

CENTRE FOR SOCIAL SCIENCE
RESEARCH

Southern Africa Labour and Development
Research Unit

**PUBLIC WORKS AS A RESPONSE TO
LABOUR MARKET FAILURE
IN SOUTH AFRICA**

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CSSR Working Paper No. 19

November 2002

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With thanks to the KwaZulu Natal Department of Transport for their cooperation and for making data available on their visionary programme, to my supervisor Professor Francis Wilson, and to Dudley Horner of SALDRU, Professor Robert McCutcheon of the University of Witwatersrand Department of Civil Engineering, Dr Charles Meth of the University of Natal, and Professor Anthony Black and Richard Walker of the Economics Department of the University of Cape Town for their valuable comments.

Published by the Centre for Social Science Research
University of Cape Town

Copies of this publication may be obtained from:

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Price in Southern Africa (incl. VAT and postage): R 15.00

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[Http://www.uct.ac.za/depts/cssr/pubs.html](http://www.uct.ac.za/depts/cssr/pubs.html)

ISBN: 0-7992-2153-8

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Abstract

Unemployment has been rising in South Africa for the last three decades, leading to official unemployment rates of 26.4% (37% if the broad definition is used). This implies a jobless total of 7 million, with more than 40% of the rural population unemployed, and the development of a growing pool of workers who are excluded from the labour market. The South African economy is facing labour market failure, with labour supply increasingly outstripping demand. If the economy continues on its current growth path this problem of labour market failure will intensify and the employment situation will continue to deteriorate. The severe levels of unemployment resulting from this market failure are a particular problem in South Africa given the role unemployment plays in exacerbating poverty and inequality in an already highly unequal and segmented society, and the uneven incidence of unemployment among racial groups.

Public works programming offers a response to both poverty and unemployment, while also addressing the linked national priority issue of asset creation. This paper discusses the option of state intervention through public works, reviewing the South African response in the context of global public works experience. The paper examines both project based public works programming, which forms the dominant policy response in South Africa, and the option of large-scale labour intensification of state expenditure, and examines the employment creation and cost implications of each, drawing on a case study from KwaZulu Natal. The paper concludes that public works interventions in South Africa to date have been relatively limited in scope and impact, and that the potential exists for far greater job creation and poverty alleviation through both the labour intensification of public spending, and the rationalization of the project based approach.

Chapter 1:

Introduction to the Problem

Unemployment has been rising in South Africa for the last three decades (Lewis 2001), leading to official unemployment rates of 26.4%, or 37% if the broad definition is used¹, implying a jobless total of 7 million, with more than 40% of the rural population unemployed, and the development of a growing pool of workers who are excluded from the labour market (Stats SA 2001). The South African economy is facing labour market failure, with labour supply increasingly outstripping demand. If the economy continues on its current growth path this problem of labour market failure will intensify and the employment situation will continue to deteriorate. The severe levels of unemployment resulting from this market failure are a particular problem in South Africa given the role unemployment plays in exacerbating poverty and inequality in an already highly unequal and segmented society, and the uneven incidence of unemployment among racial groups (Leibbrandt & Woolard 2001).

This paper explores the relationship between unemployment and poverty in South Africa, and discusses the option of state intervention to address these twin challenges. The main policy instrument examined is public works programming, which offers a response to both poverty and unemployment, while also addressing the linked national priority issue of asset creation.

The Role of the Labour Market in Poverty and Inequality

The unanimous insight of recent poverty analyses based on a range of indicators, encompassing the conventional income and expenditure indices (May 2000, Leibbrandt & Woolard 2001) or deprivation indices incorporating a broader entitlement approach (McIntyre et al 2000), is that poverty, however defined, is a growing problem in South Africa, along with inequality (Bhorat et al 2001).

¹ The broad definition of unemployment includes economically active people who are actively seeking work as well as those who did not actively seek work in the four weeks prior to the interview.

Of a total population of 45 million, 24 million South Africans live below the poverty line² (Stats SA 2000). Thirteen million live in destitution, with income levels less than half the poverty line (Samson et al 2002), and one in four children under the age of six, a total of 1.5 million children, are stunted due to chronic malnutrition (Mgijima 1999). These poverty levels are closely correlated with unemployment; the poorest encounter unemployment rates of more than 70% (Samson et al 2002) and the majority of households in the bottom four income deciles have no members in employment, leading to the conclusion that most poor households are poor due to the absence of wage income (Nattrass and Seekings 2001), findings which are confirmed by survey work indicating that job creation is the priority demand of households on the state, in terms of improving welfare levels (Klasen 1997, Clark 2000). Given the strong correlation between wage income and poverty in South Africa, responding to unemployment is clearly a key policy challenge.

Leibbrandt & Woolard (2001) formally decompose the linkage between the labour market and household inequality to explore the impact of socio-economic differences on position in the labour market and the incidence of poverty in South Africa in more detail³. Their conclusion is that access to employment is critical, since wage income accruing to households through wage labour or remittances, is the primary cause of income inequality. This argument is illustrated in table 1 below, which indicates that shocks relating to wage income account for more than 80% of household mobility into poverty (see shaded segment of the table). This mobility profiling highlights the importance of the labour market in influencing the movement of households across the poverty line.

² Calculated on the basis of household consumption expenditure of R800 or less per month (1996 prices).

³ Liebbrandt and Woolard's dynamic poverty analysis is based on panel data for KwaZulu Natal, drawn from the 1993 SALDRU Living Standards Measurement Survey and the 1998 KwaZulu Natal Income Distribution Survey.

Table 1: Causes of Household Mobility (%)

Cause of mobility	Into Poverty	Out of Poverty
Fall in money income as result of demographic events	27.4	23.5
Income event, change in income from head's labour income	23.7	19.3
Other household member labour earnings	20.7	26.0
Remittances	10.4	9.2
Non-labour income of head/spouse	5.9	6.7
Non labour income of other household members	1.5	2.9
Self-employment income	4.4	8.8
Farm income	5.9	3.4

Source: Leibbrandt & Woolard 2001

Given the rising level of unemployment and the strength of its correlation with poverty, the negative impact of rising unemployment potentially counterbalances the positive impact on inequality of the decline in racial discrimination in the labour market (Leibbrandt & Woolard 2001, p675), a critical concern in a society which is already one of the most unequal in the world (Bhorat et al 2001).

Carter & May (2001) argue that falling shares of income are accruing to the bottom deciles, implying that this group of households is getting poorer and inequality increasing. Viewing poverty from a dynamic perspective, they argue that the poorest households are subject to ongoing labour market exclusion and economic marginalisation over time, which compounds and perpetuates their poverty. The chronically poor constitute a core within this group who over time remain below the economic threshold at which assets can be accumulated, shocks absorbed and expenditure smoothed, and hence are unable either to acquire the human capital required for participation in the labour market or move out of poverty.

The critical factor compounding this dynamic poverty trap for the chronically poor is the contraction of formal sector unskilled labour demand in South Africa during the last three decades⁴. This fall in formal sector demand for unskilled labour has particularly serious poverty and equity consequences due to the unusually high dependence on formal sector income in South Africa, in contrast to the more typical pattern elsewhere in Africa

⁴ This trend is discussed in more detail in chapter 3.

where there is a greater degree of dependence on the informal sector or subsistence agricultural activity.

The Costs of Unemployment

The socio-economic costs of unemployment have been examined in some detail, although primarily within a developed country context. Unemployment has been found to have negative social impacts at both individual and household level, the most significant being reduced physical and mental health status, increased social isolation, and reduced take up of education and health services (Leon & Walt 2001), as well as the more immediate impacts attributable directly to poverty. These effects lead to an increase in domestic and social conflict, political disaffection and criminal activity, which undermine social stability. These findings were mirrored in a recent study in townships around Durban, which found similar correlations between unemployment and social breakdown, in terms of violence and antisocial behaviour (Louw & Shaw 1997).

The exclusion of almost 40% of the population from the labour market may also have profound political costs. Given current trends the unemployed are likely to comprise the majority of the workforce within the next decade (Lewis 2001a), implying that more than half of the economically active the population will not be participating in the national economy, and will form a residual ‘surplus’ group in a highly polarised economy. The cost of such polarisation is likely to be negative in terms of medium term political and social stability, and consequently the resolution of this problem poses not only a major ethical challenge to the state, but also a challenge of political survival.

From a conventional macroeconomic perspective the constrained consumer demand resulting from high levels of unemployment acts as a brake on national economic growth⁵. The limited consumer market reduces South Africa’s attractiveness in terms of both domestic and international investment. Growing unemployment and inequality also deters investment *sui generis*, by raising investor concerns regarding actual and potential social

⁵ The potential negative and contractionary macroeconomic implications of unemployment and constrained consumer demand are fully explored in Keynes’ *General Theory of Employment, Interest and Money*.

and economic instability (Gelb 2001). Subbarao et al (1996) also highlight this negative economic impact of unemployment, arguing that severe unemployment levels may compromise economic growth in the long-run. This argument indicates the negative investment implications for an economy in which the poor resort to criminal or marginalised activities in order to survive, due to the lack of formal (or informal) sector employment. This lack of confidence in the stability of the country has a significant deterrent effect on Foreign Direct Investment in South Africa (BusinessMap 2001), which in 2001 averaged less than 1% of GDP, substantially below the rates of between 3 and 5% enjoyed in comparable emerging markets in Europe, despite the stability of South Africa's macro-economic (rather than social) indicators⁶.

An additional macroeconomic cost arising from unemployment is the cost of revenue forgone, in terms of under-utilised productive capacity, in line with the traditional neo-classical growth model which characterised surplus labour as an opportunity for accumulation and growth (Lewis 1955). Foregone production and revenue projections for South Africa are not available however, and so it is not possible to quantify this aspect of the macroeconomic impact of unemployment.

While the various consequences of unemployment are not easily quantified in economic terms, it is evident that unemployment has severe and mutually reinforcing implications in the social, political and economic spheres, which combine to aggravate poverty and inequality, depress economic growth prospects, and pose a serious threat to national stability.

⁶ A recent EIU survey, *World Investment Prospects*, (March 2001) forecast that South Africa would receive 0.2% of global FDI flows (\$10bn) during the period 2001-5, while Poland and Brazil, frequently used Middle Income Country comparators for South Africa, would be likely to receive 0.8% and 2.1% respectively, highlighting the investment deficit affecting the economy. Since levels of inequality in Brazil are comparable to those of South Africa, (both have Gini coefficients of approximately 0.6), this forecast implies that inequality alone may not be deterring investment in South Africa, but inequality in the context of a growing unemployment crisis in the particular social, economic and political milieu of South Africa.

Chapter 2: The Characteristics of Unemployment in South Africa

Compared to global unemployment levels, South Africa is facing an extreme situation, with levels significantly in excess of those found in other developing and developed countries. The developed country average was 6.2% in 2000, while the Latin American and Caribbean average was 8.9%, Asia and the Pacific 4.6%, and the Transition Economies 10.9% (ILO 2001a). With specific reference to other developing and Middle Income Countries, South Africa is also an outlier, having unemployment rates which are only comparable to states engaged in or emerging from conflict, or facing extreme economic isolation⁷. Brazil, which is frequently cited as an economic comparator for South Africa, enjoying similar levels of both GDP output and inequality, differs significantly from South Africa with respect to unemployment, with an unemployment rate of 9% in 1999 (ILO 2001b).

Unemployment rates are higher in the southern African region in general than other regions, but even within this grouping South Africa represents an extreme, only outstripped by the outlier Lesotho, a weak economy which is itself highly dependent on the South African labour market, as table 2 shows.

