

An Overview Of The Performance And Potential Of Public Works Programmes In South Africa

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THE CHALLENGE OF GROWTH AND POVERTY: THE SOUTH AFRICAN ECONOMY SINCE DEMOCRACY.



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EXECUTIVE SUMMARY

The South African economy is unable to deliver employment for a growing number of would-be workers, especially among the unskilled. There is a need for state intervention to address this failure, and public works have been identified in the national policy discourse as a central policy response, to address both the problem of unemployment, and also a range of social development and economic objectives. This paper offers a critical review of the evidence base available to policy makers on public works, and an assessment of the performance of public works in South Africa since 1996, in response to the question of whether public works can offer a significant response to the South African employment crisis.

With the data currently available it is not possible to show that the anticipated broader benefits of public works programmes in terms of increased livelihoods, reduced poverty, the creation of sustainable employment, community empowerment, local multipliers, or growth as outlined in the policy rhetoric, have been achieved. It is only possible to assess performance in terms of the scale of employment created. By this criterion, success has been limited. The Community Based Public Works Programme, the major national employment creation instrument, created between 13,000 and 33,000 jobs per annum between 1996 and 2001, representing an estimated 1.5 million to 4.5 million workdays per annum, or 0.2 to 0.5% of total unemployed labour days. The scale of employment creation performance has been limited, due to i) the scale of budgetary allocations, (less than one percent of the annual social security and welfare budget), and ii) institutional constraints, relating to programme conceptualisation and design, and project management capacity, in both the public and private sectors. The multiplicity of programme objectives has also contributed to a lack of focus which has reduced the amount of employment generated.

In this paper simple models are used to estimate the impact and fiscal feasibility of 'expanded' public works programmes using the limited data available. The employment creation potential of a R1.2 billion investment in labour intensive

construction over three years, is found to represent a maximum of 0.5% of unemployed workdays per annum. The cost to the fiscus of an expanded public works programme able to offer part time employment to a significant number of workers (3.2 million) is found to be between R17 and R28 billion per annum.

Irrespective of the fiscal feasibility of this level of expenditure, such a programme is unlikely to meet the wider set of sustainable social development and economic objectives set out in the policy discourse, unless a series of institutional issues relating to project design and implementation are resolved. The limited duration of employment offered under public works may mean that the wage transfer functions as short term income shock, which is consumed, rather than leading to sustained benefits or livelihoods improvements for participants, a problem which is compounded by lack of access to microfinance. Targeting and rationing problems may be leading to a sub-optimal allocation of employment for the intended beneficiary groups, and the selection of appropriate assets for construction and rehabilitation is hindered by the lack of strategic development plans at local level. Limited project management and social development capacity in the public and private sectors is also serving to constrain performance.

In the light of this analysis it is concluded that while public works programmes are a valid component of a social protection policy, an expanded public works programme *sui generis* is unlikely to have a significant impact on the problems of poverty and labour market access, or their associate, growth, unless the proportion of government expenditure allocated to the programme is substantially increased, and the associated institutional constraints are addressed.

1 INTRODUCTION

The South African economy is unable to deliver employment for a growing number of would-be workers, especially among the unskilled, and there is a need for state intervention to address this failure and its consequences. The dominant economic paradigm in South Africa places ideological constraints on the range of policy options under consideration, leading to the favouring of public works programmes over other solutions such as direct transfers (eg a basic income grant). Given this context, it is critical to assess the potential of public works, and their adequacy as an instrument for addressing the problems of poverty and unemployment. This paper offers a critical review of the evidence base available to policy makers on Public Works, and an assessment of the performance of public works in South Africa since 1996, in response to the question of whether public works can offer a significant response to the South African employment crisis.

1.1 Trends in unemployment

Structural poverty and unemployment are persistent and growing problems in contemporary South Africa. Unemployment continues to rise, standing at 4.8 million in September 2002, or 30.5%, by the official definition, (compared to a broad rate of 41.8%), and Lewis (2001) has estimated that even in the most positive growth scenario, after ten years with projected GDP growth of between 4 and 5% per annum, broad unemployment among the semi and unskilled would not fall significantly below 30 per cent (Lewis 2001, p55). The central challenge is clear; the structure of the South African economy is such that unemployment will not be significantly reduced in the coming decades without major state intervention. This paper focuses on the issue of state intervention to promote employment creation through public works and labour intensification programmes.

Whether conceptualised as a public good¹, as a requisite for enhanced growth and investment from a purely functional macroeconomic perspective, or as an essentially moral imperative *sui generis*, there is a need to promote increased access to

¹Reducing the negative externalities associated with extreme poverty and inequality (Black *et al*, 1999 p 50)

employment, particularly in the light of the strength of the link between unemployment and poverty in South Africa².

1.2 Assumptions underlying public works programme impact

In theory public works programmes achieve social development and economic objectives by creating employment through the creation of infrastructure, providing services or improving access to them, stimulating informal and formal sector economic activity and bringing resources into decapitalised areas. Potentially then public works are an ideal instrument for deploying in the context of the South Africa of the 21st century, and consequently they have enjoyed considerable policy prominence since 1994. Public works programmes have been ascribed increasingly ambitious objectives in recent years, in terms of both scale and range of impacts. However, economic analysis to date, both in South Africa and internationally has focused almost exclusively on the evaluation of public works programmes in terms of the efficiency of transfers under public works programmes, rather than assessing the efficacy of the transfers in terms of direct or indirect microeconomic impact on participating households, and the ability of such programmes to achieve the anticipated impacts in the social, economic and labour market spheres (see for example Adato and Haddad 2002).

Likewise the nexus between the poor and the public works programmes is often taken for granted, and in the case where a transfer is delivered efficiently, there is frequently an underlying assumption that if wages are correctly set, the transfer will reach the poor, despite the fact that there is little data or analysis exploring targeting efficiency in terms of whether programme participants are the poorest, or even the poor. Equally, the positive impacts of non-wage benefits to the poor deriving, for example, from the asset created under the programme, or improved labour market access as a result of experience and training received in public works programmes, are often assumed as an article of faith, rather than on the basis of empirical data.

In South Africa assumptions regarding the potential impact of public works programmes risk undermining evidence based and realistic policy making, and the development of

² This linkage is attested by Leibbrandt and Woolard (2001) and is largely due to the high reliance on wage income and the underdevelopment of the informal and subsistence sectors in South Africa, compared to other developing countries.

distorted policy objectives and expectations related to public works programming. This paper explores the reality of public works programmes in South Africa, in terms of scale of job creation to date, the fiscal implications of a large scale 'extended' programme, the potential of such a programme to absorb unemployment, and the extent to which existing programmes meet their objectives. It then goes on to discuss some of the key policy and implementational issues which the above debate provokes, with particular reference to the need for appropriate institutions and social development considerations if public works are to have a sustained and large scale impact on livelihoods.

2 The Economic AND POLICY Rationale for Public Works Programmes

Bassi and Ashenfelter (1997) have identified three primary economic rationales for government intervention in the labour market; i) the reduction of frictional unemployment, ii) the reduction of cyclical unemployment which would operate on and off in response to fluctuations in the unemployment rate, and iii) the alleviation of structural unemployment which is involuntary and persists over the course of the business cycle. In the case of South Africa it is clearly the latter which is the core rationale for intervention. However in South Africa public works programme objectives also include a range of social development objectives which represent a response to the distortions resulting from apartheid labour market policies (and related policies including education, resource distribution etc). The assertion is frequently made that public works programmes will promote livelihoods by enhancing labour market access, reducing poverty and contributing to economic growth.

The heavy reliance placed on public works to deliver significant responses to the critical challenges of poverty, unemployment and growth in the current South African anti-poverty and employment policy discourse invites an exploration of the existing evidence base, in order to inform a realistic assessment of their potential performance in relation to the ambitious targets set out above. The evidence available in South Africa and internationally suggests that in and of themselves, public works programmes do not necessarily draw participants into the labour market, but offer a temporary sojourn; they do not necessarily move participants out of poverty, but offer a temporary respite, reducing the depth of poverty during the period of employment, and they do not offer sustainable livelihoods without a range of complementary social development interventions. Furthermore it would be incorrect to assume that assets created under public works schemes contribute directly or indirectly to growth and poverty reduction at

either local or national levels, unless the assets created or maintained through public works are strategically selected for their benefits to the poor and/or the wider economy, and their construction is given adequate technical management to ensure they are of acceptable and sustainable quality. Moreover the performance of public works programmes in terms of their various social and economic objectives is highly contingent on the institutional context in which they are executed, and the social development process in which they are embedded. Without adequacy in either the institutional or social development context it is unlikely that public works programmes will meet the objectives set out above.

This paper constitutes a review of some of the evidence for public works programming in South Africa. Prior to an examination of the key determinants of public works performance in relation to poverty reduction and livelihoods promotion, the objectives of the national public works programme are reviewed, the scale of current operation of the National Community Based Public Works Programme (CBPWP) examined, the likely employment impact of an investment of R1.2billion in labour intensive public works appraised (as outlined in the National Budget, 2003), and the fiscal implications of an 'extended' programme modelled.

