the surplus. Moreover, in the cases where women were involved in farming, their total distance traveled was similar to that of men, but females' trips involved carrying loads most of the time while only one third of men's trips involved such efforts.

Policy implication: Government rural transport policy should coordinate with the country's rural development plans so as to improve intra-village production and marketing transport links.

THE CRITICAL ROLE OF RURAL TRANSPORT IN HUMAN DEVELOPMENT PERFORMANCE

Poor accessibility is associated with lower human development indices. Several education and health indicators are lower in communities with low transport access (Table 4). In the case of net primary school enrollment rate (NER) and literacy rate for instance, the difference between villages endowed with all-weather motorable roads and those without this type of access is particularly high for females. The presence of an all-weather motorable road is associated with an increase of 50 percent in girls' NER and 75 percent in female literacy, whereas these increases are 15 and 20 percent respectively for males. Good accessibility is also

associated with better health outcomes as shown, for example, from the significantly higher rates of pre-natal consultation, immunization coverage, contraceptive prevalence, and births assisted by skilled attendant in villages with all-weather motorable road access. These data may somewhat overstate the relationship between poor accessibility and social issues - particularly gender associated problems - since there are important socio-cultural differences between the different provinces of Pakistan (particularly between the Punjab on the one hand and NWFP and Balochistan on the other) that also impact these indicators. However, the association between human development performance and transport access is broadly consistent with observations in other countries (Box 2).

Table 4. Selected Human Development Indicators and Road Access.

Indicator	Villages with all-weather motorable roads	Villages without all-weather motorable roads
Girls Net Primary School Enrollment Rate (NER)	41%	27%
Boys Net Primary School Enrollment Rate (NER)	56%	49%
Females Literacy Rate (10 years and above)	23%	13%
Males Literacy Rate (10 years and above)	53%	44%
Immunization Coverage ⁽¹⁾	54%	46%
Contraceptive Prevalence Rate ⁽²⁾	19%	12%
Pre-natal consultation	28%	14%
Births assisted by skilled attendant	58%	39%
Births at home	85%	91%
Post-natal consultation	7%	5%

⁽¹⁾ Fully immunized 12-23 months based on recall and record.
⁽²⁾ Percentage of married women of age 15-49 who ever used contraception.

Source. PIHS 2001-02.

Box 2. Socioeconomic Influence of Rural Roads.

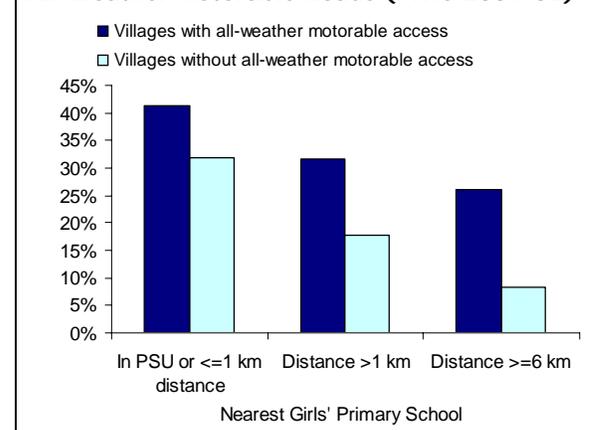
Research conducted by the World Bank on the impact of rural roads on human development achievements has documented the link between the availability of road access and gender gaps in education and health outcomes. For example, a survey of a rural roads improvement program in four areas in Morocco found that women and girls benefited especially from providing all-weather road access. Better roads made delivery of butane more affordable, reducing the need for women to collect firewood and thus freeing up as much as two hours daily for them. The new roads also made travel to schools safer, encouraging parents to send their daughters to school. Primary-school education enrollments in the study area reached 68 percent, compared to 28 percent prior to the improvements, and the enrollment of girls more than trebled. At the same time, rural road access improvements in the study areas more than doubled visits to hospitals and primary health care centers.

Source. World Bank, 1996.

International experience shows that the availability of schools and health facilities in villages *per se* explains variations in education and increased health outcomes. In rural Pakistan, availability of road access seems to add another layer to explain these variations. Indeed, communities with similar degree of school availability have different primary net enrollment rates for girls for instance depending on their degree of endowment of all-

weather motorable roads. As shown in Figure 2, even when there is a girls' primary school within the village or at less than one kilometer from the village, the primary NER for girls is still significantly higher in villages with motorable roads.