Table 2: Southern African Unemployment Rates

Southern Africa	1999
Botswana	21.5**
Lesotho	40.5***
Namibia	19.5****
Zambia	15
Zimbabwe	6
South Africa	25.3

1996 *1997

Source: *World Employment Report 2001, ILO*

⁷ Algeria and the former Yugoslav Republic of Macedonia are examples of the former category, while the latter category includes the isolated Central Asian states of the former Soviet Union.

The impact of such extreme levels of unemployment is particularly acute in South Africa, given the high dependence on the formal sector, the critical role of formal wage labour in driving poverty and inequality, and also the skewed distribution of unemployment among different demographic segments of the population. The aggregate unemployment statistics may be decomposed by province, gender, urban/non-urban location and race, in order to explore the distribution of unemployment among these segments in more detail.

The Provincial Decomposition of Unemployment

Provincial unemployment rates vary considerably, with a concentration of unemployment in North West Province, Limpopo, and the Eastern Cape, as table 3 shows. Limpopo has a narrow unemployment rate of 30% and a broad rate of 48.7%, the highest in the country, and the large interval between these numbers implies that a high proportion of those currently without work are not engaged in job search. The high value attributed to wage labour by households in South Africa (Adato et al 1999, Clark 2000) and the importance of wage income for household welfare make it unlikely that failure to search for a job search implies lack of desire to participate in the job market, but rather implies a rational response to a situation of chronic labour demand deficit, and the existence of a category of the unemployed who may be characterised as ‘discouraged’, and who are excluded from the narrow definition. On the basis of this analysis an association may be made between lack of job search and unavailability of work⁸, and the interval between the narrow and broad rates (B-N) used as a crude proxy for employment availability, with a higher figure indicating lower levels of availability⁹. A provincial ‘employment availability ranking’ may be calculated on the basis of this interval, as table 3 shows. With the exception of the Free State¹⁰, poverty is concentrated in the provinces with the highest unemployment, illustrated by the shaded cells in table 3. Again, the Free State excepted, a high B-N interval occurs where levels of both narrow and

⁸ See Nattrass 2001 for a fuller discussion of ‘discouraged’ workers in South Africa.

⁹ For a more accurate index differential urban/non-urban participation rates would need to be taken into account.

¹⁰ In the Free State the high aggregate poverty level does not correspond with a matching aggregate unemployment level. This is largely due to the extreme depth of poverty experienced in the pockets of the province affected by unemployment.

broad unemployment are high, implying reduced job search activity due to chronic labour demand deficit in these areas.

Table 3: Provincial Unemployment Rates, Employment Availability Proxy and Poverty Ranking

Province	Narrow Unemployment Rate (N)	Broad Unemployment Rate (B)	Employment availability proxy (B-N)	Labour Demand Ranking (1= lowest) ¹¹	Poverty Ranking (1= highest level of headcount poverty) ¹²
Western Cape	18.7	24.8	6.1	8	9
Eastern Cape	30.6	45.1	14.5	3	2
Northern Cape	26.2	36.5	10.3	5	5
Free State	28.2	35.8	7.6	7	1
KwaZulu Natal	26.4	37.3	10.9	4	6
North West	28.2	42.9	14.7	2	4
Gauteng	25.6	31.6	6	9	8
Mpumalanga	26.7	35.4	8.7	6	7
Limpopo	29.7	48.7	19	1	3

Source: Derived from Labour Force Survey February 2001, Stats SA

Gender, Location and Racial Decomposition

A decomposition of unemployment data by gender indicates that women encounter higher levels of unemployment than men, as table 4 shows. If urban/non urban location is added to the analysis, female unemployment outstrips male in both categories, a finding which has negative welfare implications, given the high proportion of female headed households in South Africa. Table 4 also indicates that while narrow non-urban unemployment rates are similar to urban rates, broad unemployment in non-urban areas is approximately ten percentage points higher. This implies that in rural areas employment is generally less available, and hence job search activity is reduced accordingly, indicating that narrow employment statistics are likely to understate the true extent of non-urban unemployment. Since the broad definition of unemployment accommodates the deterrent impact of chronic work unavailability on job search, it is the most sensitive indicator of non-urban unemployment, and the most relevant for estimating the

¹¹ Calculated on the basis of B-N

¹² Stats SA 2000

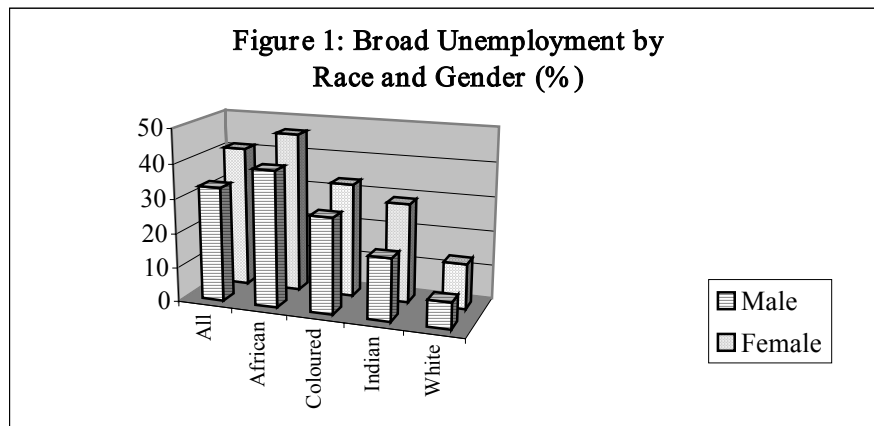
incidence of unemployment in South Africa, and as such the broad definition will be used as the basis for further discussion¹³.

Table 4: Unemployment in South Africa, by Location and Gender

	Narrow			Broad		
	Total	Male	Female	Total	Male	Female
Total	26.4	24.8	28.0	37.0	33.1	41.0
Urban	26.2	24.1	28.6	33.5	29.5	37.8
Non-urban	26.7	26.4	26.9	43.0	39.7	46.0

Source: Labour Force Survey, February 2001, Stats SA

Race however is a more significant determinant of the incidence of unemployment than gender and urban/non-urban location, due in large part to the legacy of racial employment restrictions under the apartheid regime. Table 5 illustrates the continued racial segmentation of unemployment, together with the impacts of location and gender. Africans experience the highest rates of unemployment in all scenarios, with an average of 42.9%, compared to 30.3% for Coloureds, 22.5% for Indians and Asians, and 10.1% for Whites. Unemployment is high in all racial categories, but the level experienced by Africans is severe, and has been described as ‘catastrophic’ by Kingdon & Knight (2001, p13). The decomposition of racial unemployment by gender reveals that female unemployment is higher than male across all racial categories, as shown by figure 1, which also illustrates the concentration of unemployment among African women.



Source: Labour Force Survey, February 2001, Stats SA

¹³ This argument is presented in more detail in Kingdon & Knight (2001, p4).

If urban/non-urban location and race are taken into consideration, non-urban African employment levels are the highest at 44.9%, (see shaded numbers in table 5 below). When decomposition by gender is included in the analysis the group enduring the highest incidence of unemployment is non-urban female Africans, for whom the unemployment rate is 47.2%. From this the conclusion may be drawn that involuntary unemployment is concentrated in the female rural black population.

Table 5: Broad Unemployment by Race, Location and Gender

All population groups	Broad Unemployment Rate		
	Total	Male	Female
Total	37.0	33.1	41.0
Urban	33.5	29.5	37.8
Non-urban	43.0	39.7	46.0
African			
Total	42.9	39.3	46.3
Urban	41.1	36.8	45.4
Non-urban	44.9	42.4	47.2
Coloured			
Total	30.3	27.6	33.0
Urban	31.7	30.5	33.0
Non-urban	22.6	14.0	33.3
Indian/Asian			
Total	22.5	18.0	28.8
Urban	22.0	17.6	28.3
Non-urban	*	*	*
White			
Total	10.1	7.6	13.1
Urban	10.2	7.8	13.1
Non-urban	9.1	*	*

* Sample size too small for reliable estimates

Source: Labour Force Survey, February 2001, Stats SA

Age is also closely correlated with unemployment, with 70% of the unemployed in the poorest quintiles being under the age of 35 (Klasen & Woolard 1997, cited in May 2000, p82). By adding age to race, gender and location Klasen & Woolard identified six categories of unemployed¹⁴. The

¹⁴ Klasen & Woolard's six groups comprise; i) the poorly educated rural unemployed (28%), ii) the poorly educated urban unemployed (18%), iii) the young unemployed with no labour market experience (36%), iv) the long-term unemployed with no labour market

two groups which have the greatest difficulty in finding formal sector employment are i) the youth unemployed with no labour market experience, who comprise 36% of the total, and ii) the poorly educated rural unemployed, who contribute 28% of the total. The latter group is almost exclusively African, predominantly female, and concentrated in KwaZulu Natal, the Eastern Cape, Limpopo and the North West, provinces with high concentrations of rural poverty.

Policy Responses to Segmented Unemployment

Each category of unemployed requires different policy responses, and while for the youth unemployed training-based interventions are the most appropriate, such programmes are of little benefit for the deep rural female African unemployed, given the scarcity of employment opportunities in these areas (Bhorat 2001b and Kingdon & Knight 2001).

Given the high incidence of employment among the deep rural African population, the policy challenge therefore is to identify instruments which would benefit this group, who are characterised by Bhorat (2001, p40) as the 'unemployable' by virtue of their lack of skills and the remoteness of their rural location in relation to labour demand¹⁵, and who fall outside the scope of current employment interventions. Public works programmes are one economically feasible policy response which can be targeted at this group, having the potential to address the 'unemployability' of these segments of the South African population. The feasibility of a public works response to labour market failure and the resultant 45% non-urban African unemployment rate is discussed in detail in chapters 4 to 7.

experience (6%), v) those with labour market experience and some education (15%), and vi) the highly educated unemployed poor (1%), cited in May 2000, p82.

¹⁵ Bhorat describes as 'unemployable' the group comprising older unemployed individuals with very little formal education residing in deep rural areas, who are 'never going to find sustainable, long-term employment in their lifetimes' 2001, p40.

Chapter 3:

Causes of Unemployment in South Africa

The current high levels of unemployment in South Africa are the consequence of structural trends over the last thirty years which have led to a steady decline in the labour absorption capacity of South Africa's economy (Fallon & de Silva 1994). Annual employment growth reached a high of approximately 4% in the early 1970s, but has been declining since this time (Lewis 2001a), and in the context of increasing labour participation rates the consequence has been a secular rise in unemployment, particularly among the unskilled, since the 1970s. The causes of this growth in unemployment are a combination of changes in the structure of the South African economy, domestic political and policy shifts, and the broader effects of global economic integration.

Structural Transformation of the South African Economy

The structural transformation of the economy has entailed a shift in sectoral composition and increasing technology intensity leading to a situation characterised by Lewis (2001a, piii) as one of 'high unemployment and negligible job creation'. This has had a major impact on both total employment levels and the composition of labour demand, leading to stagnation in the absolute number of jobs in the economy during the 1990s (McCord & Borat 2002), and a significant fall in the demand for unskilled labour (Bhorat & Hodge 1999).

The share of the primary and secondary sectors in the South African economy has declined since the 1980s relative to the tertiary sector, the only sector to show substantial annual real growth over the same period, while both primary sectors, agriculture and mining, are in secular decline (Bhorat 2001a). The change in capital/labour ratio has been particularly marked in the mining and agriculture sectors as a result of major consolidation during the 1980s, which exacerbated the fall in labour demand in an already highly capital intensive structure of production¹⁶. This increase in capital intensity

¹⁶ Lewis (2001a) estimates that if a more labour intensive structure of production were adopted the percentage of unemployed unskilled workers could fall by 6%, and Jenkins

was largely due to the relative economic isolation of the South African economy during the previous dispensation, and political concerns with self reliance. Levels of formal sector employment declined in every year but three between 1981 and 1999, with the loss of 1.3 million unskilled formal sector jobs (Lewis 2001a, pii). Between 1993 and 1998 average annual job losses were estimated to be 5.5% in mining, 4.3% in construction, 2.1% in transport, 1.4% in utilities and 0.9% in agriculture (Wilson 2001, p21, citing Borat 2001a).

