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Urban Renewal through Labor-Intensive Construction Technology in South Africa: Problems and Potentials

WELLINGTON DIDIBHUKU THWALA

Abstract: In South Africa, the levels of unemployment and poverty are extremely high and two of South Africa's most pressing problems. There is also a widely acknowledged need for housing and municipal infrastructure (water supply, sewerage, streets, stormwater drainage, electricity, refuse collection). There is a need for physical infrastructure in both urban and rural areas. The infrastructure backlog is aggravated by the apparent lack of capacity and skills at institutional, community and individual levels. Urban renewal and inner city regeneration projects are a priority for the South African government which have invested in several areas to stem the tide of decline in its nine major cities. Commitment to alleviation of poverty has become very high on the government agenda and will stay one of the focal points of government. A labor-intensive approach can be used to maximise the number of people employed in urban renewal projects and this can go a long way in alleviating poverty and reducing the more than 28% unemployment rate in South Africa. This paper will look at some past African experiences in assessing the problems and potential of a labor-intensive approach in urban renewal projects. The paper will then outline the contribution which labor-intensive approach could make to alleviate the unemployment and in reducing poverty in South African cities. Finally, the paper closes with some recommendations for the future.

INTRODUCTION

In South Africa, unemployment and poverty are extremely high and amongst South Africa's most pressing problems.¹ Unemployment has been rising steadily over the years. The level of unemployment was 7% in 1980, 18% in 1991, and 28% in 2003.² Commitment to alleviation of poverty has become very high on the government agenda and will remain one of the focal points of government. Currently around 24% of the population lives on less than \$1 a day, below the poverty line defined by the World Bank.³ In addition to high levels of unemployment, there is also a widely acknowledged need for housing and municipal infrastructure (water supply, sewerage, streets, stormwater drainage, electricity, refuse collection). This lack of infrastructure is a problem in both urban and rural areas. Infrastructure backlog is aggravated by the apparent lack of capacity and skills at institutional, community and individual levels. According to the World Bank, infrastructure can deliver major benefits in economic growth, poverty alleviation, and environmental sustainability - but only when it provides efficient services that respond to effective demand.⁴

Over the past 25 years, several projects have been initiated in South Africa to counter unemployment and poverty.⁵ It is envisaged that there will be others in the future. Properly formulated employment creation programs based on the use of employment-intensive methods could be established to construct and maintain the required physical infrastructure, thus creating employment, skills, and institutional capacities. The Urban Renewal Infrastructure Projects have the potential to redress the disproportionately high unemployment levels in South Africa and also to correct the skills deficit in

Wellington Didibhuku Thwala is currently a Senior Lecturer in the Department of Construction Management and Quantity Surveying at the University of Johannesburg. He is a registered professional Construction Project Manager, Member of the Chartered Institute of Building (MCIQB), and Corporate Member of the South African Planning Institute. He has worked extensively with various development organisations in Rural and Urban Research Projects and is currently completing his PhD at the University of the Witwatersrand.

disadvantaged communities. These may be achieved through an efficient institutional set up, effective community participation, and construction technology that is pragmatic and innovative in nature.

This paper will look at some past African experiences with labor-intensive urban renewal projects. The paper will then outline the problems and potential contribution which labor-intensive approach could make to alleviate unemployment and reduce poverty in South African cities. Finally, the paper closes with some recommendations for the future.

INFRASTRUCTURE PROGRAMS AND EMPLOYMENT CREATION

Public works programs have a long history in 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 recent years, they have formed important components of special job-creation schemes launched by many industrialised countries in response to either economic recession or rising unemployment among youth. In contrast to their short-term, anti-cyclical role in industrialised countries, labor-intensive public works programs have acquired far more significance in developing countries where they are now frequently resorted to for one or more purposes, such as the following outlined by Jara as long ago as 1971:

- 1) To deal with emergency situations arising out of natural calamities such as drought, floods and earthquakes;
- 2) To serve as a means for harnessing the potential resource of surplus manpower and for evening out seasonal fluctuations in employment and incomes;
- 3) To achieve permanent drought-proofing of drought-prone areas through systematic soil-conservation and water-development measures;
- 4) To attend to long overdue tasks of erosion control and other land-development works;
- 5) To promote systematic development of essential infrastructure facilities integral to rural and urban spatial planning.⁶

These major programs generally comprise a wide variety of minor and intrinsically labor-intensive works such as soil conservation and reforestation; small and medium-scale irrigation (for example, canals, field channels and dams); drainage; flood-protection and land-development schemes; rural access and crop-extraction roads; and basic amenities such as inexpensive housing, drinking-water-supply projects, school buildings, and health and community centers. They are often undertaken with the involvement of local communities and institutions in their identification, formulation and supervision. They utilise predominantly public funds but sometimes receive supplementary support in the form of local community contributions in cash and materials, as well as food aid provided by bilateral donors or multilateral aid agencies such as the World Food Program.

