

# EMPLOYMENT CREATION THROUGH THE CONSTRUCTION AND MAINTENANCE OF PUBLIC INFRASTRUCTURE IN SOUTH AFRICA THROUGH THE USE OF LABOUR-INTENSIVE METHODS: EXPERIENCES AND PROBLEMS

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## ABSTRACT

History has shown that labour-based methods of work have long been used in creating remarkable infrastructure works. Labour-intensive programmes generate more direct and indirect local employment opportunities and income by using locally available inputs (materials, simple tools and local labour) and thus creating a greater demand for local products and services than do high-technology programmes reliant on imported technology and equipment. Investment in infrastructure has a huge potential to redress the high unemployment and poverty levels in South Africa and also to correct the skill deficits in disadvantaged communities. From a theoretical perspective supported by experience elsewhere in Africa, there are reasons for considering that properly formulated employment creation programmes based on the use of labour-intensive methods could be established to construct and maintain the required physical infrastructure, thus creating employment, skills and institutional capacities. The paper looks at the experiences, problems and outlines the potential contribution of employment creation programmes in alleviating the unemployment problem in other African countries through the construction and maintenance of public infrastructure through the use of labour-intensive methods. The paper then describes the problems and experiences that have been encountered in South Africa in relation to employment creation through the construction and maintenance of public infrastructure. The paper closes with some recommendations for the future.

## 1. INTRODUCTION

History has shown that labour-intensive methods of work have long been used in creating remarkable infrastructure works. Labour-intensive programmes generate more direct and indirect local employment opportunities and income by using locally available inputs (materials, simple tools and local labour) and thus creating a greater demand for local products and services than do high-technology programmes reliant on imported technology and equipment. Investment in infrastructure has a huge potential to redress the high unemployment and poverty levels in South Africa and also to correct the skill deficits in disadvantaged communities. Commitment to alleviation of poverty has become very high on the government agenda and will stay one of the focal points of government. This is motivated by the fact that, currently around 24% of the population lives on less than \$1 a day, below the poverty line defined by the World Bank (World Bank, 1994). The levels of unemployment have been rising steadily over the years. The level of unemployment was 7% in 1980, 18% in 1991 (McCutcheon, 1995) and 28% in 2003 (Statistics South Africa,

2003).

Over the past 25 years several projects have been initiated in South Africa to counter unemployment and poverty (Thwala, 2001). It is envisaged that there will be others in the future. From a theoretical perspective supported by experience elsewhere in Africa, there are reasons for considering that properly formulated employment creation programmes based on the use of labour-intensive methods could be established to construct and maintain the required physical infrastructure, thus creating employment, skills and institutional capacities.

The paper looks at the experiences, problems and outlines the potential contribution of employment creation programmes in alleviating the unemployment problem in other African countries through the construction and maintenance of public infrastructure through the use of labour-intensive methods. The paper then describes the problems and experiences that have been encountered in South Africa in relation to employment creation through the construction and maintenance of public infrastructure. The paper closes with some recommendations for the future.

## **2. PUBLIC INFRASTRUCTURE PROGRAMMES AND EMPLOYMENT CREATION**

Public works programmes have a long history in the industrialised countries as an economic-policy tool, both as a fiscal measure to expand or contract public spending in periods of unbalanced domestic demand as well as a short-term measure to alleviate unemployment. In order to alleviate poverty and generate employment during the construction and maintenance of infrastructure projects, attempts must be made to encourage the use of labour-intensive methods. According to Bentall (1999:219) “labour-intensive approach” is defined as an approach where labour is the dominant resource for carrying out works, and where the share of the total project cost spent on labour is high (typically 25 – 60%).

The term “labour-intensive approach” indicates that optimal use is made of labour as the predominant resource in infrastructure projects, while ensuring cost-effectiveness and safeguarding quality. This involves a judicious combination of labour and appropriate equipment, which is generally light equipment. It also means ensuring that labour-intensive projects do not degenerate into “make-work” projects, in which cost and quality aspects are ignored. Labour-intensive construction results in the generation of a significant increase in employment opportunities per unit of expenditure by comparison with conventional capital-intensive methods. By ‘significant’ is meant 300% to 600% increases in employment generated per unit of expenditure (McCutcheon, 2002).

## **3. OVERVIEW OF AFRICAN EXPERIENCES THROUGH THE USE OF LABOUR-INTENSIVE APPROACH IN PUBLIC INFRASTRUCTURE PROGRAMMES**

The use of employment-intensive public works programmes is not new to Africa. In the 1960s, three countries in North Africa, namely Morocco, Tunisia and Algeria, experimented with such programmes. Although started initially as emergency relief works programmes, especially in rural areas, it gradually came to acquire a development orientation. The Moroccan experiment, known as National Promotion, was launched in June 1961. This large-scale programme aimed at enhancing opportunities for the rural unemployed in productive works; and slowing down the rural exodus and associated problems with rural populations in the development process. The importance of this programme was confirmed by its mention in the constitution of 7 December, and subsequently by the creation in 1975 of the High Council of National Promotion Plan. According to one estimate, the programme

provided employment for 85 000 workers per month during the peak season and increased GNP by 3, 6 per cent (Jara, 1971).