Domestic Political Change

South Africa experienced a further intensification of this process of structurally declining employment as a consequence of the lifting of international sanctions and the reintegration of the South African economy into the global market during the 1990s, following the change of dispensation in 1994. The associated trade liberalisation and increased exposure to international competition exposed the weaknesses of the high capital-intensity-low capital productivity basis of the South African economy which developed during the previous period of high regulation and protection. The consequence of increased international competition has been major industrial restructuring in terms of increased productivity for manufacturers able to increase their competitiveness, and plant closures for less competitive manufacturers, which led to the loss of one in nine manufacturing jobs between 1994 and 2000 (Kaplan 2001).

The new dispensation also introduced a medium term macroeconomic strategy prioritising macro-economic stabilisation (GEAR 1996), which has been characterised by a contractionary monetary and fiscal stance. This strategy has deterred both domestic and international investment by increasing the cost of capital and constraining domestic demand. Failure to attract and retain capital investment in South Africa is a key determinant of the current poor growth rates, which averaged 1.3% during the 1990s (Lewis 2001a, p7) and less than 2% in 2001 (SARB 2002), and continued poor economic growth implies increasing rates of joblessness in the country¹⁷.

(2002) also highlights the low labour intensity of South African manufactured exports compared to those of other developing countries.

¹⁷ This dilemma arising from the negative capital investment consequences of the GEAR strategy has been summarised by Powers in the question 'If there is no capital at the microeconomic coalface, what is the macroeconomic point?' (Powers 2002, p597).

Global Unemployment Trends

While South Africa is an outlier in terms of the severity of its unemployment crisis, the structural shift underlying this trend is one mirrored throughout the global economy, with a reduction in the numbers of workers needed to produce the goods and services required to satisfy global demand; as noted by Solow (1986) 'There is a fact, a big unmistakable unsubtle fact: Essentially everywhere in the modern industrial capitalist world, unemployment rates are much higher than they used to be two or three decades ago'¹⁸. For South Africa, integration into the global economy accelerated after 1994, and while the net employment impact of increased integration is subject to debate¹⁹, analysis by Borat & Hodge (1999) and Jenkins (2002) indicates that it has contributed to a change in the composition of labour demand, resulting in 'significant disemployment at the bottom end of the job ladder' (Bhorat 2000, p458).

The Role of the Informal Sector

The impact of these domestic and global economic changes has been exacerbated in South Africa by the lack of an adequate informal sector employment cushion to absorb labour shed by the formal sector. The informal sector is relatively under-developed compared to other Sub Saharan African countries, primarily as a result of the socio-legal constraints existing under the Apartheid system which directly and indirectly limited informal sector activity among the African population, while the migrant labour system contributed to the creation of labour reserves with a heavy economic reliance on formal sector wage income (Wilson 1976). As a consequence Natrass (1998) estimates that 80% of the small informal sector which does exist in South Africa comprises 'survivalist poverty relief oriented activity', rather than viable economic enterprise, hence the capacity of the sector to absorb excess unskilled labour is limited.

¹⁸ Cited in Saint-Paul (1996).

¹⁹ See for example Jenkins (2002) who argues that the overall impact of liberalisation on the labour market in South Africa has been negative, compared to Edwards 2001 and Fedderke, Shin & Vaze (2000) who assert that it has had a modest positive effect

The 'Unemployable'

Apartheid has bequeathed South Africa a legacy of labour market and economic characteristics which has meant that the distribution of gains and losses arising from domestic policy choices, market liberalisation and global economic trends has impacted negatively on the poor African rural population. The labour market is failing, and the 'invisible hand' is failing to operate to resolve this imbalance of supply and demand. Leibbrandt & Woolard (2001) have argued that the net outcome of such a growth path is likely to be a widening of household inequality, driven by a labour market which fails to deliver formal employment for increasing numbers of labour market participants, while improving earnings for those retaining formal sector employment.

The consequence of this market failure is chronic and worsening unemployment, and the emergence of a growing category of the poor, described by Borat as the 'unemployable' (2001, p40) and by Seekings as an 'underclass' (2000, p68) comprising households where no-one works and no-one is likely to find work²⁰. This group is effectively economically irrelevant as it is excluded from participation in the market; the market economy doesn't need what they have and they can't buy what it sells²¹. The existence of this group provokes the question 'what do we owe one another as members of the same society who no longer inhabit the same economy?'²².

Within the dominant political discourse in South Africa, unemployment is characterised primarily as a supply side problem, and policy responses developed accordingly²³. However the problem with this approach is that it does not recognise the significance of the structural changes experienced in South Africa over recent decades in creating and sustaining involuntary

²⁰ This analysis conforms closely to Marx's description of the underclass as the lowest grouping within the reserve army of labour.

²¹ This is a paraphrase of Nathan Gardel's observation regarding the relationship between the unemployed and the market, 'From the standpoint of the market the ever swelling ranks of the [unemployed] face a fate worse than colonialism: economic irrelevance...we don't need what they have and they can't buy what we sell', quoted in Rifkin 1996 p215.

²² This question was posed by Reich in 'The Work of Nations; Preparing Ourselves for Twenty-first Century Capitalism' 1992.

²³ The DTI Growth and Employment Strategy (2001) is an example of this 'supply side failure' characterisation of unemployment in South Africa.

unemployment, particularly in the primary sector. Lewis (2001b) highlights the error in this characterisation of unemployment, arguing that while supply-side factors, such as skills development and labour market inflexibility, do impact on unemployment in South Africa, they are subordinate to demand factors relating to structural change. Hence supply side interventions are not adequate to address the fundamental structural shifts and resultant labour market failure which South Africa is currently experiencing²⁴.

The labour demand deficit is already extreme²⁵, and trends imply that it will increase further, with the impact skewed towards the unskilled African population, for whom the situation has been described as catastrophic (Kingdon & Knight 2001, p13). The lack of informal sector opportunities or social safety nets makes the unemployed particularly vulnerable, and a crisis is taking place which the market is unable to remedy. The market has failed to deliver mass employment in South Africa, and will continue to fail, irrespective of supply-side interventions. Given the constitutional responsibility of the state to protect the socio-economic rights of its citizens, urgent interventions are now required to defuse the social, political and humanitarian breakdown which continuing labour market failure has initiated.

²⁴ Kingdon & Knight also argue that supply side interventions (upgrading human capital) will not solve the unemployment problem since the critical factor is one of net labour demand deficit (2001, p 23).

²⁵ Unemployment in South Africa exceeds the levels of unemployment in the US during the depression of the 1930s.

Chapter 4:

Job Creation and Public Works, an Analytical Framework for Programme Design

Given the failure of the market to provide sufficient employment in South Africa, direct policy intervention is urgently required to address the joint challenges of poverty and unemployment²⁶. Internationally policy responses to unemployment range from the demand oriented Keynesian expansionary fiscal stance and direct employment creation schemes on the one hand²⁷, to neo-classical supply side interventions and the creation of a more flexible labour force on the other²⁸. In the context of the current South African unemployment crisis a supply side intervention is inadequate, as it is not lack of skills, but net lack of employment which is the critical factor. While an increase in the skills level of the labour force will meet the structural demand for skilled workers, this demand is not sufficient in scale to absorb the majority of the unemployed, and nor will skilled workers in deep rural areas be significantly more likely to find employment. Hence a supply side response is only partial, and marginal in terms of the broader issue of unskilled rural and youth unemployment (Kingdon & Knight 2001).

Demand oriented policy responses to unemployment may be separated into three main categories; formal sector employment generation, informal sector employment generation and public works. Each of these responses will be discussed in more detail below, and an analytical framework for public works programme design outlined.

²⁶ The need to reconsider the role of the state is recognised in the Employment and Growth Strategy Framework Paper, prepared by the Department of Trade and Industry in 2001, given the ‘limitations of the market’ in terms of employment provision.

²⁷ This approach is typified by the US response to the Great Depression in the 1930s, when massive state expenditure and public works programmes were initiated to absorb up to 30% of the unemployed nationally, in an attempt to stimulate consumer demand and prevent deepening of the economic recession.

²⁸ The UK and US responses to rising unemployment during the recession of the 1980s characterise the supply side response.

Formal Sector Employment Creation

Formal sector employment generation is directly linked to economic growth through a process of mutual reinforcement²⁹, and this characterises the dominant South African policy response, outlined in the Department of Trade and Industry Employment and Growth strategy (2001). This approach addresses mass unemployment and poverty reduction only indirectly, mediated through increased GDP in the long term, in a contemporary version of the contested ‘trickle down’ approach. While this strategy has the potential to promote economic growth and skilled employment, it does not address the structural unskilled labour deficit.

Informal Sector Employment Creation

The second category of policy responses to employment creation is informal sector employment generation, which primarily occurs through the creation of SMMEs and micro-credit organisations. These approaches aim primarily at skills development and transformation³⁰ in order to stimulate informal sector activity. However the scale of SMME and micro-credit engendered employment growth is not sufficient to redress the massive structural labour demand deficit (Lewis 2001a)³¹. Also, SMME interventions tend to be concentrated at the top end of the informal sector, thereby excluding the most marginalized, since the poorest have less access to the human and financial capital required to participate in SMME activity.

²⁹ In this scenario growth contributes to formal sector employment creation which in turn contributes to further growth.

³⁰ Transformation is the term used to refer to policy interventions aimed at redressing the racially skewed distribution of enterprises and economic activity within the South African economy, arising from the historical constraints of Apartheid.

³¹ Lewis highlights the fact that SMME employment growth is tending to arise as a result of the creation of new SMME firms, while existing SMMEs are reducing their labour demand, leading him to question the policy of continued new SMME creation as a strategy for net employment creation (2001a, piii). Nattrass (1998) and Borat & Liebbrandt (1998) both make an associated critique of the micro-credit approach to large scale job creation, arguing that the sector is dominated by ‘survivalist’ poverty alleviation oriented activity, rather than dynamic expansionist enterprises, thereby questioning the potential of this sector to make a significant contribution to the national employment crisis.

Only the third category of policy response, public works, is explicitly concerned with both poverty alleviation and job creation. The primary purpose of public works programming is poverty alleviation through labour absorption, and this is frequently achieved through the creation of public assets using labour intensive methods. Public works schemes function as a social safety net by directly increasing unskilled labour demand and making direct wage transfers to participants. Such schemes have the potential to absorb a large percentage of excess labour; during the Great Depression public works schemes in the US absorbed up to 30% of the unemployed (Rifkin 1996), while in Tunisia and Mauritius similar programmes accounted for between 20 and 40% of the unemployed during the early 1970s, and the Maharashtra Employment Guarantee Scheme in India absorbed up to 75% of available person days in rural Maharashtra State (Maxwell 1978, quoted in Reynolds 1984).

Given the portfolio of job creation policy options available, public works offer the best match with the profile of unemployment in South Africa, having the potential to match the scale of the unemployment problem, while also directly addressing poverty alleviation, and at the same time responding to the national priority of infrastructure creation³².

A Definition of Public Works

Public works are based on the fundamental concept that the most abundant asset of the poor is their labour. In a public works scheme the state, or an agent acting on its behalf, develops programmes of public work in order to create increased demand for labour, often using labour intensive techniques to enhance the amount of employment absorbed. The goal is most frequently to absorb labour in order to effect an income transfer and hence reduce poverty. This is often done in association with the creation of infrastructural assets, and may also entail secondary objectives relating to supply side improvements such as skills transfers, or political objectives implicitly aimed at the diffusion of instability.