By sustaining demand for large masses of purely unskilled labor, these rural works programs indeed provide an important contribution towards a simultaneous solution to the problems of rural employment, income distribution, and growth. Their direct and indirect employment and income effects apart, the infrastructure they create supports agriculture and helps to preserve the ecological balance of land and forest areas which have long suffered excessive exploitation; they accelerate the integration of monetized and non-monetized sectors and help to modify the prevailing spatial distribution pattern of rural settlements so as to facilitate the more economical provision of common facilities and growth of viable rural communities. Finally, they meet some of the more elementary basic needs of the poor.⁷

The incomes that such infrastructure works generate can help to create new demands for manufactured consumer goods which, in turn, can make import-substitution industries viable. The true economic cost of such manufactured consumer goods, moreover, can be kept very low if underutilized manufacturing capacities - a phenomenon not uncommon in some of the developing countries - can be more fully utilized.

LABOR-INTENSIVE APPROACH

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 labor-intensive methods. According to Bentall "labor-intensive approach" is defined as an approach where labor is the dominant resource for carrying out works, and where the share of the total project cost spent on labor is high (typically 25 – 60%).⁸ The term "labor-intensive approach" indicates that optimal use is made of labor as the predominant resource in infrastructure projects, while ensuring cost-effectiveness and safeguarding quality. This involves a judicious combination of labor and appropriate equipment, which is generally

light equipment. It also means ensuring that labor-intensive projects do not degenerate into “make-work” projects, in which cost and quality aspects are ignored. Labor-intensive construction results in the generation of a significant increase (300 – 600%) in employment opportunities per unit of expenditure by comparison with conventional capital-intensive methods.⁹ Appropriate levels of other resources should be used in order to ensure competitive and quality results.

OVERVIEW OF AFRICAN EXPERIENCES WITH LABOR-INTENSIVE INFRASTRUCTURE PROGRAMS

The use of labor or employment-intensive public works programs is not new to Africa. In the 1960s, Morocco, Tunisia, and Algeria, experimented with such programs. Although started initially as emergency relief works programs, especially in rural areas, these gradually came to acquire a development orientation. The Moroccan experiment, known as National Promotion, was launched in June 1961. This large-scale program aimed at enhancing opportunities for the rural unemployed in productive works thus slowing down the rural exodus and addressing associated problems with rural populations in the development process. The importance of this program 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 program provided employment for 85,000 workers per month during the peak season and increased GNP by 3,6 percent.¹⁰

During 1959-1960, a large Tunisian works program, known as *Worksites to Combat Underdevelopment*, was carried out with 80 percent of the cost being borne by Tunisian authorities and the remaining 20 percent 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 labor force.¹¹ In Algeria, the publicly-sponsored works program, known as *Worksites for Full Employment* (*Chantiers de plein emploi* or CPE) began in 1962 as a relief operation. It soon acquired a strong development orientation to maximize employment in a project of economic interest, namely reforestation work to fight the severe erosion problem.¹² In 1965, the *Peoples Worksites Reforestation* (*Chantiers populaires de reboisement* or 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 Program has provided assistance and the scope of projects have been increased to include land reclamation and other infrastructural works.