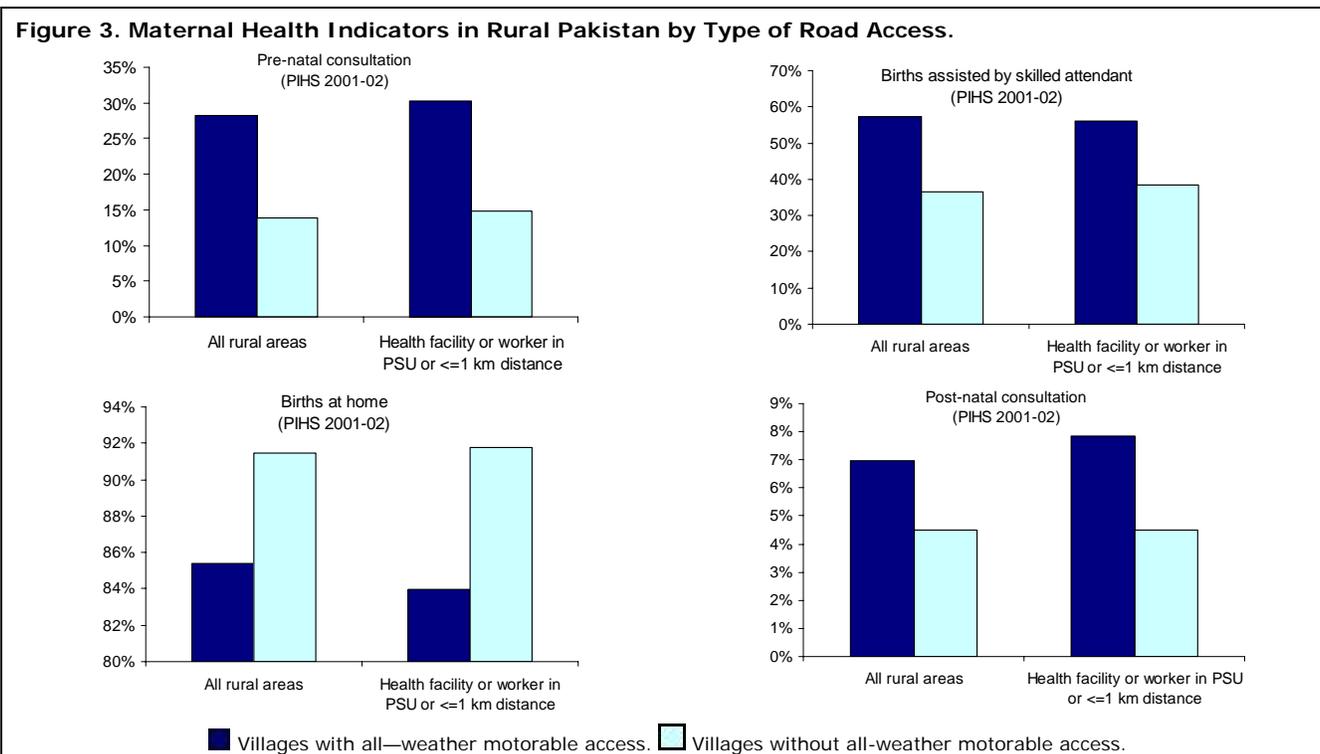
Figure 2. Girls Primary Net Enrollment Rate and All-Weather Motorable Roads (PIHS 2001-02).



The same observation is valid for health outcomes (Figure 3). Even when the facility is within the village or at less than one kilometer from the village, the outcome still varies with road access. This is consistent with observations in other countries. Some plausible

explanations could be that better road access (i) reduces teachers and health workers' absenteeism; (ii) improves awareness among parents about the benefits of education and preventive health; and (iii) brings alternative products to the communities freeing girls' time and allowing them to go to school.

Policy implication: Government rural transport policy should complement the country's strategy of extending *education and health services to the rural poor, and prioritize interventions that would benefit rural girls' education the most as well as access to health services, especially that of women.*



THE CHALLENGES OF IMPROVING RURAL TRANSPORT ACCESSIBILITY AND MOBILITY IN PAKISTAN

Expanding accessibility and improving mobility in rural Pakistan involves numerous challenges:

- 1. Lack of holistic development vision.** There are currently no clear and consistent rural transport policies and strategies. Rural transport is not part of a comprehensive rural development strategy that looks at the overall picture and tries to improve mobility by eliminating the need to travel when it is more efficient to do so. Moreover, while the ongoing devolution process in Pakistan is meant to strengthen policy setting and prioritization that responds to beneficiaries' needs, the reality is that lower levels of government have inherited standards and procedures rather than policies and strategies, along with many former provincial staff and their previous professional mind-set. The result is a continuing focus on paving roads, construction at the expense of road maintenance or intra-village infrastructure.
- 2. Top-down and isolated sectoral planning and investment prioritization.** Traditionally, planning for rural transport has been a top-down process managed by a conservative core of engineers in

which the main decision making inputs have come from local politicians and elites. Little attention has been given to consider the heterogeneous needs of local groups, stakeholders and communities. There is a lack of consultation with key stakeholders and beneficiaries as well as an absence of rational transparent prioritization plan that emphasizes poverty reduction. Technicians, local politicians and elites are generally male-dominated groups and it is not surprising that no evidence was found of gender-specific considerations having ever been incorporated into the design, planning and prioritization of the Rural Transport Infrastructure (RTI) projects of the district governments. There has also been little or no community involvement in planning, and although this has been provided for under the devolution proposals, the implementing organizations are administratively weak and lack sufficient funding. Some progress with community involvement has been made under the Rural Support Programs, the Pakistan Poverty Alleviation Fund with its Community Physical Infrastructure component, as well as a few donor-funded road projects, but it has limited focus on transport issues and has presently very limited outreach. At the provincial level, only 15 percent of road sector expenditures are allocated to maintenance, the rest is used in new construction (64 percent) and salaries (World Bank, 2001), at the national level, until very recently only 6 percent of total road

expenditures have gone to maintenance (World Bank, 2003c).

3. **Inadequate funding and resource mobilization.** Insufficient public resources lead to under-funding of road transport infrastructure needs (road network maintenance needs, as well as the extension of basic motorable access to all). With the devolution, confusion over the future financing of district transport infrastructure persists. While Districts, Tehsils and Union Councils have been given new tax collection powers with a mandate to generate their resources to the extent possible, these remain untried.
4. **Unclear ownership and responsibility, especially during the early stages of the devolution process.** Some road classes such as the original district road network in Sindh seem to have no clear owners in the post-devolution arrangement. This results in diffused accountability and neglect of network management responsibilities. The evolving post devolution set-up has also resulted in a fragmentation of institutional roles and responsibilities, with no one institution being aware of the overall picture and dynamics of the transport infrastructure. Moreover, no adequate institutional arrangements exist for rural Tehsil Municipal Administrations and Union Councils to attend to their access management responsibilities under the devolution plan.
5. **Weak institutions.** The devolution of transport system management responsibilities to local government without adequate preparation, an under-developed private sector as contractors or transport service providers, non-mobilized communities and vulnerable groups lead to inadequate capacity for transport system development, and for operation and maintenance.
6. **Inappropriate design and construction standards.** This makes for expensive road construction as well as poor road performance, higher unit costs and increased future maintenance liability, leaving insufficient resources to extend the network to un-served communities. Village surveys indicate that little or no effort has been made to design new and innovative low-cost transport infrastructure interventions, best suited to local conditions and employing more labor-intensive methods³. Discussions with engineering staff suggest that design remains conservative in respect to philosophy, road widths and pavements; there is a need for an extensive program of re-education and training. The near certainty of lack of maintenance and fear of blame for the subsequent collapse has bred a risk averse mind-set among local engineers. Roads are over-designed, for their functional need, and network extension is always subordinate to quality. The roads with an earth surface are simply not regarded as roads, unless they are to be upgraded and surfaced. The concept of more extensive basic access, rather than a limited network of good quality, paved roads, appears alien to local government departments. The pre-devolution emphasis on paved roads has also

meant that district councils have inherited a machine-oriented approach to construction. Labor-based methods have been more prevalent in road maintenance, but there has been little experience with the introduction of modern labor-intensive practices, based on the use of specially trained small-scale contractors.