3 THE OBJECTIVES OF PUBLIC WORKS PROGRAMMES IN SOUTH AFRICA

The clarification and prioritisation of the objectives of a public works programme is critical for successful implementation. These vary according to a range of factors related to the nature of the labour market crisis the programme is designed to alleviate (chronic or acute), the intended beneficiary population (universal or targeted), the timescale of the intervention (long or short term)³. All public works programmes however have at their core the joint objectives of poverty alleviation and/or poverty reduction, and asset creation, although the weighting of these components varies according to policy priorities. At their simplest public works programmes alleviate poverty through a transfer to increase household income. This benefits the household in two ways; through the transfer itself, and through the stabilisation effect it induces. Generally this transfer does not move participants out of poverty, but relieves poverty by enabling household consumption smoothing, reducing vulnerability to stochastic shocks, and diminishing the size of the

³ For a discussion of the range of key factors influencing public works design see McCord, 2002, p25.

poverty gap⁴. Even when transfer benefits are small, income stabilisation can pre-empt acute distress, and in such cases the insurance or 'risk benefit' function of a transfer may be as important as its transfer function⁵. Such poverty alleviation oriented programmes are the simplest to manage, creating jobs and offering a financial transfer in return. Poverty reduction programmes are more complex, typically also including micro-finance and/or training components in order to address sustainable livelihoods issues. Public works programmes are not only driven by poverty objectives however, they also address asset creation and maintenance, and differ critically from simple welfare initiatives in this respect. In theory public **WORKS** programmes match unmet demand for infrastructure creation with excess labour supply, a consideration that is particularly relevant in the South African context given the inequitable distribution of infrastructure under the previous dispensation, and the political commitment to widespread asset provision (housing, rural road construction etc).

The South African National Public Works Programme was originally conceptualised as an instrument for asset and employment creation, on the basis of a two pronged strategy; promoting a community based public works programme, and changing the rules governing the provision of infrastructure to increase labour intensity across all government departments with responsibility for infrastructural delivery, (Adato *et al* 1999). This entailed 'the systematic re-orientation of public sector approaches to infrastructure provision' (NEF, 1994), and was supported by the Construction Industry Development Programme, which was charged with the development and dissemination of best practice guidelines for labour-based construction in pursuit of the same goal. The merits of this approach were recognised in GEAR (1996), which argued that 100,000 new jobs would be created each year through labour intensive responses to infrastructural development and service provision. However, successive policy shifts and the reprioritisation of objectives in the Department of Public Works reduced the relative priority of employment creation through the labour intensification of infrastructural provision, which has only recently been restated as a central policy objective (for example, at the Growth and Development Summit, June 2003 and ANC Iekgotla, July 2003). The Department of

⁴ The Malawi Social Action Fund Public Works programme is a current example of a simple poverty alleviating public works programme which reduces the intensity of the poverty of participants.

⁵ Dev (1995) argues that for the large scale Maharashtra Employment Guarantee Scheme in India, the risk benefit is of greater significance in promoting household welfare than the value of the transfer itself.

Public Works focused instead on more conventional public works programmes through the Community Based Public Works Programme⁶.

The objectives of the National Public Works Programme set out by the NEF in 1994, are highly complex and comprise; i) create, rehabilitate, and maintain physical assets that serve to meet the basic needs of poor communities and promote broader economic activity; ii) reduce unemployment through the creation of productive jobs; iii) educate and train those on the programme as a means of economic empowerment; iv) build the capacity of communities to manage their own affairs, strengthening local government and other community based institutions, and generating sustainable economic development. These four objectives can be divided into eight primary and three secondary objectives, set out in figure 1. These objectives will be reviewed in the light of programme design in section 8.

Figure 1: National Public Works Programme Objectives

<i>Primary</i>	Secondary
1 Create/ maintain infrastructure	1.1 Meet basic needs of poor communities 1.2 Promote economic activity
2 Reduce unemployment	
3 Create productive jobs	
4 Educate and train workers	4.1 Achieve economic empowerment
5 Build community capacity	

⁶ Rather than reorienting infrastructural investment throughout the administration, the Department of Public Works contribution to public works has been focused on the administration of the National Public Works Programme, which in 2000/1 represented only 9% of its total budget. (Department of Public Works 2001).

6 Strengthen local government	
7 Strengthen community based institutions	
8 Generate sustainable economic development	

[Source: NEF 1994a]

Additional functions such as community empowerment, capacity building and transformation have also been added to the public works concept in South Africa⁷. In some instances this plurality of objectives has hindered progress on the primary job creation objective. This multiplicity of objectives led Adato and Haddad to conclude that 'South Africa's public works programmes have been among the most innovative in the world, with multiple objectives that include not only job creation, poverty reduction, and infrastructure development, but simultaneously job training and community capacity building' (2002, p30).

Adato *et al* also argued that 'Relief and development, income generation and empowerment, jobs today and training for future jobs ... is... without a precedent elsewhere in the world.' (1999, p xiii), and while they conceded that 'this gives the programmes a development potential that is commendable', Adato and Haddad (2002, p30) recognised that this also 'involves some potential trade-offs'. The cost of this 'unprecedented' approach and the nature of the trade off concerned, is illustrated by the performance of the Community Based Public Works Programme which in 2000/1 created only 918 sustainable and 32,587 'non-sustainable'⁸ jobs at a cost of R349 million (Department of Public Works, 2001). The conceptualisation of public works programming

⁷ This range of objectives is included in the strategy of the National Programme for Public Works, Department of Public Works 1996.

⁸ The term 'non-sustainable jobs' has been used in order to differentiate between the two categories of employment generated under the Community Based Public Works Programme, which is recorded as 'jobs' and 'sustainable jobs' (see for example Department of Public Works, 2001)

as a transformational tool, rather than a tool to address the national employment crisis goes some way to explaining the poor performance and high cost of South African interventions to date⁹. If public works programmes are given additional objectives related to the more diffuse and complex goal of transformation, the primary goal of job creation may be undermined, and the value of the intervention substantially reduced in terms of poverty alleviation and asset creation.

4 THE SCALE OF PUBLIC WORKS INTERVENTIONS TO DATE

The Community Based Public Works Programme (CBPWP) is the primary national mechanism for job creation, although there are a range of other public works programmes currently being implemented in South Africa, most of which fall under the national public works programme, known as the Special Public Works Programme¹⁰ (SPWP). With the exception of the Department of Water Affairs' Working for Water programme, which in 2002/3 created between 3 and 4 million workdays, the other programmes under the SPWP are considerably smaller than the CBPWP, and hence this section of the paper focuses exclusively on the performance of the CBPWP as an the main national instrument for employment creation. The performance of the CBPWP is measured in terms of the number of 'jobs' and 'sustainable jobs' created (Department of Public Works Annual Reports, 1997-2002). Use of the terms 'jobs created' and 'sustainable jobs created' is however problematic as there is no common definition of these terms (see discussion in McCord 2002)¹¹, and the term 'workdays created' is preferred in the international literature as an alternative which enables a ready and comparable indicator of performance. Since data on the number of workdays created each year by the CBPWP are not available¹², estimated workdays have been calculated to provide

⁹ The former Deputy Director of the Department of Public Works explained the low number of jobs created, and high costs in terms of the fact that 'For us [in South Africa]... it's the issue of content as opposed to necessarily scale, because scale does not address the South African problem which is a transformational problem' (quoted in Adato *et al* 1999, p 232).

¹⁰ The following programmes constitute SPWPs under the Ministerial Determination of 2002; Community Based Public Works (CBPWP), Working for Water, Coastal Care, Sustainable Rural Development (DPLG), Landcare, Community Water and Sanitation, and Arts and Culture poverty relief projects. (Department of Labour 2002a).

¹¹ The term job created does not give information on the duration or full/part time nature of employment created, and hence renders performance monitoring and comparison problematic.

¹² Interview with de Bruyn, National Poverty Allocation Programme Manager, South African National Treasury 2002.

indicative figures for the employment creation performance of the programme. Assumptions were made regarding the number of workdays created per 'job' and 'sustainable job'¹³, which yielded the results in Table 1 below.

Table 1: Employment generated by the CBPWP (1996/7 to 2001/2)

Year	Total number of jobs created	Total number of sustainable jobs created	Total number of workdays created (estimated)
96/97	n/a	n/a	1,430,000 ¹⁴
97/98	13,000	n/a	1,560,000
98/99	29,194	4,154	4,001,760
99/00	15,665	342	1,920,840
00/01	33,505	918	4,437,480
01/02	25,124	527	3,078,120

[Source: Own calculations and Department of Public Works Annual Reports 1997 to 2002]

Table 1 indicates that there were considerable fluctuations in the performance of the CBPWP over the 1996 to 2002 period, with the total number of 'jobs' created ranging from 13,000 in 1996/7 to a maximum of 33,505 in 2000/1, and the number of 'sustainable' jobs fluctuating from a high of 4,154 in 1998/9 to only 342 in 1999/2000¹⁵. These figures represent the creation of between 1.4 and 4.4 million workdays per annum under the CBPWP during this period.

¹³ These workdays are indicative only, as data on workdays created under the CBPWP and the average duration of employment is not available for this period. The figures are calculated on the assumption that a 'sustainable' job offers 12 months full time work, less 20 days per annum holiday/public holiday, and a 'non-sustainable' job offers 6 months full time work, less 10 days per annum holiday/public holiday per annum. It is likely that this calculation will err on the side of overestimating the performance of the programme.

¹⁴ This figure is based on actual rather than estimated workdays of workdays created, as reported in the Department of Public Works Annual Report, 1997.

¹⁵ The expansion of employment creation in 2000/01 reflects the policy imperative to increase spending against budget in the programme during this year, following several years of significant underspending (Department of Public Works 2001).

In order to assess the meaning of this level of job creation it is necessary to compare the scale of employment created under this programme with the scale of the unemployment problem. Table 2 indicates the incidence of official and expanded unemployment levels during the 1996 to 2001 period, during which time it has risen significantly.

Table 2: Official and Expanded Unemployment 1996-2001

	Official	Expanded
1996	2,224,000	4,566,000
1997	2,451,000	5,202,000
1998	3,163,000	5,634,000
1999	3,158,000	5,882,000
2000	4,082,000	6,559,000
2001	4,525,000	7,698,000

[Source: Stats SA 2000, 2001, 2002 and 2003]

Table 3 illustrates CBPWP performance against unemployment, presenting the number of workdays created under the CBPWP as a percentage of the unemployment figures in Table 2, converted into workdays.

