

EMPLOYMENT CREATION AND LABOUR-BASED TECHNOLOGY IN ROADWORKS: UGANDAN CASE STUDY

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Objectives of the case study

This study was carried out in order to evaluate the potential of using employment-intensive technology in the rehabilitation of feeder roads as a means of generating employment and combating poverty. The study concentrates on the economic aspects rather than technical ones, since it is assumed that most rehabilitation work on feeder roads can be carried out by labour as well as by the use of heavy machinery. The central hypothesis of the study is that labour-based approaches are viable and offer high employment potential, as well as greater indirect benefits to the national economy than the conventional, equipment-based technology. In order to test this hypothesis, empirical evidence from feeder roads rehabilitation projects carried out in Uganda between 1993 and 1997 was compared.

The hypothesis was confirmed at several levels. The main conclusions indicate that a switch towards more labour-based methods could generate very significant benefits for the poor in the form of employment opportunities, and for the country in terms of GDP and foreign exchange savings:

- Labour-based methods are cheaper than equipment-based methods: in direct financial terms they are 18% cheaper for full rehabilitation of feeder roads and 50% cheaper for spot rehabilitation
- In economic terms, labour-based methods are even more advantageous: 38% cheaper for full rehabilitation and 60% for spot rehabilitation
- In terms of costs, labour-based works are competitive as long as the unskilled daily wage does not exceed US\$4; the current rate in rural areas is US\$1.2
- The employment generation effect is much higher for labour-based than for equipment-based work: in the labour-based projects studied the proportion of the cost spent on wages, mostly for the unskilled, ranged between 44% and 60%, against 3% - 8% in equipment-based works.
- The macro-economic model showed that the indirect effects were even greater than the direct effects; for each job directly created another 2 jobs are generated elsewhere in the economy through a multiplier effect.
- An investment of US\$23 million in feeder roads rehabilitation would generate 107,000 jobs (directly and indirectly) if carried out with labour as against 36,000 jobs if carried out with equipment (the GOU current investment in feeder roads is estimated at Ushs 30 billion per annum)

- Due to the savings in foreign exchange from not having to import heavy equipment from abroad, the fiscal deficit of the investment would be 37% less with labour-based methods than with equipment.

The Ugandan labour market grows by at least 300,000 young people each year. With the formal sector being able to absorb less than 100,000 of them, the study concludes that there is a strong case for making the wider application of labour-based methods in infrastructure works a dynamic element in a strategy for employment creation and poverty eradication.

Summary of the Report

1. The Ugandan Economy has registered impressive success in the recent years achieving one of the highest economic growth rates in the sub-region. The impressive economic performance has however not been matched with positive social indicators. The high level of poverty indices and massive under employment indicate that a very large part of the population is yet to benefit from the country's economic recovery.
2. The under-employment – in reality a poverty problem – in Uganda is even more serious than it appears to be. The number of under/unemployed people is estimated at about 3.8 million. The growth in the labour force is at least 300,000 per year, out of which only 100,000 people are absorbed, mostly in the agricultural sector.
3. Key areas to address in reducing the incidence of poverty are contained in the country's Poverty Eradication Action Plan. These include, among others: increasing wage-employment and income generating activities as a way of stimulating local demand and production.
4. Accordingly, labour-based methods and less use of heavy equipment are considered as the best option for reconstruction and maintenance of badly needed infrastructure but also to provide productive employment.
5. A mere presentation of the idea of application of more labour-based methods is not sufficient to make the methodology attractive. However correct the arguments for it may be in theoretical terms, planners, project evaluators, engineers, politicians and the intended beneficiaries themselves need significant evidence on which to base their day to day decisions.
6. This report describes a comparative study of the use of labour-based and equipment-based methods for feeder road rehabilitation in Uganda. It was carried out as part of the Labour-Based Policy Promotion Initiatives and the broader context of poverty reduction through employment creation.

7. The study examined available data from various feeder road programmes carried out in Uganda between 1993-1997. Some of these programmes used labour-based methods and some equipment-based methods. The standard of the road works carried out was broadly similar, although some programmes involved full rehabilitation and others spot rehabilitation.
8. When financial costs were compared, the labour-based methods were found on average to be 18% cheaper than equipment-based methods for full rehabilitation. The cost advantage of labour-based methods was even greater for spot rehabilitation, some up to 50%.
9. An economic cost comparison was also carried out, costs exclusive of taxes were compared. Wages for labour were shadow priced to more accurately reflect their resource value to the economy. Based on available data for the rural sector in Uganda, a ratio of shadow price to market price of 0.54 was used. The results indicate an even greater cost advantage in favour of labour-based methods. The average cost of full rehabilitation by labour-based methods was found to be 38% cheaper than equipment-based methods. The figure for spot rehabilitation was 60% cheaper for labour-based methods.
10. The “break-even” wage rate between labour based methods and equipment-based methods was calculated at US\$4 per day. This is the maximum limit to which wages can be raised before labour-based methods become financially or economically uncompetitive compared to the equipment-based approach. This implies that it would still be beneficial to use labour-based methods up to a daily wage rate of US\$4 for unskilled workers. The current average wage rate is US\$1.2 in rural areas.
11. Finally a comparison of the macro-economic impact of using the two alternative methods was carried out. A simple macro-economic model was used to estimate the direct and indirect effect of GDP, household incomes, government revenue, budget deficit, trade balance, and employment creation.
12. Considering both direct and indirect effects, labour-based methods were found to generate more income to households, increase GDP faster than equipment-based methods, and have a stronger stimulus on local private investment. The employment potential is also much greater.
13. There are cases where equipment-based methods are suitable and they should not be replaced in such instances. But also there is a huge potential for increasing the scope of using labour-based methods such as in rural feeder roadwork. Therefore, where the financial and economic benefits of using labour-based methods are higher than equipment, labour-based methods should be used as an alternative to equipment.

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14. The recommendations of the study for increasing the scope for the use of labour-based methods in feeder roads include:
- Partnership between government and private sectors to ease participation of small local contractors in public sector works.
 - Extension of project evaluation criteria to include employment creation potential, shadow pricing of labour, and assessment of the indirect costs and benefits of public investments.
 - Removal of existing bias in conditions of Tender and Contract provisions which favour equipment-intensive contractors.
 - Promote the increased use of subcontracting to provide more work opportunities for small, local contractors.
 - Ensure that feasibility studies and designs give due consideration to the use of labour-based methods as well as equipment-based methods.
 - Relax tight construction time constraints where possible. The longer duration sometimes inherent in the use of labour-based methods can be more than compensated for by the greater benefits and faster mobilisation times.
 - Change attitudes to labour-based methods through the inclusion of the concepts of appropriate technology in the formal training of civil engineers.

Source: Taylor, G. and Bekabye, M. (1999). An opportunity for employment creation, labour-based technology in roadworks: the macro-economic dimension: SETP No.6