

# **Expanding Labor-based Methods for Road Works in Africa**

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## **Executive Summary:**

The use of labor-based methods for road works has been an important part of the strategy to improve rural transport infrastructure in Africa over the past twenty-five years. These methods not only produce gravel roads of equal quality to those produced using equipment-based methods, but they also generate rural employment in a cost-effective manner. In the late-1970s and 1980s, pilot projects were set up in low-wage countries to demonstrate the technical and economic feasibility of labor-based methods. These efforts have proved insufficient for expanding labor-based methods-their use often collapsed soon after the pilot ended. This report, based upon extensive field work in Sub-Saharan Africa and a review of previous experience, identifies the key reforms and interventions that can facilitate the expansion of labor-based methods in the road sector. These include increased government commitment, effective labor laws, appropriate design standards, training, a reliable flow of funds, and a decentralized administrative structure. These last two reforms have not received the attention they require. While addressing these reforms, program designers can begin to establish a delivery mechanism for initiating and later expanding labor-based programs. This paper presents a framework for selecting the delivery mechanism most suitable to a country's particular circumstances.

In the 1970s, international organizations and donors focused their attention on determining the feasibility of labor-based methods. In terms of quality, the World Bank and International Labour Office (ILO) identified those activities for which labor-based methods produced better, equivalent, and worse quality output than equipment-based methods. They found that there was a broad scope for the use of labor-based methods in the road sector. This report argues that the relative cost of labor-based compared with equipment-based methods depends on three factors: the wage level for unskilled labor, the supply of equipment and spare parts, and the type, design, and packaging of works. The lower the wage level, the smaller the supply of equipment, the shorter the haulage distance, the smaller the project size, and the more remote and dispersed the work, the more likely are labor-based methods to be more cost effective than equipment-based methods. In terms of completion time, theoretically, labor-based methods can deploy enough labor to finish a project in the same amount of time as equipment-based methods. Practically, however, the completion time when using labor-based methods is constrained by the availability of labor, the willingness of labor to work, and the size of the works to be completed.

The pilot projects initiated in the late-1970s and 1980s-in those African countries where they appeared to be feasible-created an artificial environment to test the feasibility of labor-based methods. For example, pilot schemes would circumvent labor regulations to enable employers to pay wages below the legislated minimum wage, or would alter the definition of casual labor so that laborers could be fired after a few months without severance pay. In addition, pilot schemes used design standards that were more appropriate for labor-based methods than those used by the road agency, they provided training, and they created financial mechanisms that circumvented normal procedures to ensure that labor was paid on time. Although these pilot schemes were effective in demonstrating the technical and economic feasibility of labor-based methods, their

artificial structures often collapsed soon after the projects ended. There is a need, therefore, to institute the reforms initiated during the pilot scheme nationwide. Such reforms should facilitate a sustainable expansion of the use of labor-based methods.

## **Reforms and Interventions for Expanding Labor-based Methods**

Reforms that have received the most attention include generating government commitment to the labor-based technology, altering labor laws to make them conducive to labor-based methods, adapting design standards to make them appropriate for labor-based methods, and providing training so that quality can be ensured. The reforms that have been overlooked in the past or have not received the attention they require are related to ensuring a reliable flow of funds and decentralizing the administrative structure by delegating authority and financing to the appropriate level. Both of these reforms are aspects of financial management.

An unreliable flow of funds makes equipment-based methods more attractive than labor-based methods. Cash flow problems affect labor-based operations more quickly than they do equipment-based operations, because material and equipment suppliers will often accept delays in payment, while casual laborers will not. At best, delays in paying wages reduce productivity and increase costs. At worst, delays result in strikes and riots. Small firms, currently thought to be the most attractive candidates to implement labor-based methods, are particularly vulnerable to cash flow problems, since they often lack sufficient collateral to obtain overdrafts. In addition, a centralized road management structure, present in most countries, hinders the expansion of labor-based methods. Highly bureaucratic payment procedures often delay payments. Interim payment certificates or payroll receipts may have to pass through twenty-five to forty-five checkpoints before being paid. A centralized management structure may also be insensitive to the demands of the domestic constituency who favor labor-based methods. Often, the only stakeholders favoring labor-based methods are small farmers in rural areas who are employed on the road sites. Although in some countries this constituency may be strong at the local level, it is often incapable of pressing its demands on a centralized management structure.

## **Two Reforms Requiring More Attention**

The successful mainstreaming of labor-based methods, therefore, requires both reliable, safeguarded funding over an extended period, and decentralized project administration. Reliable funding might be attained by imposing an interim surcharge on fuel that is held separately from the road fund for maintenance, or by securing programmatic donor funding. Funding can be made secure by placing it in a properly managed special account. Project administration can be decentralized by delegating authority and finances to local levels and undertaking financial and technical audits ex-post.

While working to put these reforms in place, program designers can begin to compare the various models for expanding labor-based programs. These models can be divided according to their production arrangement, which is either force account or contracting. Within the contracting arrangement there are two different approaches: using established contractors and developing small-scale contractors. The models, depicted in the following table, can be distinguished by the degree of private sector involvement in execution and administration and the size of the firm measured by its acquired assets. Program designers must understand each model's relative

strengths in order to choose the most suitable model or succession of models for a particular country, given the characteristics of its public and private sector.

The force account model has been the most widely used (for example, in Benin, Ethiopia, and Kenya). Like many other government-directed activities, it has inherent inefficiencies and is unlikely to ever reach the efficiency of the private sector.

Using established contractors may appear to be the most attractive approach for introducing labor-based methods since they can pay laborers on time, few institutional changes are required, and there is low performance risk. This model is currently being used in South Africa. But it has inherent weaknesses. Established contractors resist substituting labor for equipment that they already own. It may be possible to force established contractors to use labor, but this will often result in increased costs. Instead of substituting labor for equipment, they may hire a large number of nonproductive laborers merely to meet employment requirements.

An alternative approach to using established contractors is to develop small-scale contractors (as in Ghana, Tanzania, and Zambia). In this case, program designers have three models to choose from, which differ in the degree and type of private sector involvement. In the government-run model, contractor development is the responsibility of a government road agency; in the agency model, it is the responsibility of a nonprofit non-governmental organization (NGO) or a for-profit consulting firm; and in the development team model, the responsibility is shared amongst the government agency, an established contractor, and a for profit consulting firm. The selection of a model depends primarily on the current contracting environment in the country being considered and the resistance to reform. If the road agency is functioning well and reform can be facilitated, the direct road agency model or development team model may be most suitable. If a road agency is unable to undergo the required reforms within a reasonable time or would prefer to pass a portion of the risk of contractor development to the private sector, a development team model may be the most suitable. If the road agency is nearly defunct or unacceptably corrupt, an agency model may be more suitable and can be used until the road agency has undergone the necessary institutional reforms. In the end, the choice of technology and production arrangement should be consonant with the reform needed in the government's structure and its work practices.

#### **Also See:**

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