

## RURAL ROADS IN SUB-SAHARAN AFRICA: POLICY ISSUES AND STRATEGIES

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### INTRODUCTION

The development of road networks and transport in Africa over the past two decades has been vital to economic activity in all countries. At present, the road networks of 47 African countries include about 700,000 kilometers of main roads (37 percent paved), and an equal length of rural feeder roads. Roads connect most productive areas with markets and trade centers, and where business conditions are favorable, road transport services have become available.

Given the large area covered by Africa, the present road length averages only 5 kilometers for every 100 square kilometers, with some variation among sub-regions. Such an average is low compared to other developing regions. For example, Latin America averages 12 kilometers, and Asia averages 18 kilometers for every 100 square kilometers.

The low average road length, the need to provide reliable access to all economically productive areas, and the demand from fast growing populations require selective upgrading and expansion of both the international and national road network.

From 1964-1989, the Bank provided about US \$1.7 billion (constant 1988 US\$) in loans and credits for 127 projects to construct, rehabilitate or maintain over 160,000 kilometers of rural roads in Sub-Saharan Africa (SSA). The review of these projects, as well as the analysis of the experience of the six countries — Cameroon, Kenya, Malawi, Nigeria, Senegal and Tanzania—provide an adequate basis to recommend several new directions for improved policies and operational strategies.

### PLANNING

The importance of rural roads extends to all aspects of the economic and social development of rural communities. As a result, planning for rural roads has been driven by a multiplicity of objectives and institutions with a lack of continuity and a lack of attention to sustainability, and generally poor use of resources. The first and foremost conclusion regarding planning is the necessity for each country to formulate a coherent Rural Road Strategy,

including measures to strengthen related capabilities at all levels, i.e., national/central, regions, districts and local communities. Country strategies should recognize the need for close coordination with programs and policies concerning main roads, as well as agricultural development.

Typical approaches used for planning and evaluation of rural road programs have shown systemic shortcomings. They have not paid sufficient attention to maintenance and have not fostered community involvement. The scarcity and poor quality of data on production and traffic have limited the validity of economic return computations based on savings in vehicle operating costs and producer surplus. Moreover, such approaches have tended to neglect increases in personal travel which have characteristically been one of the most striking impacts of rural road improvements.

The experience from several successful rural road programs point out the need to think of rural road planning in terms of a system comprising not only methodology and criteria, but also the process and the procedures through which key constituencies are involved at various levels. This points towards multi-tiered planning and programming systems based on locally acceptable criteria allowing participation of local communities. The method used to assess relative priorities should reflect the determinants of community demand for rural roads; these would normally include: population, area, production, and social, economic and cultural services. It should also include technical information on terrain, materials, hydrology, etc. Further research is needed to guide the design of planning systems for rural roads.

The poor record of SSA countries in rural road maintenance points to the need to establish a consolidated framework for network-based programming and budgeting so that requirements for maintenance and rehabilitation are considered along with construction and improvements. Such fungibility may be politically difficult to accept but it is essential if one considers that earth road improvements have a life span of three to five years. A consolidated framework is further justified by the fact that the tasks and skills involved in maintenance of earth roads are basically the same as those needed for construction.

## DESIGN AND TECHNOLOGY

The scarcity of resources, the low traffic volume and the fact that all-year vehicular access is not always essential, indicate that conventionally engineered rural roads are in many instances neither necessary nor possible. This points out the need to design and maintain rural roads in relation to specific levels of serviceability defined in terms of access by specific types of vehicles during various seasons. The prime considerations in defining rural road improvements should be reliability and durability rather than width and speed. This would lead to concentrating expenditure on essential access, spot surface improvements in critical sections (poor subsoil, gradients), on surface drainage and essential structures, rather than on geometric characteristics determined by design speeds.

Considering the lack of income opportunities in many rural areas and the intractable problems inherent in the deployment and operation of mechanical equipment for small scattered works, labor-based methods should be considered as the normal choice for rural road works. Conditions inappropriate for labor-based methods may be found in very sparsely populated areas, and also for specific tasks, e.g., long distance earth movements.

The development of labor-based capability for road works is a long-term undertaking requiring considerable up-front inputs in technical assistance and training. Successful efforts supported by the International Labor Organization (ILO) have typically been sustained over a period of ten years starting with pilot projects and leading to the development of country-wide programs relying on a critical mass of trained engineers, field supervisors, etc. The future development of labor-based capability would benefit greatly from transfer of expertise among Sub-Saharan African countries. It would be useful in this respect to support the preparation by African experts of guidelines concerning the range of application of labor-based methods and the employment of women in such operations.