During the period 1959-1960, a large Tunisian works programme, known as Worksites to Combat Underdevelopment was carried out with 80 per cent of the cost being borne by Tunisian authorities and the remaining 20 per cent in the form of food aid from the United States. The employment created was equivalent to an annual average of 20.7 days per head of Tunisia's labour force (Thwala, 2001). In Algeria, the publicly-sponsored works programme, known as Worksites for Full Employment (Chantiers de plein emploi (CPE)) began operating in 1962 as a relief operation. It soon acquired a strong development orientation to maximise employment in a project of economic interest, namely reforestation work to fight the severe erosion problem. (Jara, 1971). In 1965, the Peoples Worksites Reforestation (Chantiers populaires de reboisement (CPR)) was created as a statutory body attached to the Forestry Division of the Ministry of Agriculture and Agrarian Reform. Since then, the World Food Programme has provided assistance and the scope of projects has been increased to include land reclamation and other infrastructural works.

A few countries have tried to create, through employment-intensive infrastructural works, relatively small 'functional economic areas' in the countryside in an attempt to stem rural-urban migration and retain more people on the land. An example is the Djoliba pilot project in Mali for converting a swollen rural village into an agro-urban community, which calls for several layers of investment in infrastructure. This project was to test the feasibility of the establishment of some 150 rural centres that would service Mali's more than 10 000 villages (Thwala, 2001). The Volta River Settlement Programme of Ghana, involving the creation of network of rural towns and access roads, is another example of rural spatial planning. Three times as many workers were employed in these resettlement preparations than were involved in building the Volta dam, showing the employment-generating potential of employment-intensive infrastructural investment.

In Kenya, over 12 000 kilometres of rural access roads have been constructed and over 80 000 man-years of employment have been created (McCutcheon, 1993). The Kenyan Rural Access Roads Programme is the overall responsibility of the Ministry of Transport and Communications but operates within the national District Focus policy which gives great autonomy to the local level. According to McCutcheon (1993) the methods have been considered so successful that they have been introduced in the secondary roads network (the Minor Roads Programme). In Botswana a national programme of labour-intensive road construction units has been set up within District Councils which are semi-autonomous bodies under the overall responsibility of the Ministry of Local Governments and Lands. This programme has resulted in the creation of over 3 000 jobs (total employment within the public sector is only 20 000) and the construction and upgrading of nearly 2 000 km of road. (McCutcheon, 1995).

Thus, within different institutional and organisational frameworks, a wide range of techniques of labour-intensive road construction and maintenance has been extensively tried and tested over the past 25 years. Despite their valuable contribution to employment-generation, many of these earlier experiments in employment-intensive public works in Africa suffered from one or more of the following short-comings (Barker, 1986; Abedian and Standish, 1986; UNDP and ILO, 1987, Ligthelm and Van Niekerk, 1986, McCutcheon, 1990, 1994, 2001; McCutcheon and Taylor-Parkins, 2003; and Thwala, 2001):

- The ad hoc nature of schemes, lacking spatial focus and often without any links to national rural development and infrastructural planning systems.

- Makeshift administrative arrangements and failure to inject sufficient managerial and engineering skills and technical competence into project selection and execution, as well as choice of technology, resulting in poor project planning, programming and manpower management.
- Lack of balance between centralisation and effective involvement of local administrations and popular bodies in crucial programme decisions, planning and implementation.
- Failure to adjust programme operation and intensity to seasonal labour demand for agricultural operations.
- Lack of precision about target groups and programming on the basis of inadequate information about beneficiary groups.
- Lack of adequate and sustained political commitment and allocation of public funds for the programmes.
- Inadequate post-project maintenance arrangements.
- Inadequate emphasis on, and arrangements for, reporting cost-benefit studies and general performance evaluation.

#### **4. PUBLIC WORKS INFRASTRUCTURE AND MAINTENANCE IN SOUTH AFRICA: EXPERIENCES, PROBLEMS AND PROSPECTS**

The Government of National Unity initiated the National Public Works Programme (NPWP) after 1994 elections. In essence the NPWP consists of a process of labour-intensification and increased training and capacity building in the provision of infrastructure. The NPWP is a key component of the Government's Reconstruction and Development Programme (McCutcheon, 1995). The NPWP has been shifted towards a Community Based Public Works Programme (CBPWP), which places more emphasis upon smaller companies and regulatory bodies than a national programme. Prior to the NPWP another initiative was the set up of the Framework Agreement, this was later incorporated into NPWP. The Framework Agreement is a social compact between Government, labour, the construction industry and the civics (McCutcheon, 1999). The main item in the Agreement is first, where industry commits itself, to maximise the use of labour-intensive systems of construction within public works programmes, with due regard to economics.