³² An expansionary infrastructure programme to accelerate delivery on the backlogs of social infrastructure was identified as one of the central priorities of the GEAR programme, (GEAR 1996).

The outcome of public works programming is conventionally measured in terms of ‘workdays created’ in order to facilitate programme analysis and comparison.

A Public Works Analytical Framework

Public works are however a highly heterogeneous instrument, and need to be designed to address the specific characteristics of labour demand deficit in different contexts in order to achieve the absorption of surplus labour, poverty alleviation and asset creation in the most effective way. The success of a public works programme is contingent on correctly defining the labour market problem and designing the programme response accordingly. An analytical framework outlining the key design components of a public works programme, and the range of options within each is set out in figure 2 below.

Figure 2: Public Works Analytical Framework

Overall Objective	Poverty Relief ↔ Welfare/financial transfer	Poverty Reduction Skills transfer
	(Asset creation)	(Asset creation)
Nature of Employment Deficit	Acute ↔ Natural disaster	Chronic Structural shift in economy
Timescale	Short Term ↔	Long Term
Beneficiaries	Targeted ↔	Universal
Economic Objective	Microeconomic ↔	Macroeconomic
Programme Concept	Multiple Job Creation Projects ↔	Increase Labour Intensity of Government Expenditure

Public Works Objectives

Public works programmes have the joint objectives of poverty alleviation and/or poverty reduction, and asset creation. At their simplest they alleviate

poverty through a transfer to increase household income. This intervention does not break the poverty cycle, or address household economic mobility, but relieves poverty by enabling household consumption smoothing, reducing vulnerability to stochastic shocks, and diminishing the size of the poverty gap. Even when transfer benefits are small, income stabilization can preempt acute distress, and hence the insurance function of a transfer is as important as its transfer function³³.

Public works programmes are not only driven by poverty objectives, they also respond to existing demand for asset creation and maintenance, and consequently are critically different from simple welfare initiatives. Public works programmes match excess labour supply with unmet demand for infrastructure creation, a factor which 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 clarification and prioritisation of the objectives of a public works programme is critical for successful implementation. Poverty alleviation programmes are the simplest to manage, creating jobs and offering a financial transfer in return, while poverty reduction programmes tend also to include micro-credit and/or training objectives. Additional functions such as community empowerment, capacity building and transformation have also been added to the public works concept in South Africa³⁴, and in some instances this plurality of objectives has hindered progress on the primary job creation objective. The multiplicity of objectives ascribed to South African labour-intensive public works programmes led Adato et al (1999, p xiii) to argue, 'Relief and development, income generation and empowerment, jobs today and training for future jobs ... is... without a precedent elsewhere in the world.' The cost of this unprecedented approach is illustrated by the performance of the National Community Based Public Works Programme which in 1999/2000 created only 2,000 sustainable and

³³ It is important to note however that destitute households, especially female or child-headed households, may not have an adult who is able to work, particularly given the high incidence of HIV/AIDS, and that these households are thereby excluded from the benefits of participation in public works programming. For this reason, among others, public works programs should not be conceptualised as an alternative to social safety net responses to poverty in South Africa, such as the Basic Income Grant.

³⁴ This range of objectives are included in the strategy of the National Programme for Public Works, Department of Public Works 1996.

20,000 unsustainable jobs at a cost of R377 million (Department of Public Works 2000). This conceptualisation of public works programming as a transformational tool, rather than a tool to address the national employment crisis explains the poor performance and high cost of South African interventions to date³⁵. 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.

The Nature of the Employment Deficit

If an employment deficit is acute, occurring as the result of a natural disaster, a local response is required which compensates in the short term for the loss of employment opportunities. This response must be implemented rapidly and be synchronized with the period of demand deficit in order to address immediate welfare needs and prevent the crisis selling of assets which could drive households into chronic poverty.

If the employment deficit is chronic however, arising for example from structural labour market shifts, as in South Africa, or economic transition, then a longer term solution is needed which generates sustainable employment opportunities on a national scale which are targeted to the characteristics of those worst affected. In this context the rapidity of implementation is less important than sustainability, appropriate targeting and scale.

Public Works Timescale

A short term intervention is appropriate when the employment deficit is temporary and welfare is undermined on a short term basis. However, in a situation of chronic unemployment, a short term job creation initiative may have little poverty alleviation or reduction impact, and may even reduce

³⁵ Gwagwa, the Director of the Independent Development Trust responsible for implementing the national programme explained the low number of jobs created, and high costs in terms of the fact that 'For us [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 22).

household welfare in the medium term³⁶. In the chronic unemployment scenario a short term intervention focusing on poverty alleviation will have negligible impact beyond the immediate period of the transfer, as it will not permit household consumption smoothing, or reduce vulnerability to stochastic shock, neither is it likely to entail sufficient capital accumulation to enable movement out of poverty. Equally, a short period of training or job experience is unlikely to have a significant impact on human capital accumulation (Adato et al 1999) or prospects for finding employment in the context of a labour demand deficit of the South African scale³⁷, while short-term micro-credit interventions are by definition not sustainable³⁸.

From a technical and administrative/managerial perspective the design and implementation of public works programmes within short term planning and implementation horizons is not cost-effective (Phillips et al 1995 and McCutcheon 2001c³⁹). Short term planning horizons may compromise the quality or appropriateness of the asset created and programme management. Equally importantly, public works programmes typically experience high start up costs during the initial period of training and systems development, which may range from a period of months to a period of several years, depending on the scale and complexity of the project, with a programme only reaching efficient levels of output and cost efficiency after this initial start up phase⁴⁰. Hence short term programmes are likely to experience high costs and sub-optimal outcomes, in terms of programme impact, quality and cost effectiveness, as illustrated schematically in figure 3.

³⁶ Anecdotal evidence suggests that in some cases household welfare may deteriorate after participation in a short term job creation programme, due to shifts in household consumption patterns and increased indebtedness (D Horner, SALDRU, University of Cape Town, personal communication, 2002).

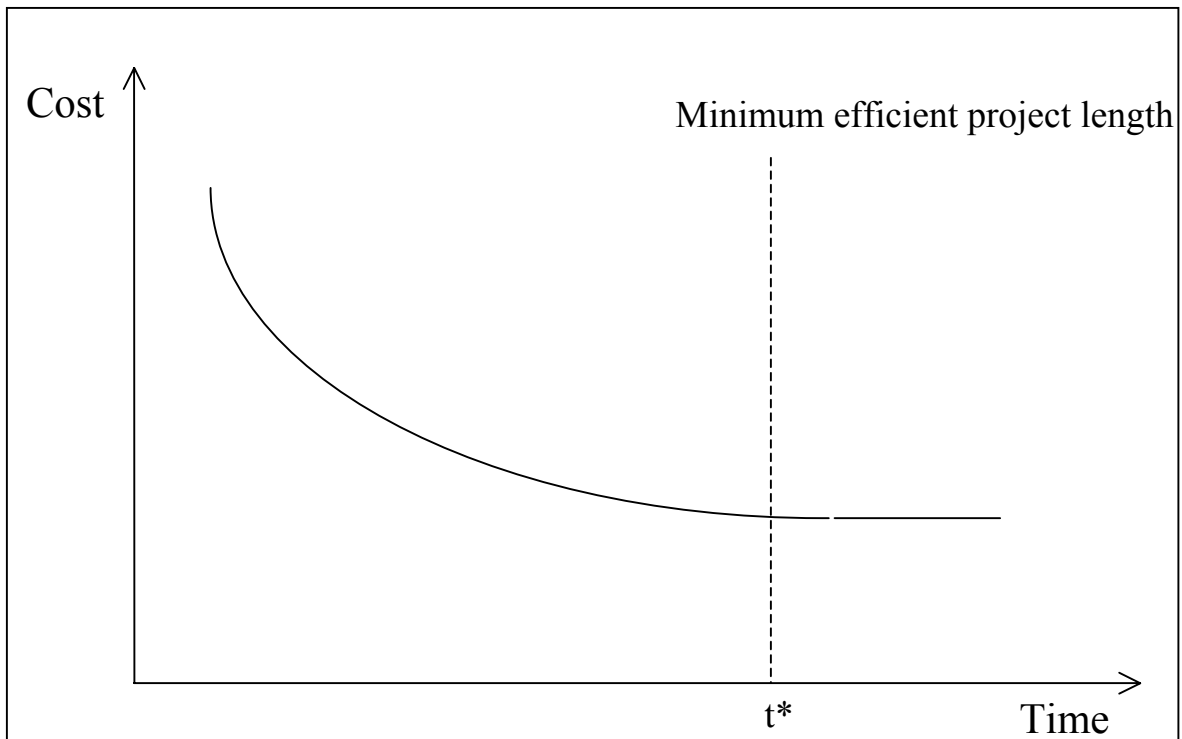
³⁷ There has been little research in South Africa to evaluate the impact of skills training on successful job search among the different segments of the unemployed, nor among the unemployed as an aggregate. This evaluation is required urgently in order to assess the effectiveness of training aspects of public works programming

³⁸ Micro-credit is based on the development over time of a financial relationship between the agents involved, and the transfer of skills for business development. This cannot be achieved in a short term framework.

³⁹ McCutcheon argues that short term interventions entail an 'almost inevitable loss of concentration upon technical, economic and deeper social objectives', 2001c, p8.

⁴⁰ See Phillips et al 1995 for a detailed discussion of the timeframes for civil engineering public works programmes to reach maximum cost efficiency.

Figure 3: Minimum Efficient Project Length



The nature and value of the assets created also influences the long-term employment and income-creation effects of short term public works programs. If assets engender large and sustainable employment multiplier effects, then a short term intervention may be appropriate. This is contingent on the assets created through public works being in line with local or national priorities, their ability to stimulate ongoing economic activity, and the inclusion of a maintenance component in the budget design, to prevent asset deterioration post construction (de Bruyn 2002). If the assets created enhance the welfare of the poor (by improving rural access to markets or providing Primary Health Care facilities for example), this will further improve the welfare impact of an intervention.

In the South African context there is no economic analysis to indicate that sustained positive employment gains have accrued from short term public works interventions, at either household or community level; further work is urgently required in this area, to ascertain the economic validity of ongoing short term public works interventions.

Beneficiaries and Targeting

Public works programmes may be universal or targeted, depending on the characteristics of the labour deficit, the objectives of the programme, and the resources available. Universal public works programmes are open to all who are seeking work, and are characterised by the Maharashtra Employment Guarantee Scheme (MEGS), and the Swedish unemployment programme (Ginsburg 1983).

Given the limitations frequently imposed on universal interventions by fiscal constraints, particularly in a context of poor economic growth, a targeted programme may be more cost-effective and have a greater poverty alleviation impact. In this case the targeting criteria are critical, and depending on the scale of unemployment and the number of jobs generated, they need to be set more or less stringently. In South Africa official public works targeting criteria tend to be set extremely loosely, focusing on women, children and the disabled, and excluding any explicit reference to poverty, (see for example the Department of Public Works Annual Report 2000-1). Such loose criteria seem inadequate in the context of a 37% unemployment rate, representing some 7 million jobless, with 70% of the poor unemployed, when the public works effort nationally is creating fewer than 100,000 jobs each year⁴¹. Currently the demand for employment in public works programmes far outstrips public works supply, and hence extreme levels of rationing are taking place, and the criteria currently in use in South Africa render public works a very blunt instrument in terms of anti-poverty programming⁴². Without adequate targeting public works programmes function as generalised transfer programmes to those who are willing to work at a given rate, rather than anti-poverty programmes, a critical insight which is frequently overlooked in the international literature.