Table 3: CBPWP Performance in Relation to Unemployment, 1996 to 2001

	Total workdays created (million)	Total official unemploy- ment workdays (million)	Workdays created as % of total official unemploy- ment	Total broad unemploy- ment workdays (million)	Workdays created as % of total broad unemploy- ment
96/97	1.4	587	0.24%	1,205	0.12
97/98	1.6	647	0.24%	1,373	0.11
98/99	4.0	835	0.48%	1,487	0.27

99/00	1.9	834	0.23%	1,553	0.12
00/01	4.4	1,078	0.41%	1,732	0.26
01/02	3.1	1,195	0.26%	2,032	0.15

[Source: Own calculations and Department of Public Works 1997, 1998, 2001, 2002 and Stats SA 2002]

Table 3 indicates that when examined in the context of unemployment over this period, the workdays created under the CBPWP represent between 0.24 and 0.48% of total official unemployment during 1996/7 and 2001/2, and 0.11 and 0.27% of broad unemployment. Even if the employment creation achievements of Working for Water were added to these totals, the total proportion of unemployment accounted for by public works programmes would remain at less than 1% for 2002/3. This suggests that the scale of job creation over this period has been negligible in terms of the magnitude of current employment, and does not offer a significant response to the problem of mass unemployment¹⁶.

A comparison with the performance of the Employment Guarantee Scheme (MEGS) implemented in the state of Maharashtra in India since 1970 is instructive in reviewing the scale of South African job creation performance¹⁷. The MEGS was designed initially as a response to an acute problem, but subsequently offered employment on a cyclical basis as required for those with chronic unemployment problems, resulting from the structural composition of the rural Indian economy, in order to 'sustain household welfare in the short run, through the provision of employment, and to contribute to the development of the rural economy in the long run through strengthening rural infrastructure' (Dev 1995 p109). During the 1980s and 1990s more than 100 million workdays were created each year through the scheme, which absorbed between 10 and 30% of total unemployed workdays (Dev 1995 p113). Employment absorption through public works reached similar levels in the US during the Great Depression of the early 30s, with the employment of 4 million workers out of a total of 12 million unemployed (for a full discussion of the scale of US employment creation see Garraty 1979). The performance of the Maharashtra and US programmes, highlight the limited achievements of the South African job creation programme to date.

¹⁶ A similar level of employment absorption, between 0.65 and 1.25% was found by Adato *et al* in their study of public works programmes in the Western Cape between 1995 and 1997 (Adato *et al* 1999 p 169).

¹⁷ Maharashtra state has a population of 80 million, roughly twice that of South Africa.

5 THE EMPLOYMENT IMPLICATIONS OF INCREASED EXPENDITURE ON JOB CREATION.

Given the policy prominence recently afforded to increased expenditure on public works, the impact of increased expenditure on job creation performance is discussed below. As part of the expansion of the public works programme an allocation of R1.2billion over three years was initiated in 2003/4 for labour intensive infrastructure construction, under the Construction of Municipal Infrastructure Programme. Estimating the employment impact of such an investment is problematic given the limited data available, and so indicative estimates of the employment impact have been modelled using three methods; one based on current performance of the CBPWP, one based on a simulation using NEF performance norms, and one extrapolating from employment creation estimates developed by the construction industry.

A crude estimate of the employment impact of such an investment may be made by extrapolating from the performance of the CBPWP, which created 25,000 'jobs', or approximately 3 million workdays in 2001/02 with a budget of R374 million. Assuming that job creation performance continues at current costs under the labour intensive allocation, the three year disbursement of R1.2bn between 2003/4 and 2005/6 is likely to create an additional 25,000 temporary 'jobs' each year, or 3 million workdays per annum, totalling 9 million workdays over the three year period, and absorbing approximately 0.26% of unemployed workdays per annum.

To model the impact of a R1.2bn allocation on employment in more detail, a simple simulation may be used, in which different scenarios can be simulated by altering the amount of workdays offered per 'job', and the material cost as a percentage of total cost. The wage has been set at R35 per day¹⁸, the distribution of costs between management, administration and workers has been taken from the NEF public works programme for the period 1992 to 1998¹⁹, and it has been assumed that annual expenditure is phased incrementally. Under a full time scenario²⁰ the total number of jobs for workers created per annum would rise to between 35,000 and 52,000 after three years, depending on material cost as a proportion of total cost²¹, representing the creation of a total of between

¹⁸ R35 is taken as a typical public works daily wage, following Budlender 2002.

¹⁹ The NEF costings are taken from the Department of Labour 1999.

²⁰ Assuming 22 workdays /month.

²¹ The higher figure assumes only 10% of total expenditure being allocated to materials, as would be the case in rubbish collection, social work programmes (Adato *et al* 1999) or in rural road maintenance programmes such as Zibambele in KwaZulu Natal (McCord 2002), while the lower figure is based on the average material

19 and 28 million workdays over the period (see appendices 1 and 2). Under a part time scenario, offering ten workdays per month, the figure would rise to between 69,000 and 103,000 thousand jobs per annum after three years, or a total employment creation over the period of between 17 and 25million workdays²² (see appendices 3 and 4). Given the R1.2 billion is to be focussed in the construction sector, where material costs are significant, job creation levels at the lower end of this range are most likely, *ie* 35,000 full or 69,000 part time 'jobs' per annum by the end of the three year investment period, totalling approximately 18 million workdays. It is interesting to note that even the lower bounds of the employment creation estimates under this simulation are more positive than extrapolations based on existing CBPWP performance. However, the data on which both sets of figures are based are problematic, and can only provide indicative estimates of the level of employment likely to accrue from an investment of R1.2bn.

The impact of a R1.2bn allocation can also be assessed using job creation estimates developed within the construction sector for labour intensive construction. Job creation through increased labour intensity in the civil engineering sector was outlined in the National Public Works Programme (NEF 1994a), and was to be promoted through changed rules governing state expenditure on asset creation and maintenance. This approach has few international precedents and is significantly more ambitious than the project-based approach, with the goal of 'fundamentally changing the way in which publicly funded infrastructure is built so that employment and skills transfer are maximised for the unemployed' (Phillips *et al* 1995, p23).

Formal economic modelling of the job creation impact of the labour intensification of the civil construction sector is required to assess the potential employment impact of this approach. This would require an analysis of line ministry construction budgets at all levels, to identify the proportion of expenditure eligible for labour intensification, and then an assessment of the degree of labour absorption likely to occur in each subsector if labour intensive methods were used, using the employment ratios calculated by

cost expenditure for a wide range of public works projects as a percentage of total job creation expenditure under the NEF programme 1992-8, representing 40% of total expenditure (Department of Labour 1999).

²² The diminution in the total number of workdays created in the part time scenario is due to the fact that the management and supervision costs per worker in the simulation remain constant, whether a part of full time scenario is modelled, underestimating the cost of management in the case of the full time scenario, and overestimating it in the part time scenario. This problem is an artefact of the NEF public works data on which the simulation is based, as the NEF costings provided only mean management and administrative costs (Department of Labour 1999).

McCutcheon (2003) for each sub-sector of activity. On this basis the potential employment gains from this level of investment could be modelled. This is a critical area for further work, as significantly modifying existing capital/labour ratios within the civil engineering sector requires robust estimates of the employment gains likely to result, particularly in the light of the reluctance of the sector to implement significant shifts in factor intensity (Mabilo 2003).

In the absence of such detailed analysis it is possible to extrapolate from existing research by McCutcheon, Croswell and Taylor Parkins to gain a third indicative estimate of the potential job creation impact of a R1.2bn allocation²³. On the basis of labour intensive employment creation norms for the transport sector used by Croswell and McCutcheon (2001) it is possible to infer that the allocation of R1.2bn for labour intensive construction under the LICM would lead to the creation of up to 12,000 'jobs' per annum over the three year period, although the duration of these jobs can not be stated. This would translate into between four and ten million workdays over three years, depending on full or part time nature of employment created.

Hence the CBPWP extrapolation from existing performance suggests that a R1.2bn investment would create a total of nine million workdays over three years, construction industry estimates suggest between four and ten million workdays, and the simulation exercise, based on NEF cost ratios and current payment levels, 18 million workdays. On the basis of these three approaches, the annual employment created ranges from between 1.5 to 6 million workdays, which represents between 0.13% and 0.5% of total unemployed workdays. While this would confer employment opportunities for programme participants, the overall impact on the performance of the labour market, and unemployment in South Africa of a R1.2bn investment in labour intensive public works

²³ The amount of employment generated by shifting government expenditure from capital to labour intensive methods has been subject to extensive technical analysis by McCutcheon, and others (see for example Phillips *et al* 1995, McCutcheon 2001a and 2001b, Croswell and McCutcheon 2001, McCutcheon and Taylor Parkins 2003). McCutcheon argues that labour intensive methods of construction and maintenance have the potential to increase employment generated per unit of expenditure by between 300 and 700% in certain civil engineering subsectors, such as rural road reconstruction and conveyances. He argues that this may be achieved without compromising cost, quality or time, conditional on adequate skills and institutional capacity development. Using this analysis Croswell and McCutcheon (2001) argue that for an annual expenditure of R15.2 billion in transport infrastructure 460,000 jobs would be created using labour intensive methods.

over three years would not be significant. The level of investment represented by an employment creation allocation of this order (approximately R400 million per annum) is less than 1% of the annual social security and welfare budget²⁴.