A variety of employment-intensive works programs in other countries consisted of limited experiments with local self-help projects. In such cases, the projects were proposed by local communities and the state made its technical assistance conditional on execution by the local population. The intention was to get the work done as cheaply as possible, but more especially to ensure that the people viewed the projects as their own and so paid more attention to their maintenance. 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 Mali’s *Djoliba* pilot project for converting a swollen rural village into an agro-urban community, calling for several layers of investment in infrastructure. This project was to test the feasibility of the establishment of some 150 rural centers that would service Mali’s more than 10,000 villages.¹³ Ghana’s *Volta River Settlement Program* 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.¹⁴ The *Kenyan Rural Access Roads Program* 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 the methods have been considered so successful that they have been introduced in the secondary roads network (the *Minor Roads Program*).¹⁵ In Botswana a national program of labor-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 program 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.¹⁶ In Malawi, the roads program is part of the Ministry of Works and Supply. Since its inception, over 3,845 kms of district road have been upgraded in 16 of the country’s 24 districts. The *Labor Construction Unit* in Lesotho has been attached to the Ministry of Works since 1977. By 1985, about US \$3,350,000 had been expended on various road construction works.¹⁷

Thus, within different institutional and organisational frameworks, a wide range of labor-intensive road construction and maintenance has been extensively tried and tested over the past 45 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: The ad hoc nature of schemes lacked spatial focus and links to national rural development and infrastructural planning systems. Makeshift administrative arrangements and failure to inject sufficient technical competence into project selection and execution resulted in poor project planning, programming, and manpower management. Lack of balance between centralisation and effective involvement of local administrations produced problems with crucial program decisions, planning and implementation. Planners failed to adjust program operation and intensity to seasonal labor demand for agricultural operations. Programrs lacked precision about target groups and programming occurred on the basis of inadequate information about beneficiary groups. Programs lacked sustained adequate, sustained political commitment, and allocation of public funds. Programs had inadequate maintenance arrangements. Finally, there was inadequate emphasis on reporting cost-benefit studies and general performance evaluation.¹⁸

OVERVIEW OF LABOR-INTENSIVE CONSTRUCTION TECHNOLOGY IN SOUTH AFRICA

The Government of National Unity initiated the National Public Works Program (NPWP) after 1994 elections. In essence, the NPWP consists of a process of labor-intensification through increased training and capacity building in the provision of infrastructure. The NPWP is a key component of the Government's Reconstruction and Development Program.¹⁹ The NPWP has been shifted towards a Community Based Public Works Program (CBPWP), which places more emphasis upon smaller companies and regulatory bodies than a national program. Another initiative, the Framework Agreement, was later incorporated into NPWP. The Framework Agreement was a social compact between Government, labor, the construction industry and the civics.²⁰ The main item in the Agreement was the commitment of industry to maximize the use of labor-intensive systems of construction within public works programs with due regard to economics.

Its main objective was to change the Public Works program from relief, emergency, and "special" public works to a long-term structured labor-intensive program. The approach was to link economic growth, employment, and investment policies. Such programs should aim at ensuring that infrastructure is planned around local needs rather than vice-versa. 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, employment-intensive approaches to infrastructure development can also be an important instrument for economic growth.²¹ When public spending on infrastructure is not wisely deployed, it can crowd out more productive investment in other sectors.

Implementation of well thought-out programs can have an important impact on the development of the economic and social situation in South Africa.²² According to the Department of Public Works, increased investment in physical infrastructure is constrained by public-sector fiscal capacity and the limited ability to mobilise private-sector finance and initiative.²³ There is also lack of public-sector capacity to manage the procurement and service delivery process which has become a growing concern in Government and industry circles. The new Constitution has further complicated the already difficult task of implementing policy, causing delays while new agencies and personnel are established.²⁴ The lack of experience in the delivery of line-function goals and services is undermining the position of the public sector as a knowledgeable and expert client. Ultimately, the inability to manage delivery reflects poorly on the image of Government, undermines its policy objectives, and inhibits the development and transformation of the construction industry.

McCutcheon has set out the implications for South Africa derived from experiences elsewhere in sub-Saharan Africa.²⁵ Firstly, the programs in Kenya, Botswana, Lesotho, Malawi and Ghana demonstrate that good quality, low-cost, low-volume, rural roads may be constructed and maintained by highly employment-intensive methods. Five to seven times more employment was created per unit of expenditure without compromising cost, quality and time. The significant increase was achieved through various factors, in particular: 1) identification of types of work which could incorporate a significant increase in labor per unit of expenditure; 2) investigation of economically efficient methods; 3) application onsite of the principles governing the use of employment-intensive methods.