Internationally the main mechanisms used for targeting public works are, random lottery based selection, community selection, the use of demographic criteria and self-targeting based on wage levels, and geographical programme targeting (focusing on poor areas, rather than

⁴¹ Estimate derived from Department of Public Works 2001, and Special Allocation for Poverty Relief Progress Reports 2002

⁴² Targeting under the National Public Works Programme is based on broad female/youth/disability criteria

individuals). The wage level is the dominant instrument for targeting, often used in conjunction with other techniques, based on the assumption that if public works wages are set at or below the prevailing wage, the resultant self-selection will exclude the non-poor. As Ravallion asserts, ‘provided the wage rate is low enough it will self-select poor participants while not undermining their incentive to take up other jobs when available. A low wage rate will also help assure a good distribution of benefits amongst the poor’⁴³.

This approach has two potential drawbacks. While retaining a low wage maximises the number of participants in the scheme per unit of expenditure, it also entails lower transfer earnings per poor participant. Secondly, in a high unemployment context, even a low programme wage may not ensure exclusion of those who are not the poorest; since the poor are the majority in many areas, and employment opportunities scarce, access to wage income may be attractive to the non-poorest and hence undermine the intended impact of targeting – in this instance self targeted programmes may provide jobs for the poor, but not necessarily the poorest. This approach is particularly problematic when demand for employment exceeds supply, which is the case in most South African schemes (Adato et al 1999, McCord 2001). If the poor are conceptualised as a single entity then this approach is adequate, but if the poor are disaggregated in terms of the depth of their poverty, a more heterogeneous population emerges, and a more subtle form of targeting is required to ensure that poverty among the lower deciles is addressed. If public works programmes are to be used as an instrument of poverty alleviation, as well as job creation, more stringent targeting is essential.

Programme design is also important here, as if programmes are to be targeted to address the needs of a specific demographic group, such as the female African rural poor identified above, the programme needs to be one which will extend to the deep rural areas where female African unemployment is concentrated. In this instance, rural road maintenance, rather than for example, hospital construction, would be particularly appropriate.

In order to avoid the grossest targeting errors, wages should be set no higher than the prevailing market wage for unskilled labour, as if it were set above

⁴³ This issue is discussed further in Ravallion 1998, p8.

the market wage labour market distortions could ensue⁴⁴. In the absence of a legal minimum wage, the wage may be set at or below the prevailing wage⁴⁵. Drawing on an analysis of the Maharashtra Employment Guarantee Scheme (MEGS), Datt & Ravallion (1994) argue that too high a wage can erode the effectiveness of poverty targeting with perverse anti poverty consequences⁴⁶.

The relationship between the programme wage and the ruling market wage is critical in terms of ensuring some measure of poverty targeting. However, in the context of mass unemployment, wage-based self selection is an inadequate instrument, as excess demand for jobs will lead to rationing, even at a low wage. In this case additional criteria based on demographic characteristics are required in order to guarantee an anti-poverty impact.

In order to assess the effectiveness of targeting and the poverty impact of public works programmes, baseline data is required to establish the characteristics of programme participants, and panel follow up is required to assess the anti-poverty impact of the intervention over time.

Economic Objective

If immediate micro-economic, or household poverty is the objective of public works programming, then it is necessary to focus on transferring resources to the most vulnerable households, as discussed above, by means of poverty targeting. However, if community or district economic renewal is the objective, or macro-economic growth through a Keynesian stimulation of demand, the strategic geographical clustering of programmes would be critical, as would the growth potential of the areas selected.

⁴⁴ In some cases the wage level may be dictated by the legally binding minimum wage, which may be above or below ruling market wage

⁴⁵ In Chile public works remuneration was set at 70% of the minimum wage, while in India it is set at the minimum wage, despite the fact that this is above the market wage in many regions (Subbarao 1997).

⁴⁶ The MEGS wage was set at the Indian minimum wage, which was lower than the market wage, until in 1988 it was revised upwards above the market wage. The result of shifting the public works wage above the market wage was increased demand for public works employment, job rationing, an erosion of the 'guarantee' element of the programme, and hence a reduction in the effectiveness of poverty targeting. Studies of public works in Tanzania, Botswana, Kenya and the Philippines, also indicate that programme wages set above the market rate for unskilled labour, attracted the non-poorest, and led to increased job rationing (Subbarao 1997).

Programme Concept

The traditional conceptualisation of a public works programme consists of a specific job creation project, implemented at a local, regional or national level.

There is however an alternative, broader conceptualization of public works programming, based on the concept of increasing the labour intensity of mainstream government expenditure on infrastructure creation and maintenance. Under this approach current public sector capital expenditure itself offers an opportunity to generate employment, without additional demands on the fiscus. In support of this approach McCutcheon highlights the discrepancy in scale between state expenditure on the construction industry, and its investment in public works programming, arguing that marginal expenditure allocations are inadequate in response to the major structural problem of unemployment⁴⁷. McCutcheon argues that ‘a public works programme should be aimed at fundamentally changing the way in which publicly funded infrastructure is built so that employment and skills transfer are maximised for the unemployed’ (McCutcheon 1995, p23). In this way government would use public infrastructure budgets to contribute directly to labour intensive employment by regulating the terms under which public contracts were granted; since the state comprises 75% of the client base of the civil engineering sector it has leverage to promote increased labour intensity (McCutcheon 2001b).

The assumption underlying this approach is that labour intensive methods are directly comparable to capital intensive techniques in terms of cost and quality, providing certain conditions are fulfilled⁴⁸ (Phillips et al 1995a) and the implication is that a major expansion of employment may be generated

⁴⁷ McCutcheon 2002, personal communication. Total construction industry investment in 2000 was approximately R40 billion, (Langenhoven 2000) compared to a national public works budget of R274 million.

⁴⁸ The basic principles for effective labour intensive construction, in terms of cost and quality parity as set out in the engineering discourse by McCutcheon, Phillips et al may be summarised as; appropriate materials and design for labour intensive construction, the development of improved labour intensive construction techniques, the use of pilot projects to establish correct practice, tendering and construction administration process adaptations, small contractor development programmes, community participation, and effective supervision.

through budgeted government expenditure. If centrally coordinated this approach would entail considerable economies of scale in public works programming nationally, for example reducing the development of parallel management structures and administrations, and establishing systems for targeting, monitoring and evaluation⁴⁹.

The South African Conceptualisation of Public Works

The South African National Public Works Programme was originally conceptualised as an instrument for asset and employment creation, as part of 'the systematic re-orientation of public sector approaches to infrastructure provision' (NEF 1994), and was to be 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 also recognised in GEAR (1996), which argued that 100,000 new jobs would be created each year through labour intensive responses to the creation and maintenance of infrastructure.

However, successive policy shifts and the reprioritisation of objectives in the Department of Public Works have reduced the relative priority of employment creation through the labour intensification of infrastructural provision. A proliferation of additional objectives attached to public works programming has obscured the more fundamental objective, and rather than reorienting national policy on capital expenditure and labour intensity, the Department of Public Works instead focuses on more conventional add-on public works programmes through the National Public Works Programme⁵⁰.

In the context of the chronic unemployment and poverty situation in South Africa, long term, targeted demand side labour market responses are

⁴⁹ Each of these issues is an area of inefficiency under the current public works scenario in South Africa (Adato et al 1999, McCord 2001).

⁵⁰ Rather than reorienting infrastructural investment throughout the administration, the Department of Public Works contribution to public works was limited to the administration of the National Public Works Programme, which in 2000/1 represented only 9% of its total budget, and created only 2,196 sustainable and 21,612 unsustainable jobs. Department of Public Works Annual Report, 2000/1.

required, which may be directed at household level poverty alleviation and asset creation. The implication of this analysis is that short term and poorly targeted public works programmes may not be effective instruments in response to the current crisis, and that the policy priority should be the development of longer term, sustainable, coordinated public works programmes creating and maintaining strategic assets, which will *sui generis* contribute to poverty alleviation and welfare. Such a programme may either be achieved by redirecting existing public works budgets, or by a more fundamental reorientation of the state's construction and maintenance allocations, to promote labour intensification throughout its programme of works.

Chapter 5:

The Zibambele Programme, A Case Study from KwaZulu Natal

A case study illustrating how deep rural unemployment and asset creation may be addressed through the labour intensification of road maintenance will now be presented. The case study is the Zibambele⁵¹ Programme, administered by the Department of Transport in KwaZulu Natal. KwaZulu Natal has a high concentration of unemployment in deep rural areas⁵², and for this segment of the unemployed it is particularly difficult to create employment opportunities, due to their lack of skills and inaccessibility. This group poses a challenge in terms of job creation/anti-poverty programming, and hence it is useful to examine the impact of the Zibambele public works programme, which was designed specifically to address their needs. The programme will be described in some detail in this chapter, with a full impact analysis in chapter 6.

Poverty and Unemployment in KwaZulu Natal

KwaZulu Natal has a population of 9.5 million (Bureau of Market Research 2001), of whom more than 40% live in poverty with household expenditure falling below the household subsistence line (HSL)⁵³, while 10% of households live on less than 50% of the subsistence line (Carter & May 2001). The implementation of the 1998 KwaZulu Natal Income Distribution Survey (KIDS) enabled detailed modeling of dynamic poverty trends in the province, and suggested that headcount poverty increased between 1993 and 1998, while per capita expenditure became increasingly unequally distributed. Underlying this trend is a skewed pattern of income mobility in

⁵¹ Zibambele means ‘doing it for ourselves’ in Zulu, and is a public works programme developed by the Department of Transport in KwaZulu Natal.

⁵² The majority of the unemployed in KwaZulu Natal correspond to Klasen’s second most populous group of the unemployed; the poorly educated rural unemployed. This group comprise 28% of the total unemployed, are almost exclusively African, predominantly female, and concentrated in KwaZulu Natal, the Eastern Cape, Limpopo and the North West.

⁵³ This figure is based on the Household Subsistence Level (HSL) definition of poverty. The HSL is based on household subsistence needs, including shelter fuel and transport, as well as food and basic clothing costs, calibrated on basis of age and sex.

which initially better-off households display more upward mobility than initially poorer households. Carter & May argue that shocks, vulnerability and imperfect financial markets prevent the initially poor from building up asset stocks, thereby catching them in a poverty trap with 65% of those below the HSL in 1993 remaining there in 1998. The resilience of households and their sensitivity to shocks was found to be the critical factor in determining their ability to accumulate, with failure to accumulate being at the heart of persistent poverty. Labour market participation was found to be the key determinant of household resilience, and hence household welfare.

Average non-urban unemployment rates in KwaZulu Natal are 28.6% (narrow) and 43.5% (broad) (LFS 2001), closely mirroring the national unemployment distribution, see table 6 below. For this reason a public works case study based on this province is particularly appropriate.

Table 6: KwaZulu Natal and National Unemployment Rates by Gender and Location

	Narrow			Broad		
	Total	Male	Female	Total	Male	Female
KwaZulu Natal						
Total	26.4	27.2	25.6	37.3	36.0	38.4
Urban	24.9	23.1	26.9	32.5	29.2	35.9
Non-urban	28.6	34.2	23.8	43.5	46.1	41.4
National						
Total	26.4	24.8	28.0	37.0	33.1	41.0
Urban	26.2	24.1	28.6	33.5	29.5	37.8
Non-urban	26.7	26.4	26.9	43.0	39.7	46.0

Source: Labour Force Survey 2001

Given the high percentage of households living below the poverty line, the extremely high levels of non-urban unemployment, and the close correlation between unemployment and poverty, the potential positive role for rural public works programming in this province is considerable.