Problems of supervision, poor motivation of workers and the inherent lack of flexibility of public sector operations, have proven very difficult to overcome in force account work. Contract operation, although not without problems, is generally a preferred alternative. The weakness of domestic contracting capability is a major obstacle. A long term rural road program would provide the opportunity to build up the capability of the domestic construction industry: a policy decision to favor the use of contractors is necessary. Specific measures to facilitate their development and to improve their operation should be part of rural road projects. The experience gained under ongoing rural road projects in Ghana

which include training of domestic contractors in the use of labor-based methods should be useful in designing similar programs.

## RESOURCE MOBILIZATION

Given the severe lack of resources at the local level, rural road development will continue to require central funding, a large portion of which will be provided from external sources. It is clear, however, that the stepped-up mobilization of local resources is an essential element of improved rural road policies. It is the only way to address the problem of maintenance. Review of World Bank experience offers no ready made solution. Approaches in which local constituencies have been involved in all stages of rural road programs have been more successful in mobilizing local resources. In many instances it will be necessary to undertake measures to build up basic organizational and technical capabilities at the local level. Bank experience in Latin American Countries suggests that once basic institutional capabilities have been established at the central and at the local level, matching fund schemes can be effective in encouraging local resource mobilization, and ensuring the implementation of country-wide policies. Further field investigations and policy analysis will be necessary to evolve suitable approaches to mobilize local resources for rural road maintenance.

The deployment of technical assistance in support of rural road programs has been a source of difficulty. The low unit cost per kilometer and the scattered nature of the work have contributed to high overheads and lack of effectiveness. Except in the case of ILO-sponsored labor-based programs, training has suffered from the lack of continuity and lack of institutional anchor. The aims, objectives and target outputs for technical assistance need to be clearly specified and agreed upon. Training should be undertaken in the perspective of capacity building efforts sustained over sufficient length of time varying from eight to ten years. Results of technical assistance and training need to be routinely monitored. Reliance on local engineers and planners should be encouraged.

## SECTORAL ORGANIZATION AND INSTITUTIONAL PERFORMANCE

Institutional problems are endemic to rural road projects. Improvements have been slow. However, a number of principles have emerged from the projects which have been considered successful:

- Rural road units or departments set up in a main roads agency, with an adequate degree of autonomy and separate funding have proven to be effective in launching and implementing rural road programs of national scope.

- Participation of agricultural officers and local communities at the planning stage has led to better sub-project selection and has facilitated subsequent maintenance.

- Steady commitments and simple and well established planning procedures have encouraged participation and resource mobilization at the local level.

Overall, the most effective institutional arrangement is likely to involve a small centralized agency acting as a focal point for policies, overall planning and funding and overseeing regional community organizations responsible for local planning and operations. The latter should be able to raise their own funds, but would receive technical advice and matching funds from the central agency.

## TRANSPORT SERVICES

Improvements in transport infrastructure serving rural areas have not necessarily been followed by increased availability and efficiency of transport services for goods, or people. Chronic shortages of fuel resulting from inadequate pricing and marketing policies have affected rural areas most severely. Deficiencies in transport services are often the outcome of inadequate policies concerning pricing and marketing of fuel, tariffs regulation, and para-statal control. More attention should be given to policies affecting the availability and cost of transport services at the local level. These should also deal with intermediate means of transport (i.e., interme-

mediate between head-loading and motorized transport) which are generally underdeveloped.

Programs to improve the productivity of farmers in SSA have, by and large, not focused on transport activities which account for a sizable part of the work involved in agricultural production and household upkeep. The introduction of productivity improvements related to on-farm transport and movements could be considered under (Benor-type T&V) extension programs. Such improvements would rely primarily on the initiative of the farmers either individually or organized in groups; however, they would have to be spurred by advice, demonstration, technical assistance and possibly credit. Improvements would have to be sought through changes in transport technology, especially alternatives to headloading (wheelbarrow, bicycle, animal draft, power tillers, etc.), improvement in off-road infrastructure, and changes in post-harvest practices (processing and storage).

## COUNTRY LEVEL ACTION PLANS

In most countries, an action plan will be needed to introduce the policies outlined above. The key elements of such plans would include:

- Preparation of country strategies for rural roads closely coordinated with main road policies and programs, and with agricultural development strategies;
- Development of labor-based contracting capabilities; and
- Review of policies affecting motorized transport services in rural areas and promotion of intermediate means of transport.