Secondly, the potential for employment generation on a large scale using employment-intensive methods could be realised through the establishment and expansion of large national programs. The South African Government needs to establish a long term program on employment intensive

construction. This cannot be established overnight, and will take some years to fully grow into a national program. In order to achieve greater success in the long run, a four-phased approach should be adopted (orientation/preparatory work; analysis and design; pilot/ initial training; and expansion of training into a national program) only at a rate at which the training program can produce trained personnel (in particular site supervisors) and institutions can absorb trained personal.²⁶ Thus in an attempt to redress the infrastructural backlog problem and proactively combat the high unemployment facing the country, the Department of Public Works in South Africa should undertake the following activities.

Improving Basic Infrastructure in both Rural and Urban Areas

The improvement of basic infrastructure can be achieved through: 1) Creating employment by orienting investments towards employment-intensive public and community infrastructure in both urban and rural areas; 2) Constructing, rehabilitating and maintaining infrastructure using local labor, local resources and local capacities, thereby maximising employment and income-generation for the poor; 3) Providing technical advisory and capacity-building services for the planning and implementation of different types of employment-intensive infrastructure (roads, irrigation, drainage, soil conservation, water supply, slum upgrading).

Large-scale employment-intensive public works programs are relevant and are urgently required to create new employment opportunities in rural areas where the rate of unemployment continues to increase. To achieve a sustainable improvement in their situation, poor persons require access to remunerative employment and/ or productive resources. Although emergency relief and assistance programs may help poor populations survive in crisis situations, they do little to improve their situation in the longer-term. In South Africa, a much greater contribution can be made to their well-being through investments which provide jobs and basic services, such as roads, water, drains, housing and schools. If the current high rate of unemployment in South Africa continues without being checked, our democracy might not be sustainable. Many workers face declining job prospects in the mining industry. On the other hand, large-scale labor-intensive opportunities exist for deployment of masses of rural workers in long-overdue erosion-control works, rural road works, etc., without which agriculture has stagnated.

Creating Quality Employment

The creation of quality employment can be achieved through: 1) Ensuring respect for fair working conditions and basic labor standards, including equality of treatment, workers' participation, and the prohibition of child labor and forced labor; 2) Promoting participation and empowerment of the working poor by introducing them to local planning, prioritising infrastructure programs, and introducing innovative methods of collective negotiation.

Women are often over-represented among the poorest of the poor. They are also in many cases the sole providers for their children. Nevertheless, women are often not offered remunerative employment. The public works program should give great attention to the inclusion of women in employment-intensive infrastructure works where in the past men have tended to predominate. Women's participation has reached thirty seven percent in programs in Botswana, twenty five percent in Madagascar and up to sixty percent in Lesotho.²⁷

URBAN RENEWAL INFRASTRUCTURE PROGRAMS IN ALEXANDRA, SOUTH AFRICA: EXPERIENCES, PROBLEMS AND PROSPECTS

Urban renewal and inner city regeneration have become serious issues for the South African government which has invested in several structures to stem the tide of decline in its nine major cities. The township of Alexandra was established in 1912 and is close to the centre of Johannesburg. It covers an area of over 800 hectares and its infrastructure was designed for a population of about 70,000. Current population estimates vary widely and have been put at figures ranging from 180,000 to 750,000. There are estimated 34,000 informal houses of which approximately 7,000 are located in "backyards".²⁸ The significant, unplanned population has overloaded the infrastructure such that water pressures are low and sewers frequently block and overflow. Maintenance of such systems is very difficult because the high densities and congested nature of the backyard informal houses makes access for maintenance very difficult or impossible in places.

At the official opening of Parliament in February 2001, the State President announced a seven-year plan to redevelop Greater Alexandra. The estimated budget for the Alexandra Renewal Project is R1, 3

billion over seven years.²⁹ The project is one of the eight original nodes forming part of the Government Integrated Sustainable Rural Development and Urban Renewal Programs. The project is one of the main vehicles through which the Government is implementing its objectives of sustainable development and poverty alleviation. The project was supposed to be labor-intensive so that more people could be employed and at the same time building new infrastructure for the community.

The Alexandra Renewal Project seeks to fundamentally upgrade living conditions and human development potential within Alexandra by: 1) substantially improving livelihoods within Alexandra and wider regional economy; 2) creating a healthy and clean living environment; 3) providing services at an affordable and sustainable level; 4) reducing levels of crime and violence; 5) upgrading existing housing environments and creating additional affordable housing opportunities; 6) dedensification to appropriate land.