The National Context

The Ministry of Transport's Moving South Africa project, initiated in 1997, called for a twenty year strategic framework for the transport sector based on the economic participation of the disadvantaged, skills and capacity building and job creation. In support of this the subsequent 'Road to Wealth and Job Creation' strategy⁵⁴ called for a 'roads infrastructure solution to rural unemployment and poverty'. The Zibambele programme is one component of the KwaZulu Natal Department of Transport's integrated approach to realising this vision.

The KwaZulu Natal Department of Transport and Job Creation

The Zibambele Programme is a public works programme implemented by the Provincial Department of Transport in rural KwaZulu Natal in response to the poverty and unemployment in the province, with the twin objectives of constructing and maintaining rural roads and alleviating rural poverty. The KwaZulu Natal Department of Transport faces the joint challenge of chronic under-investment in the maintenance of the rural access road network, and an estimated construction requirement of 11,000 km of rural access roads in order to provide adequate access to the rural population⁵⁵. In line with the vision of the National Ministry of Transport⁵⁶, the Department considers its responsibility for social uplift as inseparable from its transportation objectives, as exemplified by the Departmental motto, 'Prosperity through Mobility'. In recognition of the urgency of the province's social and economic problems, the Department is implementing its transport mandate using an approach which addresses long term poverty alleviation, community development and conflict resolution as well as the creation of institutions to promote democratic accountability.

In order to achieve this vision the Department has transformed itself during the last three years to focus on job creation and poverty alleviation based approaches to the maintenance and construction of the road network using

⁵⁴ Ministry of Transport, February 1998

⁵⁵ For criteria determining the need for rural road construction in KwaZulu Natal see the Community Access Roads Needs Study, Department of Transport, 1997.

⁵⁶ 'Road to Wealth and Job Creation', Ministry of Transport, February 1998

contracted labour, and the simultaneous creation of the bureaucratic infrastructure required at provincial and district level to promote community participation, accountability and conflict resolution/prevention. Three programmes have been created to realise these objectives; the Zibambele public works programme, the Emerging Contractor system, and the promotion of the use of labour intensive construction approaches.

In the Zibambele programme local households are paid a regular fee in return for maintaining a given length of road, on the basis of eight days work per month⁵⁷. Under the Emerging Contractor system, skills are transferred to the unemployed who are then preferentially awarded government contracts of increasing levels of technical complexity with support and training from the Department, while the labour intensive programme promotes the use of labour intensive approaches to road maintenance throughout the province, where technically appropriate. These schemes are not add-on programmes to mainstream Departmental activities, but are central to the methodology of all departmental work. Since 2000/1 the Department has adopted a zero-budgeting approach, whereby resources are allocated on the basis of regional business plans which are conditional on the inclusion of Zibambele, Emerging Contractor and labour intensive approaches.

The Zibambele Programme

The Zibambele programme was initiated in 2000, and its objectives are to⁵⁸;

- Maintain the province's rural road network
- Provide destitute rural households which have no other source of income with a regular income
- Put people to work who are unemployable due to their poverty
- Improve life chances of the contractors and their children (nutrition, education, dignity and economic activities)
- Enable contractors to organise themselves into credit unions and invest savings in other productive activities
- Create sustainable work opportunities

⁵⁷ The programme is based on the 'lengthman' contract system which has been used extensively in Europe and Southern Africa.

⁵⁸ Objectives as set out in the KwaZulu Natal Department of Transport's application to the Impumelelo Innovation Award Programme, 2000.

There are currently approximately 10,000 Zibambele contractors maintaining approximately one third of the KwaZulu Natal rural road network⁵⁹. The Zibambele programme is a conceptually simple poverty alleviation mechanism, delivering a low level transfer (R334) to a household in return for eight days of work per month maintaining a length of road to an agreed standard. The part-time nature of the work, which may be carried out flexibly within the month, is designed to accommodate engagement in household tasks and other wage or subsistence opportunities should they arise. The work is allocated on a household basis, so that if the participating household member falls sick or dies, another household member may take up the activity, and hence retain the monthly income.

The scheme was initiated and managed by a small and dynamic group within the Development Directorate of the Department of Transport, and was initially reliant on advisory and implementational support from external social and technical consultants. Now the programme is established, the Department is building in-house management and implementation capacity, and the use of external consultants is being reduced. The Department plans to extend the number of contractors to 14,000 by the end of the 2002/3 financial year, and ultimately to a maximum of 40,000.

Financing

The Zibambele programme is funded solely from the Department of Transport budget, which increased by 26% between 2000/1 and 2001/2 from R856million to R1,083 million⁶⁰. The budget of the rural access roads programme increased from R3 to R250 million over the five years to 2001/2⁶¹, funded by increases in the provincial transport budget and the reprioritisation of the maintenance and construction of rural access roads over black top roads in line with the revised vision of the Department. This allowed for the allocation of R33.5 million to the Zibambele programme in 2001/2, rising to R55.7 million in 2002/3, representing approximately 4% of

⁵⁹ It is not possible to give a more exact proportion as the true extent of rural access road network is not known and the process of formal logging is currently underway.

⁶⁰ KwaZulu Natal Department of Transport Budget Speech 2001/2

⁶¹ KwaZulu Natal Department of Transport Budget Speech 2001/2

the total provincial transport budget⁶². The use of Zibambele contractors for road maintenance is now integral to the Departmental way of working in terms of meeting its operational/technical commitments, and as such the programme has a secure and sustainable resource allocation.

The Zibambele Budget

The budget for the Zibambele programme in 2002/3 is R55.7 million. Of this R51 million is allocated for contractor salaries, R2.7 million for tools, R1 million for training and R1 million for technical support. This budget was calculated on the basis of 10,000 contractors in April 2002 rising to 14,000 in April 2003, and the costings phased accordingly. The programme and management costs of the Zibambele programme are presented in table 7⁶³.

⁶² It should be noted that conventional capital-intensive methods still account for the majority of the Departmental budget, and hence the potential for employment generation within the capital intensive component is also significant.

⁶³ The technical support budget line is included in the Zibambele budget in for 2002/3 but not 2001/2, inflating the cost of the programme in 2002/3. See Appendices 9 & 10 and McCord 2001 for more detailed budget information

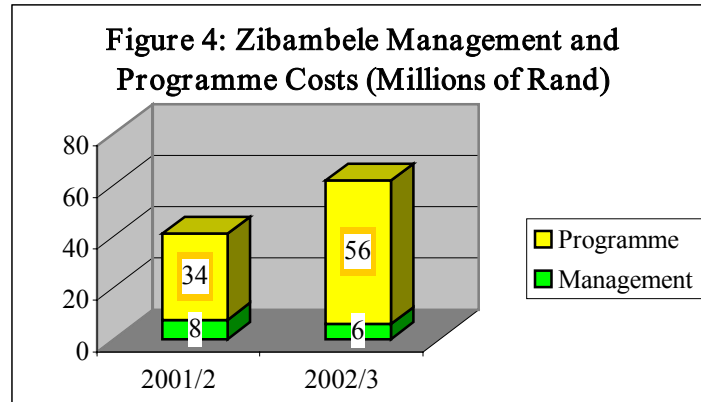
Table 7: Zibambele Budget 2001/2 and 2002/3 (Rands)⁶⁴

Management Budget	2001/2			2002/3
Head Quarters	312,200			330,932
Regional Staff	3,343,530			3,544,141
Consultancy Inputs	3,800,000			2,000,000
Total	7,455,730			5,875,073
Operational Budget				
Salary Allocation	30,000,000			51,096,500
Tools	1,500,000			2,700,000
Training	2,000,000			1,000,000
Technical Support (Dig, load and haul)				1,000,000
Total	33,500,000			55,796,500
Overall Programme Costs				
			%	
Management total	7,455,730	18.2		5,875,073 9.5
Operational total	33,500,000	81.8		55,796,500 90.5
Total	40,955,730			61,671,573

Source: McCord 2001 and KwaZulu Natal Department of Transport data

As the scheme expands the cost of the management structure relative to the number of Zibambele contractors is falling with management costs comprising 18% of total programme costs in 2001/2, compared to 9.5% in 2002/3, see figure 4.

⁶⁴ Based on a yearly average of 8,000 Zibambele contractors for 2001/2 (6,000 in April 2001 rising to 10,000 by April 2002) and 12,000 for 2002/3 (10,000 in April 2002 rising to 14,000 by April 2003).



Source: Own calculations from McCord 2001 and Department of Transport data

This progressive decline in the cost of management and planning components of labour intensive programmes occurs over time as systems and procedures are established, labour intensive specifications and methods developed and formalised, and management and contracting personnel trained, confirming the findings of Phillips et al (1995a). This also implies a progressive reduction in the cost per workday created over time.

The Selection of Roads for Zimbabwe Contracting

The selection of rural access roads for construction, upgrading and maintenance, is based on criteria set out in the Community Access Roads Needs Study (CARNS)⁶⁵, which uses a points system to develop a community development index based on the economic potential of an area, perceived priority needs, access to services, and the district Human Development Index⁶⁶. Using the CARNS index as the technical basis for decision making, the selection of roads then takes place in consultation with district level Rural Road Transport Fora (RRTF), which are elected bodies created by the Department of Transport, comprising representatives of key stakeholders from across the community, including traditional leaders. Since demand for rural access road construction and maintenance exceeds the possibility of supply, the establishment of agreed criteria is a key instrument for prioritisation, diffusing potential for conflict and corruption in

⁶⁵ Community Access Roads Needs Study, KwaZulu Natal Department of Transport, 1997

⁶⁶ It should be noted that there is an inherent tension in the CARNS model between the points given for HDI and those for economic potential, as low HDI may inhibit realisation of economic potential.

relation to resource allocation. Negotiations in the RRTF are mediated by Department of Transport staff, together with the social and technical consultants. Once the priority roads for reconstruction and maintenance have been identified and agreed by the RRTF and Department of Transport, the roads are formally classified as rural access roads prior to further investment⁶⁷.

To be eligible for Zimbabwe contracting a selected road has first to be upgraded to gravel road surface using heavy machinery to ensure that it is of a standard which is maintainable by Zimbabwe contractors. Were a road not upgraded to this standard, manual labour-intensive Zimbabwe inputs might not be technically appropriate or effective⁶⁸. Once a road has been upgraded, the RRTF may then propose that Zimbabwe contracts are issued for sections of its maintenance, and a decision is reached through negotiation between technicians and the RRTF on the basis of technical feasibility and local need.

Considerable investment in technical training related to road construction and maintenance, as well as negotiating skills is made in RRTF members in order to enable them to perform their consultative/advisory functions effectively and in this way to diffuse potential political tensions arising from the selection of roads for construction and upgrading, and Zimbabwe contracting. The RRTF structure serves to support all Departmental labour intensive initiatives, and not only the Zimbabwe programme. It also promotes accountability, creating a forum for community participation and engagement with state structures, as well as a venue for discussion and practical decision making, which is possible due to the participation of Departmental staff and technicians. In the absence of effective inter-departmental coordination at district level, the RRTF also provides a forum which other sectors of local government may attend, offering the potential for improved district coordination and planning⁶⁹.

⁶⁷ Clarity regarding the status and hence responsibility for road maintenance is a critical issue in terms of maintaining the rural road network, see Shroeder 1997.

⁶⁸ There is considerable debate within the civil engineering sector regarding this issue, with McCutcheon and others arguing the superiority of labour intensive upgrading/construction methods for roads which are to be maintained labour intensively (McCutcheon 2002, private communication).

⁶⁹ The extent to which the RRTFs actually serve a wider coordination function in each district is variable, however, it is their potential to serve this critical function as representative structures which is of major significance, and could be of broader benefit to the delivery of district services. The successful functioning of the RRTFs also has the potential to stimulate popular demand for improved service delivery and accountability.