These findings question whether the expectations of proposed job creation programmes are realistic, in terms of reducing poverty, creating sustainable jobs, improving training and stimulating economic growth, given the proposed level of investment. It is interesting to note that expenditure of R400 million per annum on employment creation represents 0.1% of total government expenditure²⁵, while during the employment crisis of the early 1930s, expenditure on public works programmes rose to a maximum of 15.8% of the budget (Abedian and Standish 1985 p75) through a range of large scale government schemes.

6 THE FISCAL IMPLICATIONS OF 'EXTENDED' EMPLOYMENT CREATION

While public works programmes to date have had limited impact in terms of reducing unemployment, current policy discussion is focusing on the role of 'extended' public works as a key instrument to address unemployment and poverty in South Africa, as illustrated in the extract from the report on the July 2003 Cabinet lekgotla below;

'Preparatory work has been done in identifying projects for an extended Public Works Programme, both as an instrument of poverty alleviation and a basis for skills development. This programme, cabinet said, is critical for **the inclusion of a great number of South Africans** - many of whom have little possibility for immediate absorption into the formal economy - **in income-generating activity from which they are also able to acquire skills.**'

Report on the Cabinet lekgotla, July 2003

ANC Today, 01 August 2003, Issue 30, Vol 3 2003.

If an extended public works programme is to bring about 'the inclusion of a great number of South Africans ... in income generating activity from which they are also able to

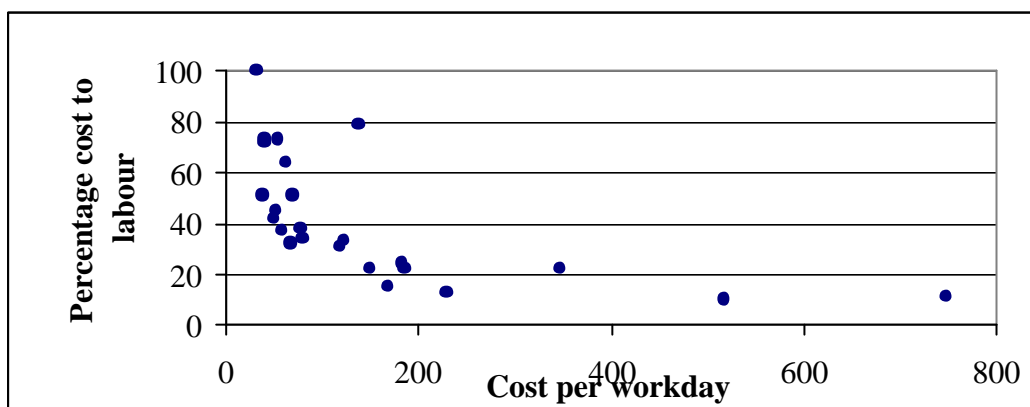
²⁴ The 2004/5 social security and welfare budget is projected to be R46 billion (National Treasury 2002).

²⁵ Government expenditure is projected to total R334 billion in 2003/4 (National Treasury 2002).

acquire skills' it is pertinent to examine the fiscal implications of a programme large enough to include a significant number of participants.

In order to estimate the cost to the fiscus of creating a given number of workdays, assumptions must be made regarding the unit cost of each workday created, and the percentage of the total cost allocated to low skilled wages. However these figures vary widely, as illustrated by the findings of Adato *et al* (1999) in the case of the Western Cape²⁶. These are reproduced below in Figure 2.

Figure 2: Cost per workday and labour as a percentage of total cost for public works programmes in the Western Cape 1995 to 1997



[Source: Derived from Adato *et al* (1999), p 200]

The most efficient programmes, in terms of jobs created per unit of investment, with low cost per workday and a high percentage of total cost transferred as wages, fall in the upper left hand quadrant of Figure 2. The range of percentage of cost accruing to labour varied between 11%-22% for programmes relating to the creation of transport infrastructure, to 100% in the case of recreation ground maintenance, at a cost per workday which varied from R31 to R740²⁷. These findings of Adato *et al* confirmed analysis at a national level by the National Economic Forum (1994b) which found that simple projects and small scale agriculture related infrastructure entailed a 40-80% spend on labour, compared to spends of as little as 5-15% of total cost for water reticulation,

²⁶ Adato *et al*'s 1999 study included seven public works programmes and 101 individual projects in the Western Cape between 1995 and 1997, and is the most extensive study of public works programme performance in South Africa to date.

²⁷ These figures are actual costs, weighted by the amount of employment generated, not current prices, and are of significance in terms of their range, rather than their rand values.

storm water, sanitation, roads and railways projects (quoted in Adato *et al* p 201). This indicates that the percentage of workday creation cost allocated to labour varies according to the capital intensity of the sector, and that the creation of socially desirable infrastructure may not necessarily entail maximum labour absorption, highlighting the potential trade off between the number of jobs created per unit spend, and the nature of the asset created.

For the majority of public works programmes in South Africa however, data about the structure of employment created, the number of workdays created, and the wage level are not available²⁸, and hence the proportion of programme cost allocated to wage transfer and management/materials cannot be calculated in this way. This makes analysis of the cost effectiveness of public works programmes and programme comparisons problematic.

In the light of this a series of assumptions have been made regarding the wage rate and the percentage of total costs spent on wage labour, and two scenarios modelling the annual cost of creating full and part time employment for 200,000 and 3,200,000 beneficiaries are developed. The first is based on full time work, (twenty two working days/month, or 264 working days/annum, at R35 per day²⁹), representing a R770 monthly wage transfer to participants. The second is based on ten days work/month (120 working days/annum, at R35 per day), a monthly transfer of R350. In both sets of calculations the estimates are bounded by a high (80%) and low (48%) share of expenditure to wages. The 80% figure is likely to occur in an efficient project with limited material costs (such as rubbish collection, social support or access road maintenance), while the 48% figure represents the average wage cost under the National Economic Forum (NEF) public works programmes from 1992 to 1998 (Department of Labour 1999)³⁰. The 200,000 scenario represents a significant expansion of current job creation performance, while the 3.2 million scenario updates the Taylor Commission estimate of the number of unemployed workers living in workerless households spending below R800 per month, (Meth and Dias, 2003).

²⁸ Interview with de Bruyn, National Poverty Allocation, South African National Treasury, 2002.

²⁹ R35 is a typical public works daily wage conforming to the mean wage offered under the Working for Water programme, (Budlender 2002), and the KwaZulu Natal Department of Transport's Zibambebe programme wage (McCord 2002).

³⁰ By comparison during the 1980s and early 1990s the average percentage of the Maharashtra Employment Guarantee Scheme paid as workers wages was 73% (Dev 1995).

TABLE 4 SUMMARISES THE BUDGETARY IMPLICATIONS OF LARGE SCALE JOB CREATION UNDER THE DIFFERENT SCENARIOS OUTLINED ABOVE, FOR 200,000 AND 3.2 MILLION JOBS.

Table 4: Cost to the Fiscus of Creating Large Scale Employment Through Project Based Public Works (at 2002 prices)

	Full time number of workdays (million)	Cost (R billion)	Part time number of workdays	Cost (R billion)
200,000 jobs created				
48% share to wages	52.8 million	R3.85bn	24.0 million	R1.75bn
80% share to wages	52.8 million	R2.31bn	24.0 million	R1.05bn
3,200,000 jobs created				
48% share to wages	844.8 million	R61.60bn	384.0 million	R28.00bn
80% share to wages	844.8 million	R36.96bn	384.0 million	R16.80bn

The cost of creating full time employment for 3.2 million people (844.8 million workdays) of one year ranges between R36.96 and R61.6bn at 2002/3 wage levels, depending on the percentage of total cost allocated to wage. The cost of creating part time employment for 3.2 million people (384.0 million workdays) with remuneration at R350 a month ranges between R16.80bn and R28.00bn. Creating full time employment for 200,000 (52.8 million workdays) would cost between R2.31 and R3.85bn, and part time (24.0 million workdays) between R1.05 and R1.75bn.

Total annual unemployment in South Africa was 1.28bn or 2.09bn workdays in 2002³¹, depending on whether the official or expanded unemployment figures are used. By comparing the amount of workdays created under the scenarios outlined above to these unemployed workday totals it is possible to calculate the proportion of unemployment which would be absorbed, see Table 5 below.

Table 5: Large Scale Public Works Unemployment Absorption Capacity 2002/3 (%)

	Number of unemployed (million)	Total unemployed workdays (million)	3.2m jobs (part time) workdays created (million)	Percentage of unemployed workdays absorbed	Cost range (R billion)
Expanded	7.9	2,092.2	384.0	18%	16.8-28.0
Official	4.8	1,277.0	384.0	30%	16.8-28.0
			3.2m jobs (full time) workdays created		

³¹ Calculated on the basis of 264 workdays or work per annum, multiplied by total unemployment.

			(million)		
Expanded	7.9	2,092.2	844.8	40%	36.96- 61.60
Official	4.8	1,277.0	844.8	66%	36.96- 61.60

A part time public works programme for 3.2 million workers would absorb 18% of official, or 30% of broad unemployed workdays, at a cost of between R16.8 and R28bn, depending on the cost structure of the jobs created. A full time programme would absorb 40% or 66% respectively, at a cost of between R36.96 and R61.6bn³².

Hence a large scale public works programme could theoretically have a significant impact on reducing unemployment, if sufficiently large allocations from the fiscus were made, equating to 5-8% of the total 2003/4 budget for the part time option, and between 11-18% for the full time model for the creation of 3.2 million jobs. This level of expenditure compares to the 15.8% budget allocation to employment creation during the height of the unemployment crisis of the early 1930s (Abedian and Standish 1986)³³. It is important to note however, that the annual draw down on the fiscus to create this scale of employment using current employment creation costings, represents a significant figure when compared to the anticipated total social security and welfare budget allocation of approximately R46bn for 2004/5 (National Treasury 2002). The draw down would be of a similar order to the net amount required for the provision of a universal basic income grant (Le Roux 2002, Samson 2002), and hence give rise to the same concerns regarding the potentially negative fiscal shock (see Borat 2003 and Thurlow 2002 for a discussion of these concerns).