The desired outcomes for the Alexandra Renewal Project after the seven year implementation period are: 1) to stimulate income-generating opportunities for the economically active population of Alexandra, so as to reduce unemployment; 2) to provide services that are appropriate and affordable and paid for; 3) to create a safe and secure environment with sufficient policing, criminal justice, and emergency services, so that rates of serious crime are at least 50% below the current levels; 4) to provide and ensure the maintenance of local government services in a manner that is well planned, administered, and accountable to the public; 5) to create a clean living environment that creates a good quality of life for the residents of Alexandra; 6) to provide a choice of sustainable and affordable housing with secure tenure that is well regulated in terms of density and quality; 7) to create a healthy, empowered, self sustaining community with access to integrated, effective social services.

A comparison of the jobs created by the project to date and the potential for job creation in the Alexandra Renewal project showed that only twenty two percent of the potential numbers of jobs were created. The failure to create the full potential number of jobs was due to the failure to apply labor-intensive methods of construction on the projects. The potential for expenditure on labor for each project was calculated by multiplying the potential number of laborers obtained by the different task rates dependent on the level of skill of the laborer. In the case of the South African Government Minimum task rate setting, the following task rates were used: R59.40 (\$10) for unskilled labor, and arbitrary rates of R65 (\$11) for semi-skilled labor and R80.00 (\$13) for skilled labor. The task rate for unskilled labor of R59.40 is the Government minimum wage for Gauteng Province in South Africa.³⁰ Using the Government Minimum task rate setting, the analysis of expenditure shows that the Urban Renewal projects have a potential of 22% of their total project costs going to labor. This expenditure on labor is far below the range of 25 – 45% of the projects costs going to labor that earlier research showed possible.³¹ Considering the potential expenditure on labor using the Government Minimum task rate setting, the projects cannot be considered as labor-intensive projects. Analysis of the project costs using the Government Minimum task rate setting shows that profits and overheads account for 60% of the project costs, showing that the emphasis was not on labor as should have been the case if the projects were labor-intensive.

From an employment creation perspective, the Alexandra Urban Renewal project experience has not been impressive. To date in South Africa, projects with similar objectives have not been as effective. Over the past 25 years, billions of Rands have been spent on projects and so-called programs with stated objectives of both creating employment and providing physical infrastructure such as roads, water supply and sanitation.³² To these objectives, community participation and entrepreneurial development have been added. Based on both the international and local experiences, the problems of the Alexandra Urban Renewal Projects through labor-intensive methods had been attributed to the following factors, which must be avoided in order for future projects to be successful in South Africa: 1) a lack of clear objectives linking the short and long-term visions of the program; 2) no pilot projects with extensive training programs or lead-in time to allow for proper planning at a national scale; 3) projects have seldom been scaled to the magnitude of national manpower needs and often introduced in an unsystematic or fragmentary style; 4) frequent organizational infirmities and inappropriate administrative arrangements; 5) an imbalance between centralization for higher level co-ordination and decentralization for local decision-making and execution of works; 6) inadequate post-project maintenance arrangements often undermined the efficacy of the projects; 7) projects have been over ambitious; 8) a lack of clearly defined and executed training programs that link medium to a long-term development plan; 9) very little sustainable employment creation; 10) expenditure on development failed to reach target groups to the extent envisaged; 11) individual skills were not improved.

RECOMMENDATIONS AND CONCLUSION

In the early phases, the emphasis was upon the creation of employment opportunities for unskilled labor. Over the past decade it has become clear that in order to use labor 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 laborers to site-supervisors is about 70 to 1; in Botswana it is about 20 to 1.³³ Equally, for a successful national program it is necessary to educate engineers about employment creation and train them in the specific skills required in planning, control and evaluation of large labor-intensive programs. In time, an experienced technician should be able to do this level of work releasing the engineer for engineering and planning.

The following are the main reasons for the success of the programs in Kenya and Botswana: 1) good preliminary analytical work and thorough attention to technical aspects throughout the work; 2) 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 program for future work; 3) strongly yet flexible institutions with good management systems; 4) extensive training; 5) long-term political support; 6) long-term financial support; 7) good long-term coordination and objective external advice; 8) consensus with the regard to wage rates, conditions of employment, role and responsibilities of the community.³⁴

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

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, labor-intensive approaches to infrastructure development can also be an important instrument for economic growth but when public spending on infrastructure is not wisely deployed, it can crowd out more productive investment in other sectors.

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