Selection of Zibambele Contractors

The goal of Zibambele is to select contractors on the basis of need in a transparent and democratic way which breaks with the systems of political/ethnic patronage which currently prevail⁷⁰. In order to achieve this goal Zibambele contractors are selected at district level by the local community and the RRTF, with support from departmental staff. Notification of the contracting process is given to the local community by the RRTF who invite potential contractors and interested community members to attend a meeting at which the contractors are selected, registered and provided with initial instruction and equipment.

Community selection of Zibambele contractors is carried out using the criteria of household poverty, unemployment, and female or child headed households⁷¹ with support from the social consultants. The selection system is generally perceived to be effective, although it is potentially open to abuse, and ongoing facilitation is required by Department of Transport staff to ensure that the Zibambele programme is not subject to political capture⁷². In the absence of baseline data on the socio-economic status of those selected as contractors it is difficult to estimate the extent to which the programme is reaching its intended target group, or the degree of leakage to non-target participants. In order to address the effectiveness of targeting and also the anti-poverty impact of the programme, a baseline survey is required, together with ongoing longitudinal monitoring.

Community selection can lead to ‘less than optimal poverty targeting but has other compensating social benefits’ (Adato et al 1999). The social benefit of this approach is particularly important in the context of a highly politicised environment, where more than 40% of the rural population are

⁷⁰ See KwaZulu Natal Department of Transport application to the Impumelelo Innovation Award Programme, 2000.

⁷¹ The inclusion of child headed households in the programme is part of the Department of Transport’s attempt to respond to the needs of rural households affected by HIV. However, this initiative is still under discussion due to the potential negative welfare implications of child labour.

⁷² At a Zibambele selection in June 2001 applicants were exclusively male, which illustrates the need for ongoing monitoring and facilitation by Department staff in order to ensure that the applicant profile conforms to the Zibambele priority categories of female/child headed households, and those experiencing destitution.

unemployed⁷³, and the existence of pockets of extreme poverty render competition for Zibambele contracts severe, with more than ten qualified candidates often competing for each contract available. In the light of these issues, an external imposition of contractor selection could add to community tensions and the potential for political ‘capture’ of the programme.

Determination of Wage Levels

The objective of the programme is not to ensure that participating households do not fall below the poverty level, but to make a contribution towards reducing the poverty gap. Contractor monthly wage levels were initially set at the individual poverty line of R250 (2000 prices)⁷⁴. However the wage has been revised to R334, which is calculated on the basis of a pro-rata percentage of the monthly household poverty level (R980), based on eight days work per month⁷⁵, which is equivalent to an hourly rate of R5.57. This increase was introduced in late 2001, and the revised figure has been used as the basis for calculations in this report. It should be noted that this figure has not been calculated on the basis of household need, or on the basis of enabling a household to achieve certain minimum ‘functionings or capabilities’ (Sen 1999)⁷⁶. Further research is required to identify the optimal level of remuneration in terms of welfare need, consistency with the level of transfers under other provincial and national welfare and public works schemes, and impact on self-targeting (see below). On the basis of anecdotal evidence and informal discussion with contractors, the rate of remuneration is sufficient to enable significant improvements within participating households, primarily in terms of improving food security by enabling participants to purchase rather than beg for basic staples, and also covering the payment of school fees. However, again, formal survey work is

⁷³ LFS 2001.

⁷⁴ Manual for the Implementation of the Zibambele Road Maintenance System, Second Draft, KwaZulu Natal Department of Transport, July 2001. The figures are taken from the Department of Constitutional Development – Baseline for Determining Basic Services and Institutional Capacity Building.

⁷⁵ This is calculated as a pro-rata payment of the household poverty level at 2001 prices; $60\text{hours}/176\text{hours} \times \text{R}980 = \text{R}334$.

⁷⁶ This observation may be applied to the process of public works wage determination internationally.

required to confirm the anticipated impact of the transfer in terms of improved household welfare.

The wage levels are maintained in line with the industry standard for unskilled labour (R6.38)⁷⁷ and are set marginally below the contract rate for the emerging contractors, in order to provide an incentive to progress from Zibambele to emerging contractor work (see discussion regarding the feasibility of this progression below). Maintaining wage levels below the industry standard for unskilled labour is consistent with the concern not to distort the construction industry market wage structure. However, the international literature suggests that in order to have an effective targeting function, the comparator wage for a public works programme should be the prevailing market wage rate for unskilled labour, rather than the construction industry norm (Subbarao1997). The median monthly wage in rural KwaZulu Natal is R563, and for elementary labour it is R433⁷⁸. The Zibambele wage of R334 conforms approximately to the 25th percentile income in both groups. Given the high level of unemployment, and the fact that the Zibambele wage is paid on the basis of only 8 days labour per month, the Zibambele wage may be attractive to those who are not the poorest, and hence wage alone is unlikely to be an adequate targeting mechanism. This could be problematic in the light of the programme's targets of 'the destitute and unemployable', and renders the community selection process particularly important. Whether there is a problem of leakage to the non-destitute can only be ascertained through ongoing survey analysis.

Payment Mechanisms

Zibambele contractors are paid through an electronic transfer system, which is used by provincial government for all employees. This system was introduced to reduce corruption and the personal security risks attendant on cash payments, and since only limited cash transactions are permitted at super-regional or district level, it is the only option for remunerating contractors.

⁷⁷ KwaZulu Natal Department of Transport Memo, March 2002

⁷⁸ Liou, personal communication, derived from LFS, May 2001.

In order to be paid under the electronic transfer system however a contractor must have a bank account, which is not the case for the majority of Zibambele contractors, and in order to open a bank account a contractor must have formal ID documentation, which again many do not have. Hence Departmental staff assist the contractors with the formalities required to get ID and open a bank account, support which is essential given the limited literacy and numeracy of the majority of the contractors. The Department makes a small loan to cover the expenses involved in getting the necessary documentation, (photographs, transport costs etc), which is repaid in installments over the following months. Holding an ID card also has wider benefits for contractors, enabling them to access state welfare transfers for which they may be eligible, and to vote in provincial and national elections.

Under the electronic transfer system bank charges are an area of concern. In addition to an initial fee for opening the account, some banks make charges when funds are withdrawn using an ATM, levy standing charges, and close accounts with zero balances, disrupting transfer payments⁷⁹. Banks vary in their ability to accommodate the needs of small-scale users such as the Zibambele contractors, an issue which needs to be addressed nationally, through an agreement between the Department of Transport and the banking sector. This issue is important in terms of wider social development and job creation activity, and some form of social contract whereby banks change their practices to support small-scale development projects is necessary in order to address this problem.

The use of a bank-based payment system necessitates monthly travel to the nearest town and the Department estimates that up to 11% of monthly income may be lost in terms of overheads by the workers, due to a combination of bank charges and transportation costs to and from the bank⁸⁰. In addition to the loss of income, the town based payment system also implies that expenditure may take place in town rather than being concentrated in the immediate vicinity of the contractor, and as a consequence secondary economic benefits may not accrue to the local community. However contractors may derive benefits from the bulk purchase of staples, such as mielie meal, in town, which is significantly cheaper than the local purchase of smaller quantities. These relative costs

⁷⁹ This same approach by the banking sector is also problematic in relation to the Emerging Contractor programme, due to the high cost of credit and cheques.

⁸⁰ Interview with Mlawu, Director, Development Department, KwaZulu Natal Department of Transport, June 2001

and benefits need to be quantified in order to assess the distribution of primary and secondary economic impacts of the programme among the contractors and the local economy.

Expansion of the Zibambele Programme

The Department of Transport aims to extend the Zibambele programme to create employment for a total of 40,000 participants, and to expand from poverty alleviation alone, to the broader challenge of poverty reduction. These two objectives of quantitative and qualitative expansion are being addressed through the diversification of Zibambele contractor activity, and the introduction of a Zibambele micro-credit initiative respectively.

Extension to District and Provincial Roads

Increasing the number of contractors to 40,000 poses a challenge given the limited absorptive capacity of the KwaZulu Natal rural road network which totals only 17,000km, and so alternative approaches to absorb the additional labour are being identified. The first response of the Department was to reduce the length of road maintained by each contractor by 50%, thereby increasing the labour absorptive capacity of the rural road network in the province⁸¹. However, this initiative will not provide sufficient employment opportunities to meet the projected target, and the Department has successfully piloted the extension of Zibambele contractor maintenance to district and provincial roads⁸², where technically feasible. The Department has also piloted the use of labour intensive road construction techniques and found that this approach is competitive in terms of cost and quality⁸³.

The Ministry of Transport's 'Rural Access' document (2001) recommended that the focus on rural roads should be extended to include the whole rural transport infrastructure, taking into consideration non-vehicular means of transport. Including initiatives such as or path and track maintenance or

⁸¹ The potentially negative impact of this initiative on economic sustainability is discussed in Chapter 6.

⁸² Manual for the Implementation of the Zibambele Road Maintenance System, Second Draft, KwaZulu Natal Department of Transport, July 2001.

⁸³ Interview with Manicum, Co-coordinator, Development Directorate, KwaZulu Natal Department of Transport, July 2001

pontoon construction is an additional potential source of opportunities for increased Zibambele activity, which would also address rural access and mobility needs, although this is not yet under discussion.

National Road Maintenance

Similarly the use of Zibambele contractors could be extended to the off-road maintenance (drainage, clearance of bushes etc), and construction of national roads which fall under the responsibility of SANRA. In this case, a coordinating intermediary between the Zibambele contractors and SANRA would be required as SANRA works through lead contractors who recruit sub-contractors for given road segments of approximately 40 kilometers, and for this reason they are not in a position to tender directly with Emerging Contractors or Zibambele contractors. A contracting clause favouring consultants who make use of Emerging Contractors and Zibambele contractors could be introduced in order to address this problem⁸⁴.

Diversification of Zibambele Employment

In addition to extending the range of roads which Zibambele contractors are maintaining, and the scope of operation to include construction, options for expanding Zibambele labour absorption currently under discussion include road beautification schemes, the construction of public conveniences, the creation of road-side centres for trade and refreshment along roads, and engagement in road safety activity. The viability and benefits of such projects in terms of returns to investment have not yet been appraised in economic terms.

The basic skills learned by Zibambele contractors could also be applied to investment in rural infrastructure more generally, including the construction and maintenance of clinics, schools etc. However this would entail operation in spheres outside the remit of the Department of Transport, and

⁸⁴ Since SANRA's authority is likely to be extended from its current 7,000 km of national road to 20,000 km to include part of the sub-national network (Ross 2001), cooperation between the Department and SANRA to promote Zibambele participation in SANRA contracting would be an additional mechanism to promote Zibambele labour demand.

require the adoption of the approach more widely across the Provincial government.

Zimbabwe as Entry Level Emerging Contractors

The option of using a Zimbabwe contract as the first stage of participation in the Emerging Contractors programme was not viable, since Zimbabwe workers lacked either the aspiration or skills to engage in SMME entrepreneurial activities. Limited literacy and numeracy are major obstacles to Zimbabwe contractor participation in the Emerging Contractor programme, as are limited technical skills (the level of skills training and expertise of a Zimbabwe contractor is not adequate for the successful completion of a level one emerging contractor contract), lack of transportation capacity, lack of management/tendering skills, lack of access to capital, and lack of time, given the competing demands of managing the household and engaging in other subsistence activities⁸⁵.

The implication of this finding is that the Emerging Contractors and the Zimbabwe programmes cater for different segments within the labour market, and that while Zimbabwe offers a poverty alleviating transfer for the 'unemployable', the Emerging Contractor programme offers poverty reduction opportunities for those with greater levels of human and financial capital.