The seminar was very useful in the sense that it provided a good background to the subject. Based on Abedian and Standish's report for the Human Sciences Research Council (Abedian and Standish, 1986), the Trade Union Research Project reported that the most prevalent causes of failure of public works programmes that they were:

- seldom scaled to the magnitude of national manpower needs;
- often introduced in a fragmented and unsystematic way;
- implemented using inappropriate technology;
- introduced on an *ad hoc* basis and were not linked to an overall development policy;
- lacking administrative back-up;
- lacking adequate post project maintenance; and
- almost entirely dependent upon the government's commitment to the programme: if there was a lack of commitment this would be reflected in a lack of funding.

By contrast, experience in South Africa has been not impressive. To date in South Africa projects and programmes with similar objectives have not been as effective. Over the past 15 years, billions of Rands have been spent on projects and so-called programmes with stated objectives of both creating employment and providing physical infrastructure such as roads, water supply and sanitation (Thwala, 2001). To these objectives, community participation and entrepreneurial development have been added. Based on both the

international and local experiences, the problems of South African large-scale public works programmes prior to 1990 can be attributed to the following factors, which must be avoided in order for large-scale projects to be successful in South Africa:

- There has been a lack of clear objectives linking the short and long-term visions of the programme.
- There were no pilot projects with extensive training programmes or lead-in time to allow for proper planning at a national scale. This should have allowed sufficient time to develop the necessary technology, establish training programmes and develop both the institutional and the individual capacities.
- The programmes have seldom been scaled to the magnitude of national manpower needs. Very often they have been introduced in an unsystematic and fragmentary style. This often led to technical hastiness, which was compounded by incompetence and inappropriate technology selection.
- There have been organisational infirmities and inappropriate administrative arrangements.
- There has been a lack of political and government commitment to the projects and programmes.
- There has been an imbalance between centralisation for higher level co-ordination and decentralisation for local decision-making and execution of works.
- Inadequate post-project maintenance arrangements often undermined the efficacy of the projects. This was largely attributed to the failure to ensure there would be an authority with a sufficient stake in the projects and in their continuing effectiveness (that is lack of community participation and ineffective local government).
- The projects and programmes have been over ambitious. This was a result of the lack of appreciation of the time it takes to build the necessary individual and institutional capacities at various levels.
- There has been a lack of clearly defined and executed training programmes that link medium to a long-term development plan.
- There was no long term development planning.
- Most of these projects and programmes were highly politicised.
- The budget allocations were arbitrary.
- Very little sustainable employment was created.
- The assets constructed were not cost-effective, of doubtful value and ill-maintained (the results have often disappeared).

## **5. RECOMMENDATIONS AND CONCLUSION**

In the early phases the emphasis was upon the creation of employment opportunities for unskilled labour. Over the past decade it has become clear that in order to use labour productively it is necessary to train a skilled supervisor who is technically and organisationally competent and thus able to direct and motivate the workers under his or her control. (In Kenya the ratio of labourers to site-supervisors is about 70 to 1; in Botswana it is about 20 to 1) (McCutcheon and Marshall, 1998). Equally, for a successful national programme it is necessary to educate engineers about employment creation and train them in the specific skills required in planning, control and evaluation of large labour-intensive programmes (to date the ratio is about one engineer per 300 labourers). In time, an experienced technician or technologist should be able to do this level of work releasing the engineer for engineering and planning.

McCutcheon (1994) considers the following points as the main reasons for the success of the programmes in Kenya and Botswana:

- Good preliminary analytical work and thorough attention to technical aspects throughout the work;
- Pilot projects which tested all aspects (technical, administrative, organisational, institutional, wage rates and conditions of employment, training, planning, socio-economic \ community) and acted as the embryonic training programme for future work;
- Strong institutions with good management systems: yet flexible;
- Extensive training;
- Long-term political support;
- Long-term financial support.

The Public Works Infrastructure in South Africa should change as the policy environment changes, from relief, emergency to a long-term structured employment-generation programme. The approach should link economic growth, employment and investment policies. The Public Works Infrastructure projects must aim to ensure that infrastructure is planned around local needs rather than vice-versa. The Government needs to establish a long term programme on employment intensive construction. This cannot be established overnight, and will take some years to grow into a national programme.

Public spending on infrastructure construction and maintenance can be a valuable policy tool to provide economic stimulus during recessions. As long as quality and cost-effectiveness are not compromised, labour-intensive approaches to infrastructure development can also be an important instrument for economic growth (World Bank, 1994) but when public spending on infrastructure is not wisely deployed, it can crowd out more productive investment in other sectors.

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