Regardless of the fiscal feasibility of such a programme however, these estimates are subject to serious institutional capacity constraints which could also undermine the feasibility of large scale employment creation, given the current performance levels of the

³² The inclusion of both the official and broad unemployment figures in this analysis does not imply any judgement regarding which sections of the unemployed should be targeted in public works programmes (eg the searching unemployed or the discouraged), the two figures have been used for indicative cost estimate purposes only. The issue of targeting is discussed in detail in section 8.4 below.

³³ The response to the problem of this depression focused almost exclusively on the provision of employment and relief for 'Poor Whites', estimated to number approximately 300,000. (Standish and Abedian 1986)

CBPWP with only 0.3% of the unemployment absorbed. These institutional constraints are discussed below.

7 INSTITUTIONAL CONSTRAINTS TO LARGE SCALE EMPLOYMENT CREATION

Success in the implementation of an expanded public works programme is conditional on overcoming three key institutional constraints;

- Institutional capacity and project management skills at government and community and levels
- Incentives for provincial ministries to use labour intensive techniques, and also
- Skills in the construction industry in labour intensive construction.

Key institutional capacity constraints in the public sector and within communities comprise; lack of project management expertise, lack of norms for processes or procedures, inconsistencies between projects (wage, terms of employment etc), duplication of effort by different line ministries, lack of efficiencies of scale, lack of social development expertise, limited community participation, and the lack of credible Integrated Development Plans to guide strategic asset selection. These problems may be characterised as the lack of a strategic or programme approach to public works, which results in a multiplicity of individual project based interventions. Given the scarcity of management capacity, this multiplicity of small projects is particularly inefficient, and constrains overall employment creation performance, leading to an inability to spend funds allocated to employment creation due to difficulties in identifying and implementing appropriate projects, and a sub-optimal outcome in terms of employment created per unit of expenditure. This problem is exacerbated by the short time scales of many projects, which entail high set up costs, (recruitment, training, development of procedures etc), and subsequently fail to realise the benefits of operating at the maximum efficient level³⁴.

³⁴ McCutcheon argues that overheads are high during the initial start up phase, but fall significantly once the programme is established, citing experience from the Kenya public works programme which suffered an initial 84:16 ratio of overheads to direct construction costs during its first three years (1974-76), which subsequently reversed to a 16:84 ratio.

In the absence of credible incentives for the private sector to tender on a labour intensive basis, it is unlikely that major shifts in the factor intensity of infrastructure provision will occur³⁵. Despite evidence presented by McCutcheon and others that labour intensive construction can be competitive with conventional capital intensive construction in selected sub-sectors (see for example McCutcheon and Taylor Parkins 2003), a high degree of scepticism persists within the civil engineering sector regarding labour intensity. A recent study of stakeholder perspectives on labour intensification found that there was a reluctance to 'alter an already optimal production function' or to take what was perceived as a 'backwards step', promoting '“enslavement” versus cheaper and more efficient alternatives' (Mabilo 2003 p17). Mabilo also notes that an industry stakeholder argues that construction 'should not be seen as the means to employment creation, but an end, and that employment opportunities are generated by the provision of the infrastructure itself through the widening and deepening of capital within the region served by the road', arguing that this effect 'overshadows the opportunities created by the road building and maintenance activities', assuming that the road as an asset will itself engender growth and employment. The stakeholder also recognises the complexity of intervention in the social development sphere, arguing that in a situation of 'extremely complex social fabric, ... allocations of employment... are subject to tacit rules that militate against the sustainability and of employment opportunities and other employment objectives'. This concern regarding the incorporation of a social development agenda into the construction workplan may represent a disincentive to increased labour intensification.

One key reason for the scepticism within the industry is the lack of skills and experience in labour intensive construction. Despite initiatives such as the training carried out under the auspices of the Research Centre for Employment Creation in Construction³⁶, the Limpopo Roads Authority's Gundo Lashu programme which is explicitly focussed on developing consultant and contractor skills in labour intensive road construction, or the development of SETA-accredited training in labour intensive techniques, skills in this area remain limited. McCutcheon and Taylor Parkins (2003) argue that if infrastructure provision is to be delivered efficiently using labour intensive methods, training in labour intensive construction is critical at all levels of management, from consultants to contractors, site supervisors and community liaison staff. The lack of skilled personnel in the sector is likely to cause a serious bottle-neck in the expanded provision of

³⁵ Mabilo (2003) highlights a credibility problem arising from the limited implementation of previous government procurement reform policies and incentives at various levels of government.

³⁶ This Research Centre functions within the University of the Witwatersrand School of Engineering.

employment through labour intensification of infrastructure provision, and possibly to undermine the quality and labour absorptive potential of this work.

8 MicRoeconomic and institutional challenges TO THE REALISATION OF POLICY OBJECTIVES

As discussed above the assumption is frequently made that the execution of public works programmes will *sui generis* deliver the wide range of objectives set out in figure 1 above, encompassing employment creation, poverty reduction, asset creation and community empowerment, which may be viewed within the broad framework of the promoting livelihoods. However, achievement of these objectives is contingent on programme design, institutional capacity, and most importantly the addition of social development considerations to otherwise essentially technical or administratively conceived and executed projects. In this section the key policy choices and institutional factors that impact on the ability of public works programmes to attain these objectives are examined.

8.1 The Livelihoods Impact of Public Works

The sustainable poverty reduction component of public works may be conceptualised in terms of promoting the livelihoods of participants. Devereux has identified three routes for the transmission of a benefit from income transfer for improved livelihoods; the promotion of trade based, production based or labour based entitlements (2000 p3). Trade based entitlements promotion would occur through the purchase of food, production based through investment in food crop farming, and labour based entitlements through the use of income as working capital to increase profits from informal activities such as petty trading. The critical factor however, constraining achievements under these three sets of entitlements is the value of the income transferred, which is mediated through the wage rate and the duration of the transfer. Achievement of livelihoods benefits is also affected by to whom benefits are conferred, which is determined by the targeting and rationing of jobs created, by access to training and microfinance, and finally by the nature of the assets created. Each of these factors will be examined briefly below, and the main challenges identified.

8.2 Project Duration

In South Africa public works programmes, known as Special Public Works Programmes (SPWP), are defined as 'a short-term, non-permanent, labour intensive programme initiated by government and funded, either fully or partially, from public resources to create a public asset' (Department of Labour, 2002a). Many programmes offer employment for between one and four months, and an explicit condition of the Special Public Works Programmes (SPWP) is that 'no person may be employed for more than 24-months (*sic*) within a 5-year (*sic*) cycle' (Department of Labour, 2002, p3). Hence the length of employment offered under a public works programme is legislatively controlled, on the basis of providing as many people as possible with the opportunity to participate in the programme (*ibid*), a tacit acknowledgement that demand for employment will exceed supply, and that rationing will be required.

The length of employment offered however, is critical in terms of the ability of participation in a programme to have a sustained impact on poverty. By definition, short term employment will limit the total transfer received by a participant, typically in the case of a five week infrastructure rehabilitation project in the Western Cape the total transfer would be R1,225³⁷, or in the case of three months of road construction employment in Limpopo R1,800 (McCord forthcoming). This transfer will temporarily increase household income during the employment period, but is unlikely to have a significant poverty reduction impact sustained beyond this period, or affect the realisation of the entitlements which constitute improvements in livelihoods³⁸. This assertion is consistent with economic theory, which would suggest that a temporary income shock will not impact significantly on livelihoods and is corroborated by anecdotal evidence on the impact of public works programmes in South Africa, although empirical data on the relative impacts of short and longer term employment is not yet available.

As important as the total amount of the income transfer generated by public works programmes, is the stabilisation effect of a transfer on the income of the poor, and the

³⁷ This would be the typical remuneration for employment on a labour intensive infrastructure rehabilitation project, personal communication with D Jooste, of the Provincial Administration of the Western Cape, January 2003.

³⁸ The exception to this would be a temporary increase in trade based entitlements, relating to the purchase of food etc.

extent to which this enables consumption smoothing, reducing vulnerability to shocks. This stabilisation effect is contingent on the length of the period over which employment is offered, and is a consequence of sustained employment, provided either through a medium to long term public works programme, or through cyclical employment provision at times of minimum market labour demand. In the case of the Maharashtra Employment Guarantee Scheme (MEGS) Dev has argued that it is the stabilisation effect rather than the immediate transfer which has the most significant impact on sustained poverty reduction, stating that 'reducing fluctuations in income can be as important to the poor as raising average incomes'. and that 'Reduction in income fluctuations can prevent acute distress to the poor and preclude the need for costly forms of adjustment, such as selling productive assets.' (1995 p126 and p136). He goes on to assert that 'even if the increase in income is not very large compared with the aggregate need, the existence of any form of income/employment insurance could be quite significant'. Evidence from the MEGS suggests that the insurance benefits that result from prolonged or guaranteed employment at times of insufficient labour market demand are significant to the poor, and Walker and Ryan (1990) argue that the risk benefit of a public works wage serves to increase and stabilise consumption expenditure across time, suggesting that this may do more to raise food consumption than efforts to enhance income *per se*.