7. **Inadequate maintenance of existing asset.** District councils have inherited a tradition of under-funded and consequently poorly organized maintenance. International experience suggests that the 1.5 to 2.0 percent per year of investment cost that has traditionally been allocated for maintenance in Pakistan is far too low, especially for rural networks where earth or, at best, gravel surfacing predominate. If allocated regularly and spent efficiently, 1.5 percent per year of investment cost is possibly adequate for a well designed and built asphalt-surfaced road. For gravel surfaces the proportion needs to be increased to 3% per year and for earth to 5%.per year. For rural transport infrastructure networks, which are predominantly earth and gravel surfaced, a 1.5 to 2.0 percent per year rate of budgeting means a slow but inevitable process of deterioration and contraction. Moreover, inadequate maintenance has also resulted from weak asset management capacity as well as poor agency accountability.
8. **Inadequate regulation of conventional transport services.** There has been no rural-specific policy addressing issues such as the lack of services in some areas, low frequency of transport services in others, passenger overloading, route subsidization and equity concerns, etc. Rural transport services operate in a largely unregulated environment. Whilst on main routes passenger services and fares are regulated, this regulation is somewhat ineffective, is restricted mainly to some bus and wagon services, and affects few of the journeys made by villagers. Overall, however, conventional rural transport services in Pakistan experience a high degree of vehicle diversity and an efficient and competitive provision of services. There appears to be a wide range of vehicles offering slightly different services depending on the requirements of the customer. The comparatively modest road density means that there will be significant areas denied services at all. The poor road maintenance regime means an inevitable increase in fares and goods tariffs. Operators, particularly of pickups, are known to add a 50-100 percent premium to prices on rough roads to cover increased repair requirements. Few buses are friendly to the cultural requirements of women travelers, and that impacts women's decision to travel.
9. **Under-developed intermediate means of transport.** Intermediate means of transport (IMT) ownership in Pakistan is low and they are not fully recognized as a valued part of the rural transport system. As a result, little support has been given to promote their development and use. In the cases where IMT are used, evidence suggests that they make a significant contribution to village-level transport. There is however scope to introduce new forms of IMT and adapting existing types to better meet local demands, including those of women.

³ See Box 3 for some innovative approaches to rural roads management and maintenance.

Box 3. Innovative Approaches to Rural Roads Management and Maintenance: The Case of Peru.

The rural poor in the Sierra in Peru have very limited mobility beyond their immediate settlements because of geographic isolation, difficult mountainous terrain and high costs associated with improving transport infrastructure. The Peru Government has thus designed the Rural Roads Project, with the support of the World Bank and the Inter-American Development Bank, to improve access to social services, markets, and income generating activities with gender equity, to help alleviate rural poverty and raise living standards of rural communities.

The project focuses on departments that rank highest in rural poverty. The first phase (1996 to 2000) improved rural accessibility in 314 districts by rehabilitating about 12,500 km of (gravel) rural roads and about 2,400 km of key secondary roads connecting them to regional centers, and about 3,000 km of informal network of paths for non-motorized transport. The Government extended the project with a second phase being implemented over the 2001 to 2006 period.

This rehabilitation was followed by maintenance performed by community-based organizations: Road Committees for NMT paths, and micro-enterprises for the rural roads.

Unlike welfare programs, micro-enterprises created for road maintenance have a legal status, and have a contractual relationship. Overall, 570 micro-enterprises are currently active in project area, providing 5,700 direct jobs, and maintaining 12,900 km of roads (10 to 14 workers for 25 to 35 km), at about US\$ 700/km/year. Micro-enterprises are financed from contract payments, which they allocated to wages (89 percent), tools, rentals, transportation and a saving investment fund. Their success was due to the appropriate selection of candidates, presence of leaders, and emphasis on entrepreneurial culture. The entrepreneurs are people from communities along the roads. These micro-enterprises are also a catalyst for local development as they create entrepreneurial capacity in community: for example, 27 percent are also engaged in productive activities bringing new services and stimulating labor market in their communities; and members of some micro-enterprises have subsequently become leaders in their communities.

As for paths for non-motorized transport, villagers appoint members to Road Committee, which undertakes works. In some cases the Road Committee consists of entire community; in others only those chosen or willing to participate. Assisted by an NGO, Road Committees elect their authorities, approve charter and operations procedures. Authorities assume their responsibility before community. Traditional community structures demonstrated capacity to assign tasks, wages, and contribute with free labor. Payments are reinvested in other community initiatives. Villagers value technical, organizational skills. NGOs with credibility among villagers enhance social side effects.

A comprehensive impact survey completed at the end of the first phase and at the mid-term of the second phase found that the project had high positive impacts on travel time, traffic rate, passenger and freight rates, reliability of public transport services, and road closures. The project also had high to moderate impacts on farm produce prices; health consultations, livestock ownership, access to the market, agriculture wages, income structure, judicial case, and police interventions.

The project had also significant impact on women who are now able to travel further, more frequently and safer. Women's interactions outside homestead facilitated acquisition of skills and knowledge. Women participation in micro-enterprises increased from 5 percent in the first phase to 23 percent in the second phase currently underway.

Source. World Bank Transport Forum and Learning Week 2005.

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