Hence the insurance function is as important as the amount of the transfer itself. However a public works programme can only have an insurance function if employment can be obtained easily, or is available on a sustained basis as an ongoing and regular income source. The concept of public works performing a social insurance function is problematic under South African conditions, given the structural and mass nature of unemployment³⁹, which would lead to a blurring of the distinction between public works and a social grant (for a detailed discussion of this problem see Meth, Shipman and Naidoo 1996). However, this insight regarding programme duration nonetheless offers a challenge to the legislative rationale and programme development norms in situations where programme duration is limited by legislation, as in South Africa. It also has implications for the importance of the seasonal provision of employment through public works programmes; if an intervention is to be short term, it should be counter cyclical in

³⁹ This is explained by Barr, 'Private insurance requires, first, that the probability of the insured event for any individual is independent of that for anyone else. This condition is necessary because insurance depends on the existence in a given period of a predictable number of winners and losers. If, in the extreme, individual probabilities are completely linked, then if one person suffers a loss so does everyone else. Thus actuarial insurance can cope with *individual* shocks but not with *common* or *systemic* shock (1998 p114).

terms of local labour demand, in order to offer employment at the times when households are most vulnerable and hence maximise stabilisation benefits.

The focus on part time asset maintenance, rather than creation, is one appropriate option for sustained employment creation, the other alternative being a 'shelf' of pre-planned projects identified at district level, which are implemented counter-cyclically on a continued basis if required, as labour demand fluctuates. This 'shelf' model forms the basis for the MEGS, but is more complex to administer than a simpler part-time maintenance programme, and presupposes the prior selection of a raft of strategic asset creation projects at local level. The Zibambele labour intensive road maintenance programme in KwaZulu Natal, which currently employs 14,000 workers, is an example of a programme designed to provide a low level, but sustained income transfer (R350 a month, on the basis of 8 days employment), offering the stabilisation benefits discussed above⁴⁰.

One other assumption underlying public works rhetoric in South Africa is that participation in a programme will offer experiential and formal training which will facilitate future absorption into the labour market. However, this supply side orientation does not take into consideration the limited demand for labour in the context of current unemployment levels, and it is likely that the shorter the period of work, the less likely training or experience is to impact on future labour market success. With reference to the Western Cape, Adato and Haddad concede the tension between skills development and short term employment arguing that 'given some projects last as little as three months and developing marketable skills take longer than this, there is a trade off that must be faced' (2002 p28).

Given the structural and hence chronic nature of unemployment in South Africa, and the continued inability of the labour market to create sustainable employment, many workers return to the unemployed labour pool after completing a term in short term public works programmes, rather than being absorbed into the labour market (Department of Water Affairs 2003). The implementation of multiple short term employment projects may therefore serve only to churn the unemployed, replacing one cohort of the unemployed with another in short term employment projects, removing them temporarily from the pool

⁴⁰ See McCord 2002 for a more detailed analysis of the transfer efficacy and implementation of the Zibambele programme, implemented by the KwaZulu Natal Department of Transport.

of unemployed labour, rather than addressing either the underlying problem of unemployment, or having a significant or sustained impact on the livelihoods of participants. Given the critical relationship between the duration of an income shock and its impact, it is unlikely that under short term project there will be a significant multiplier effect or stimulation of informal income generating activity (this is explored further in section 8.7 below). In this context prolonged public works schemes are needed that will offer sustained employment, in order to address the fundamental objectives of poverty reduction, and potentially also, livelihoods promotion.

8.3 Wage Levels

The level of the wage in a public works programme, together with the length of employment offered are the critical determinants of the use of the transfer received, and hence its impact on livelihoods.

Devereux (2000) argues that the poor use incremental income to satisfy basic consumption needs first, then invest in human capital (education and health) and social capital, and only then to invest in income generating activities and seeds. In this way the public works wage only impacts on productive investment if it is large enough to cover consumption needs; 'high value transfers are associated with higher propensities to invest in agriculture, social capital, (including in financial assistance to relatives), education and acquisition of productive assets'. (*ibid*, p4). Low value transfers by contrast, are mainly consumed, for example in the form of food and clothes,.

Similar conclusions maybe drawn from recent evidence from Malawi, where investment in income generating activities using income from public works programmes ceased following price rises resulting from the shock of drought⁴¹. This is also confirmed by evidence from recent surveys in Limpopo and KwaZulu Natal (McCord forthcoming). Devereux summarises this analysis by arguing that whereas 'tiny transfers have tiny impacts... moderate transfers can have major impacts', (2000 p5) a finding also echoed by Dev in relation to the MEGS (1995).

⁴¹ Interview with Malawi Social Fund public works programme participants in Lilongwe, by Sultan and McCord, June 2003.

However, the payment of 'moderate' rather than 'tiny' transfers may imply the payment of a wage above the prevailing market wage. This can have three adverse effects. The first is the simple trade off between coverage and impact (this is discussed in detail in Devereux 2000 p127); given a budget constraint, a higher wage implies fewer participants and greater rationing of employment opportunities. The second is the danger of distorting local labour markets if the wage offered is above the prevailing market wage, possibly attracting workers out of alternative employment and also creating expectations for levels of remuneration for future projects, (the tension arising from this problem is discussed with reference to the Western Cape in Adato *et al* 1999).

It is the third, and related effect which is arguably the most important; wages perform a rationing function and must be set at or below the prevailing wage in order to ensure that self-targeting will occur and prevent the leakage of jobs to the non-poor. Devereux argues that if the wage is set above the prevailing wage there is a risk that 'the desperately poor are excluded by those whose poverty is less severe' (p130), and he goes on to argue that depending on how the wage is set, public works programmes may be 'seen as a lucrative employment opportunity by virtually all local residents'. rendering it difficult to select participants on the basis of genuine need.

However, in the context of massive unemployment, demand for employment exceeds availability among the poor and non-poor alike (and among the more and less poor), and the rationing function of the public works wage is unlikely to be an adequate instrument for ensuring that work is targeted to the poorest, even if set at the prevailing wage. Hence setting the wage at the prevailing wage rate is a necessary, but not sufficient condition for reducing leakage under conditions of mass unemployment. There is a need for additional interventions to ensure a less crude form of rationing access to jobs. Using wage alone as a targeting mechanism risks either including the non-poorest, if set too high, or making a transfer which is of such limited value that it fails to address any but the most basic short term consumption (poverty alleviation) needs of participants, giving only a temporary boost to the trade based aspect of livelihoods, if set too low.

Interestingly, research by McCutcheon (2003) on public works wage setting in two public works case studies, suggests that whether the public works wages are set at the minimum wage, as in the Zibambele programme in KwaZulu Natal, or below, on the basis of the exemptions negotiated under the terms of SPWP (Department of Labour 2000b), as in the Gundo Lashu programme in Limpopo, both programmes are *de facto* providing

wage rates which are in excess of the prevailing wage rates among the lowest deciles. Adato *et al* by contrast found that 79% of the projects in the Western Cape set wages below the comparable district wage (1999 p173). The implication of this finding is that there may be a need to develop location specific public works wage schedules, in order to offer public works wages which correspond to the prevailing wage.

8.4 Targeting

The official targets for public works programmes are women, youth and the disabled, with the relative proportions of each comprising 60% women, 20% youth aged between 18 to 25 years, and 2% disabled (Department of Labour 2002b). However, the social development discourse argues that transfers received by women tend to deliver greater human and social capital benefits to households than those received by either youth or males,. This claim is supported with reference to South Africa by Duflo (1999), who found that the welfare impact of pensions received by woman had a significantly greater impact on household welfare than those received by men, and also by focus group discussions conducted among public works programme participants in Limpopo⁴² where female participants argued that public works wage transfers received by youth and men had a more limited impact on household welfare than those received by women (McCord, forthcoming). This challenges the objective of targeting youth, and also the limited participation target for women (60%), given the objective of the poverty reduction. This highlights the tension inherent in the multiple objectives ascribed to the South African public works programme. The explicit targeting of the disabled in the programme is also problematic in terms of economic efficiency, as the disabled are already eligible for a transfer under the existing social safety net. The double inclusion of one group within a social safety net which is already highly exclusive, in the context of severe job rationing may not be the most effective way to allocate scarce social protection resources.

Some programmes have recognised these problems, and have developed an alternative targeting protocol in response to the perceived incidence of poverty in their programme areas; the Zibambele programme in KwaZulu Natal explicitly prioritises female headed households, and more than 95% of its participants are women. At a national level

⁴² The reduced household welfare benefits accruing to households where youth and males were the public works programme participants was argued by female participants in the Gundo Lashu ILO/DFID funded Limpopo Roads Authority public works programme in during focus group discussions in Sekhukhune, Limpopo, McCord, April 2003.

however targeting remains a critical and unresolved issue given the massive excess demand for employment and transfers⁴³.

Targeting performance is also problematic, particularly in programmes in the civil engineering sector, which are technically focused and may have only limited capacity in terms of social development. Under these conditions there is a risk that targeting performance may be poor, with employment being offered to work-seekers, irrespective of their degree of social or economic impoverishment, or conformity with official targeting criteria (McCord forthcoming).

8.5 Rationing

As discussed above, the wage rate tends to be the primary mechanism for targeting in public works programmes, on the assumption that this will lead to effective self-targeting. However, rationing through wage-rate mediated self targeting is inadequate when there is excess demand for employment. Devereux argues that 'self-targeting in Zambia's cash for work programme was undermined by the massive scale of rural poverty (estimated at 86%)' (2000 p3). Given the non-urban unemployment rate exceeds 50% in South Africa, and the probable existence of 3.4 million unemployed within the poorest three deciles (Meth 2003), a similar scenario is highly likely in South Africa.

Setting wages at or below market levels is then a necessary but not sufficient tool for the targeting of employment. Given the severe unemployment levels prevalent in South Africa, the self-targeting function of wage setting may not be adequate to ensure efficient rationing of the extremely limited number of jobs created in employment creation schemes. The assumption in the development of the South African public works programmes was that if 'minimum earnings' were offered, this would 'ensure that jobs go

⁴³ It is also important to note however that public works programmes by definition may exclude many of the poorest. Since households with limited labour resources are frequently among the poorest, and that the physically infirm or disabled are in many instances de facto excluded from participation in largely physical public works programmes, the appropriateness of public works as a primary safety net for the poor is open to question. The poorest households, especially female or child-headed households, may not have an adult who is able to work, particularly given the incidence of HIV/AIDS. These households are thereby excluded from the benefits of participation in public works programming. For this reason, among others, it is problematic to posit public works programmes as an alternative to social safety net responses to poverty in South Africa, such as a basic income grant.

to the poorest of the poor and are not 'hi-jacked' by the not so-poor' and that this would remove political pressure at the project level, (NEF Targeting Focus Group 1994, quoted in Adato and Haddad 2002 p22) . However, the scale of unemployment has challenged these assumptions. Jobs represent a scarce resource, and without clear policy guidance on selection criteria or processes, evidence from the social development discourse suggests that it is likely that socio-economic power inequities or the existence of political divisions within communities may lead to the exclusion of the poorest from participation.

Frequently a combination of lottery and community selection techniques are used to ration access to employment, often using criteria of unemployment and poverty (Adato and Haddad 2002), although a recent survey indicated that based on these techniques up to 30% of the workers recruited by Working for Water (WFW) may have been drawn from the pool of employed rather than unemployed labour market participants (Department for Water Affairs 2003).

There is a need for both social development inputs and community participation to inform the selection procedures if the 'poorest' are to be targeted as anticipated during the rationing process. The technical experts who are frequently responsible for the implementation of public works programmes are unlikely to be skilled in social development or facilitation, and may favour lottery methods or the allocation of employment on a first come first served basis. This is particularly likely when recruitment has been subcontracted to the private sector, since community participation or the use of poverty or other eligibility criteria represent a cost, and demands skills which may not be readily available. If the community were uniformly poor then this method of employment would be appropriate, but given the differing depths of poverty experienced within communities and the objective of targeting the poorest, a more development-oriented approach is required in order to reach 'the poorest' and reduce leakage.

8.6 Training

'The empowerment of individuals and communities engaged in SPWP through the provision of training' is one of the explicit objectives of the SPWP (Department of Labour, 2002). Under the conditions of the SPWP a minimum of 2 days training should be provided for every 22 days worked, which should incorporate i) life, ii) functional and iii) entrepreneurship training, thereby promoting labour based entitlements and thereby enhancing the livelihood of participants.

The impact of training however is contingent on market demand for skills, and also conditional on the ability of participants to fund job search, their mobility, and access to capital, where the skills transferred are to be used for individual income generating. There is a need to design training in line with needs of different segments of the unemployed labour force. The training needs of youth differ from those of rural, female household heads. The youth are likely to have many decades as labour market participants ahead of them, and the mobility to relocate in search of employment thereby increasing potential returns from skills based training, while for rural, non-mobile female household heads an identical training investment may be less productive (Bhorat 2001)⁴⁴

The provision of training was negotiated in return for a relaxation of the minimum wage under the SPWP. However, the quality and appropriateness of the training offered, has in some cases been questioned by participants⁴⁵. While the provision of training is monitored in the CBPWP management and information system, its impact on future labour market performance of trainees is not routinely recorded, and preliminary case study research suggests that this impact may not be significant (Department for Water Affairs 2003, McCord forthcoming). Working for Water has suspended its exit programme due to the realisation that the training (supply side) component of the programme is not sufficient to guarantee, or even significantly enhance the labour market performance of former Working for Water participants in the face of mass unemployment⁴⁶. Likewise in their study of the Western Cape, Adato *et al* concluded that 'The main constraint identified as to why workers and subcontractors could not get new jobs after the project was there were insufficient new job opportunities in the area' (1999 p xix). This questions the assumption which links public works employment to significantly enhanced subsequent employment performance.

8.7 Microfinance

⁴⁴ For a more detailed discussion of the training aspect of public works programmes see Goldin 2003.

⁴⁵ Limpopo public works participants focus group discussion, McCord , April 2003. This dissatisfaction is increased by the fact that only 75% of the daily wage is received when participating in training under the SPWP. This can act as a disincentive to participate in training if it is perceived as unlikely to enhance future income streams.

⁴⁶ Personal communication with. Christo Marais, Scientific Service Manager, Working for Water, 13.8.03.

The provision of training as one component of public works programming is problematic without simultaneous access to capital, through either savings or micro-credit facilities, particularly if the low wage and short term nature of the employment provided has not enabled participants to accumulate capital directly from wage earnings. Without the provision of capital for formal or informal income generating activity, the livelihoods impact of a training intervention is likely to be limited, as lack of access to capital is a major disincentive to self employment among public works participants. In a recent survey in Limpopo, public works participants cited lack of access to capital as the primary factor inhibiting informal income generating activity (McCord, forthcoming). This consideration is particularly important in the context of South Africa's underdeveloped rural finance sector, and is likely to limit significantly the anticipated multiplier effects of public works investment at community level.

Lack of access to capital restricts the benefit of public works programme participation to the transient, short term wage shock during the period of employment⁴⁷, rather than promoting the exploitation of sustainable informal sector employment opportunities. Explicitly linking public works programmes to microfinance initiatives is one potential mechanism to surmount the capital deficit is inhibiting the utilisation of the experience, training and entrepreneurial skills developed under public works programmes.

8.8 Assets

The evidence base for assessing the economic benefits, in either micro or macro-economic terms, of the assets created under public works programmes in South Africa is extremely limited. The CSIR's research into the Tshitwe road-upgrading project in Limpopo (Mashiri and Mahapa, 2002) offers anecdotal evidence of a disjuncture between the aspirations of a project, and its realisation in terms of the quality, appropriateness and strategic value of the assets created. Mashiri and Mahapa argue that despite the ambitious objectives of 'increasing accessibility, reducing the cost of freight and passenger services and assisting agriculture by reducing the cost of inputs, boosting access to extension services and increasing farm-gate prices' which are typical objectives within the public works sector, the anticipated multiplier effects were not realised. Money earned by workers did not circulate within the community and as the anticipated

⁴⁷ For the long term unemployed, the receipt of wage income for a short period may be characterised as a positive income shock.

improvement in road passenger services did not materialise, neither did the benefits in terms of improved access to market and other amenities. Mashiri and Mahapa attribute the programme's failure to the lack of genuine participation of local communities in selecting assets and priorities for the programme⁴⁸.

This analysis also highlights a broader problem; if strategic and economically significant assets are to be created under the public works programme, their identification needs to be linked with a strategic asset selection process, involving both communities and local government⁴⁹. If a strategic selection of assets, incorporating community preferences is not made, it is likely that a proliferation of non-priority assets will be created, which may not deliver the social or economic benefits to communities intended (see objective 1, meeting the basic needs of the poor, and objective 8, generating sustainable economic benefits).

8.9 Accountability

Public works programmes have the potential to promote local democracy through the participation of communities in resource allocation decision making, (in terms of both employment and investment in assets), and to promote democratic accountability by providing a structure for direct communication between local government and communities⁵⁰. An example of the potential of public works programme to promote democratic processes and give a voice to the poor is the Maharashtra Employment Guarantee Scheme (MEGS). Under the MEGS, universal employment provision is guaranteed and the state has a legal obligation to provide employment as a right; 'every adult person in the rural areas in Maharashtra shall have a right to work, that is, a right to get guaranteed employment' (Maharashtra Planning Dept 1981, quoted in Dev p109). By making employment an entitlement, the MEGS facilitates collective political action by the

⁴⁸ Mashiri and Mahapa argued that the community's priorities of improved non-motorised transportation did not conform to the standard road construction model, and so were over-ridden by the implementing authority.

⁴⁹ The recently introduced the district level Integrated Development Plan would be the ideal institutional mechanism for this task. However, the development of these institutional instrument is a relatively new process, and they do not yet guarantee either community or integrated local government participation, or strategic prioritisation.

⁵⁰ The Zibambele Programme, implemented by the Department of Transport in KwaZulu Natal is an example of a public works programme designed to create jobs and also promote local democratic participation in this way. For a brief outline of this programme, see McCord 2002.

poor, and enhances the responsiveness of rural politicians to their needs (Eceverri-Gent (1988) quoted in Dev p111).

This illustrates the potential of public works to build community capacity, strengthen local government and strengthen community based institutions (objectives 5, 6 and 7), but this is contingent on the institutional context and the extent to which these issues are explicitly prioritised in programme design. There is a danger of constructing parallel structures to implement public works, due to an impatience to achieve results in the short term, which carries with it the risk of undermining local democracy (see for example the associated debate relating to the implementation of Social Funds) and the institutional sustainability of programme interventions, in the medium to long term. There is the potential to improve the quality of the assets created and also to promote local democracy, accountability and hence confidence in the democratic process if public works are linked in with local institutional processes. However there is little basis on which to assess the performance of public works in South Africa to date in this regard⁵¹.

8.10 Management Information

Existing public works programme monitoring and information systems do not facilitate analysis of the impact of programmes, and offer little in terms of an evidence base against which to assess performance on the eleven objectives ascribed to public works in the current policy discourse. Monitoring tends to focus on the creation of 'jobs' *per se*, rather than the social and economic impact of those jobs (see Clegg 2003, with reference to the CBPWP MIS). Also, the use of 'jobs' created as the central performance indicator, rather than workdays created renders analysis problematic, as does the lack of data on the duration of employment provided to participants.

Where performance indicators are monitored, they tend to be quantitative input measures (eg units of training delivered, kilometers of road constructed, or number of workers recruited), rather than impact indicators relating to the labour market, social or economic consequences of the intervention. A lack of baseline information on programme participants also renders impact analysis, in terms of the livelihoods of participants, problematic. A small number of detailed studies such as Adato *et al's* 1999 research into

⁵¹ With the notable exception of the Zibambele programme in KwaZulu Natal, see note ⁵⁰ above.

public works programmes in the Western Cape, and social research projects related to individual projects⁵² have been carried out. However there is little systematic monitoring of socio-economic and social development indicators to evaluate the impact of investments in public works.

9 CONCLUSION

With the data currently available it is not possible to show that the anticipated broader benefits of public works programmes in terms of increased livelihoods, reduced poverty, the creation of sustainable employment, community empowerment, local multipliers, or growth as outlined in the policy rhetoric, have been achieved. It is only possible to assess performance in terms of the scale of employment created, and by this criterion, success has been limited, with less than 0.5% of unemployed workdays absorbed annually through the CBPWP⁵³.

While additional allocations will increase the number of 'jobs' created under public works programmes, and the amount of workdays created, it cannot be assumed that this will lead to the attainment of the range of social development and economic objectives outlined in the policy rhetoric. Nor can it be assumed that public works, as currently conceptualised, have the potential to play a major role in poverty and unemployment reduction. An expanded public works programme is unlikely to have a significant impact on the problems of poverty and labour market access, or their associate, growth, unless i) a substantially increased proportion of government expenditure is allocated to the programme, ii) the series of policy questions highlighted in section 8 are resolved, and iii) the institutional constraints in both the public and private sectors are addressed.

⁵² For example social research carried out by the KwaZulu Natal Department of Transport and University of Natal 2002 on the Zibambele Programme, and the Limpopo Provincial Road Authority and University of the Western Cape study of the social context for the Gundo Lashu road construction programme.

⁵³ While the CBPWP creates less than 0.5% of annual total unemployed workdays, the total annual employment created by the National Public Works Programme is not likely to exceed 1% of unemployed workdays. This figure is an estimate based on the performance of the Working for Water Programme and other SPWPs.

APPENDIX 1

Simulation model for public work programme/low cost construction employment estimates

Simulation 1. Part time, material costs = 40%

Total amount spent over three-year budget period (Rm)	1200
Proportion spent in 1st year (%)	20
Proportion spent in 2nd year (%)	30
Proportion spent in 3rd year (%)	50

Monthly wages:

Workers	350
Supervisors	2500
Administrators	5000
Top managers	20000

Workforce composition

Ratio of workers to supervisors	55
Ratio of workers to administrators	170
Ratio of workers to top managers	2000

Material costs as proportion of total cost (%)

1st year	40
2nd year	40
3rd year	40

Convert to standard worker equivalents

	Proportion	
Standard worker	1	80.48
Supervisors	0.130	10.45
Administrators	0.084	6.76
Top managers	0.029	2.30
Cost of employing standard worker (proportion of wage)	1.242	100.00

Amount spent in 1st year (Rm)	240
Amount spent in 2nd year (Rm)	360

Amount spent in 3rd year (Rm)	600
Check	1200

Amounts available for payment of wages (Rm)

1st year	144	3311363
2nd year	216	4967044
3rd year	360	8278406

Numbers employed:

	Workers	Supervisors	Administrators	Top managers	Total
1st year	27,595	502	162	14	28,273
2nd year	41,392	753	243	21	42,409
3rd year	68,987	1,254	406	34	70,681

Convert to work days (days per annum)

Assumed number of days per annum: 120

	Workers	Supervisors	Administrators	Top managers	Total
1st year	3,311,363	60,207	19,479	1,656	3,392,703
2nd year	4,967,044	90,310	29,218	2,484	5,089,055
3rd year	8,278,406	150,516	48,697	4,139	8,481,758
TOTAL	16,556,813				16,963,517

Check total wage expenditure (Rm)

1st year	115.9	15.1	9.7	3.3	144
2nd year	173.8	22.6	14.6	5.0	216
3rd year	289.7	37.6	24.3	8.3	360

APPENDIX 2

Simulation model for public work programme/low cost construction employment estimates

Simulation 2. Part time, material costs = 10%

Total amount spent over three-year budget period (Rm)	1200
Proportion spent in 1st year (%)	20
Proportion spent in 2nd year (%)	30
Proportion spent in 3rd year (%)	50

Monthly wages:

Workers	350
Supervisors	2500
Administrators	5000
Top managers	20000

Workforce composition

Ratio of workers to supervisors	55
Ratio of workers to administrators	170
Ratio of workers to top managers	2000

Material costs as proportion of total cost (%)

1st year	10
2nd year	10
3rd year	10

Convert to standard worker equivalents

	Proportion	
Standard worker	1	80.48
Supervisors	0.130	10.45
Administrators	0.084	6.76
Top managers	0.029	2.30
Cost of employing standard worker (proportion of wage)	1.242	100.00

Amount spent in 1st year (Rm)	240
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Amount spent in 2nd year (Rm)	360
Amount spent in 3rd year (Rm)	600
Check	1200

Amounts available for payment of wages (Rm)

1st year	216
2nd year	324
3rd year	540

Numbers employed:

	Workers	Supervisors	Administrators	Top managers	Total
1st year	41,392	753	243	21	42,409
2nd year	62,088	1,129	365	31	63,613
3rd year	103,480	1,881	609	52	106,022

Convert to work days (days per annum)

Assumed number of days per annum:

120

	Workers	Supervisors	Administrators	Top managers	Total
1st year	4,967,044	90,310	29,218	2,484	5,089,055
2nd year	7,450,566	135,465	43,827	3,725	7,633,583
3rd year	12,417,609	225,775	73,045	6,209	12,722,638
TOTAL	24,835,219				25,445,275

Check total wage expenditure (Rm)

1st year	173.8	22.6	14.6	5.0	216
2nd year	260.8	33.9	21.9	7.5	324
3rd year	434.6	56.4	36.5	12.4	540

APPENDIX 3

Simulation model for public work programme/low cost construction employment estimates

Simulation 3. Full time, material costs = 40%

Total amount spent over three-year budget period (Rm)	1200
Proportion spent in 1st year (%)	20
Proportion spent in 2nd year (%)	30
Proportion spent in 3rd year (%)	50

Monthly wages:	
Workers	770
Supervisors	2500
Administrators	5000
Top managers	20000

Workforce composition

Ratio of workers to supervisors	55
Ratio of workers to administrators	170
Ratio of workers to top managers	2000

Material costs as proportion of total cost (%)

1st year	40
2nd year	40
3rd year	40

Convert to standard worker equivalents

Proportion

Standard worker	1	90.07
Supervisors	0.059	5.32
Administrators	0.038	3.44
Top managers	0.013	1.17
Cost of employing standard worker (proportion of wage)	1.110	100.00

Amount spent in 1st year (Rm)	240
Amount spent in 2nd year (Rm)	360
Amount spent in 3rd year (Rm)	600
Check	1200

Amounts available for payment of wages (Rm)

1st year	144
2nd year	216
3rd year	360

Numbers employed:

Workers	Supervisors	Administrators	Top managers	Total
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1st year	14,037	255	83	7	14382
2nd year	21,056	383	124	11	21573
3rd year	35,093	638	206	18	35955

Convert to work days (days per annum)

Assumed number of days per annum:

264

	Workers	Supervisors	Administrators	Top managers	Total
1st year	3,705,843	67,379	21,799	1,853	3,796,874
2nd year	5,558,764	101,068	32,699	2,779	5,695,310
3rd year	9,264,607	168,447	54,498	4,632	9,492,184
TOTAL	18,529,213				18,984,368

Check total wage expenditure (Rm)

1st year	129.7	7.7	5.0	1.7	144
2nd year	194.6	11.5	7.4	2.5	216
3rd year	324.3	19.1	12.4	4.2	360

APPENDIX 4

Simulation model for public work programme/low cost construction employment estimates

Simulation 4. Full time, material costs = 10%

Total amount spent over three-year budget period (Rm)	1200
Proportion spent in 1st year (%)	20
Proportion spent in 2nd year (%)	30
Proportion spent in 3rd year (%)	50

Monthly wages:

Workers	770
Supervisors	2500
Administrators	5000
Top managers	20000

Workforce composition

Ratio of workers to supervisors	55
Ratio of workers to administrators	170
Ratio of workers to top managers	2000

Material costs as proportion of total cost (%)

1st year	10
2nd year	10
3rd year	10

Convert to standard worker equivalents

	Proportion	
Standard worker	1	90.07
Supervisors	0.059	5.32
Administrators	0.038	3.44
Top managers	0.013	1.17
Cost of employing standard worker (proportion of wage)	1.110	100.00

Amount spent in 1st year (Rm)	240
Amount spent in 2nd year (Rm)	360
Amount spent in 3rd year (Rm)	600
Check	1200

Amounts available for payment of wages (Rm)

1st year	216
2nd year	324
3rd year	540

Numbers employed:

	Workers	Supervisors	Administrators	Top managers	Total
1st year	21,056	383	124	11	21,573
2nd year	31,584	574	186	16	32,360
3rd year	52,640	957	310	26	53,933

Convert to work days (days per annum)

Assumed number of days per annum: 264

	Workers	Supervisors	Administrators	Top managers	Total
1st year	5,558,764	101,068	32,699	2,779	5,695,310
2nd year	8,338,146	151,603	49,048	4,169	8,542,966
3rd year	13,896,910	252,671	81,747	6,948	14,238,276
TOTAL	27,793,820				28,476,552

Check total wage expenditure (Rm)

1st year	194.6	11.5	7.4	2.5	216
2nd year	291.8	17.2	11.1	3.8	324
3rd year	486.4	28.7	18.6	6.3	540

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