Micro-Credit

A micro-credit component is currently being added to the Zimbabwe programme with the objective of promoting saving as a basis for the development of small-scale income generation enterprises, in order to move participants beyond poverty alleviation to poverty reduction by stimulating informal employment activity, among the 'unemployable'. This process is based on the micro-credit system developed by the South African Chamber of Business, to which the Department makes a monthly contribution for each worker, which can be drawn down for individual or group income generation initiatives.

⁸⁵ This finding is based on discussion with Zimbabwe contractors and Department of Transport staff, KwaZulu Natal, 2001.

In terms of production for the local market, livestock raising, market gardening, and small-scale production initiatives could be incorporated into the Zibambele structure through the micro-credit scheme⁸⁶. Multiple agencies, both state and private, are implementing micro-credit programmes in the province and the coordination of initiatives is essential in order to ensure the complementarity of outputs, and consistency of benefits.

This initiative is subject to two challenges however, which may limit its impact; HIV/AIDS, and the depth of poverty in deep rural areas. The negative impact of HIV/AIDS on the success of micro-credit initiatives in South Africa has been highlighted by van de Ruit (2001), who has documented how the prevalence of the illness among a group of savers can lead to increased micro-credit failure rates⁸⁷. This issue is of particular concern in the KwaZulu Natal context given the high levels of HIV prevalence, and the incorporation of an insurance function into the initiative may be required in response to this problem. The second threat arises from the extreme de-capitalisation of the deep rural areas where the Zibambele programme is focused⁸⁸. As a consequence the success of the programme will be highly dependent on the correct analysis of either local consumer markets, or more distant, less constrained markets⁸⁹ and in the case of the latter, effective product development and marketing strategies, as well as the conventional skills development aspect of micro-credit programming will be required.

Integration with other Poverty Alleviation Initiatives

Despite the national policy of Integrated Development Planning at provincial level, coordination between Departments at provincial level is limited. Integration and joint planning of basic service provision, such as housing,

⁸⁶ Several initiatives, including a beading group, have developed spontaneously among contractors.

⁸⁷ van de Ruit (2001) argues that high levels of AIDS morbidity and mortality undermine the collective responsibility concept at the heart of the programme, and hence contribute an increased incidence of defaulting and failure in conventional savings groups.

⁸⁸ This is largely due to the reduction in wages and remittances income

⁸⁹ More attractive markets may be major cities within the province, wider South African markets, or international markets

education, health and transport is weak, a problem which applies equally at district level. The recommendations for 'coordinated nodal and linkage development, as an IDP sub-process' in the Ministry of Transport's recent 'Rural Access' document address this problem, but have yet to be internalised and implemented at provincial level, and may have little impact unless the incentive structure for inter-departmental cooperation is changed at provincial and district level. In addition to the Department of Transport, the Departments of Water Affairs, Public Works, Social Welfare, and Home Affairs are all engaged in job creation and/or welfare activities, but there are few effective mechanisms for the coordination of poverty alleviation or job creation initiatives within the province.

In addition to contributing to poorly integrated service delivery more generally, weak coordination leads to significant efficiency losses in anti-poverty programming, arising from the development of plural structures and the duplication of programme development and implementation activity. This could be addressed if shared resources were developed such as the creation of cross-departmental community consultation fora, or shared procedures for beneficiary selection, targeting, programme development, and monitoring and evaluation of impact. Currently each department is addressing these issues independently, without common norms, processes, goals or methodologies. In addition to the efficiency loss implications of limited coordination, there are also quality implications in terms of the consistency, transparency and equity of provincial anti-poverty programming.

An important factor underlying the poor coordination mechanisms at provincial level is the system of fiscal federalisation introduced as a consequence of the 1996 constitution, which devolved a degree of policy-making and fiscal authority to provinces and the new metropolitan councils. The result is competition for resources between line ministries at provincial level and hence each department has an incentive to maximise resource capture and constituency support, rather than cooperate. A revised incentive structure is needed with reference to national transfers for poverty alleviation and job creation, in order to alter the pay-offs in this situation, so that cooperation is promoted.

Conclusion

The Zibambele programme is a long term, sustainable response to chronic deep rural unemployment in KwaZulu Natal. In terms of the Public Works analytical framework outlined in chapter 4, the programme conforms to the poverty relief oriented long term programming response to chronic unemployment, with targeted beneficiaries, primarily microeconomic objectives, and it represents the labour intensification of existing state expenditure. The programme is aimed at job creation, poverty alleviation and asset creation, while also promoting democratic accountability and community participation. The programme has been developed over a five year period, and now has effective management and implementation systems in place centrally and at district level, with the potential for expansion both in terms of the amount of labour employed, and the range of activities involved, including micro-credit. The programme concept has the potential to be replicated in other line ministries and provinces, and offers an example of how public works programming may be used as an instrument to absorb a significant quantity of deep rural labour, while also maintaining significant infrastructural assets.

Chapter 6:

Zimbabwe Cost Effectiveness and Impact Assessment

Having outlined the Zimbabwe programme in some detail, the cost effectiveness and impact of the programme will now be addressed. A tripartite analysis methodology will be used to examine the three main components of public works programming; the relative costings of labour and capital intensity, the cost of the welfare transfer (the conventional public works cost-effectiveness perspective), and the poverty alleviation impact. These three analyses deal respectively with the three critical issues; i) the cost of asset maintenance under a labour intensive scheme, and whether it is comparable to capital intensive costings, ii) the cost of each workday created and of making a transfer to recipients, and whether this is comparable to other national and international job creation initiatives, and iii) the welfare impact of the programme, taking into consideration both monetary and multidimensional concepts of poverty (Kanbur 2002). This latter perspective, the poverty and welfare impact of public works programming, is frequently overlooked in the international literature (for example see Adato et al 1999 or Stock & de Veen 1996), a critical omission given the explicit poverty focus of most public works programming interventions. Examining the programme from these three perspectives enables some initial conclusions to be drawn regarding the effectiveness, sustainability and impact of the Zimbabwe approach.

Departmental Cost Comparison

The critical question in the public works discourse is whether labour intensive programming is cost competitive with conventional capital intensive methods of asset creation and maintenance. In the South African context the debate is ongoing, but while Adato et al (1999) quote the conventional engineering industry perception that labour intensive programming necessarily entails additional cost per unit output, a decade of research drawing on South African and Southern African experience by McCutcheon (1995, 2001a, 2001b, 2001c etc), Phillips et al (1995a) and others indicates that correctly managed, labour intensive maintenance and construction is cost competitive with capital intensive programming. The

implication of this is that additional jobs can be created within a given budget, and that enhanced job creation does not necessarily require additional fiscal allocations. An initial analysis of the Zibambele programme broadly supports this conclusion⁹⁰.

Wage Rate Comparison

Analysis of Department of Transport labour cost data enables cost-comparisons to be carried out in terms of wage costs, and for this to be extrapolated into labour cost comparisons per kilometer of road maintained. However, given the unavailability of disaggregated capital input costs under the conventional road maintenance system at the Provincial level, a formal analysis of relative costs, incorporating both labour and capital cost is not possible.

A direct comparison between Zibambele and Departmental staff wage levels illustrates the significant difference in terms of per unit cost of Zibambele and Departmental labour, see table 8, which indicates that the hourly cost of a Zibambele contractor is R5.57⁹¹, compared to R24.88 for Departmental road maintenance staff⁹².

Table 8: Labour Cost Comparison: Maintenance Costs Using Departmental Staff and Zibambele Contractors

Annual Cost of Road Maintenance Staff (salary & benefit package)	
Annual Salary*	Hourly Rate**
47,274	24.88
Annual Cost of Zibambele Contractor	
Annual Salary***	Hourly Rate****
4,008	5.57

* KwaZulu Natal Department of Transport Pay Scale

** Calculated on the basis of 4.5 weeks holiday per annum and 40 hours per week

*** Monthly Zibambele salary x 12

**** Monthly Zibambele salary /60 hours

Source: Own calculations from KwaZulu Natal Department of Transport data

⁹⁰ Given the limitations of the data available these initial findings can only be taken as indicative.

⁹¹ Calculated pro-rata from 2001 Zibambele wage levels

⁹² Department of Transport Memo, 2 July 2001

The cost differential between the two groups of workers is due to the fact that the Departmental staff receive higher salaries plus a package of benefits, which include medical and housing subsidies, pensions and the thirteenth month bonus, while the Zibambele contractors receive only a monthly wage. The provision of a benefit package for the Zibambele contractors in line with that offered to Departmental staff, would severely compromise the programme in terms of the number of additional jobs created per unit of departmental expenditure and would not be consistent with the targeted job creation and poverty alleviation objectives of the programme⁹³.

This shift away from permanent Departmental staff in favour of cheaper contract labour is consistent with an international trend towards the 'contracting-out' of state functions. From this perspective the Zibambele programme could be criticized for replacing one pool of high-cost salaried workers, with a pool of low-cost Zibambele workers. However, the reduction in the Departmental staff is considerably smaller than the increase in Zibambele contractors; in Newcastle District for example, the number of Departmental staff has been reduced by 22 over the last two years, while the number of Zibambele contractors has increased by 340, in line with the primary objective of increasing labour demand by promoting labour over capital intensity, rather than shifting employment from one labour segment to another lower cost segment. Hence the introduction of the programme represents a change in the composition of the workforce from one segment of the labour market to another, shifting from a small number of skilled/semi-skilled jobs, to a large number of unskilled jobs.

This process of increasing labour intensity was negotiated with the labour unions and an agreement reached that Departmental staff would not be retrenched, but would not be replaced as they retired or moved on, and their tasks would become increasingly value-added, focusing on training and monitoring within the Zibambele programme. There is also a residual role for Departmental staff with conventional capital-intensive skills, as certain

⁹³ While a full package of benefits is not consistent with the large scale job creation goals of the programme, confirmation of job security (contract tenure) and the introduction of a pension or savings element through the micro-credit component of the programme would assist in promoting the risk benefits accruing to Zibambele households through the programme, in terms of guaranteeing regular income. This would enhance the consumption smoothing impact of the transfer and reduce the negative impact of economic shocks, which Leibbrandt et al have argued are critical in terms of keeping chronically poor households in poverty (2001).

tasks continue to require capital intensive inputs as a complement to labour intensive activity.

It is also important to note that while the Zibambele wage rate is substantially below the salary of Departmental staff, it is higher than the median wage level for elementary labour in KwaZulu Natal on a pro rata basis, in line with the construction industry hourly standard wage (see chapter 5), and above the minimum wage, so the programme is not contingent on undermining ethical wage levels, or in tension with labour union positions.

Cost Comparison Per Kilometer

The relative labour costs of Zibambele and conventional maintenance systems can be used to model a labour cost comparison per kilometer of road maintained. While Zibambele contractors cost less than conventional staff on an hourly basis, the number of labour hours required per kilometer of road maintenance under the two schemes are widely divergent. Under the original Zibambele contract specification the labour costs of the Zibambele and the conventional road maintenance approaches per kilometer are broadly comparable, see table 9. The labour cost to maintain 1km of gravel road for one year was R2708 using conventional capital intensive methods (on the basis of two visits per annum), and R3208 if executed by Zibambele contractors (on the basis of monthly maintenance). Hence the labour cost per kilometer for Zibambele maintained roads was 16% greater than under the conventional approach, the additional cost representing the marginal cost of the jobs created.

Table 9: Cost Comparison of Maintenance per Kilometer per Annum

Department of Transport Road Maintenance Team							
Workers	Kilometers	Day	Hours	Rate	Transport*	Annual frequency	Cost
6	1	1	8	24.88	160	2	2708
*Average cost of transportation from/to depot for Departmental Staff is 80km@R2/km							
Zibambele Contractors							
Workers	Kilometers	Day	Hours	Rate	Transport	Frequency	Cost
0.8*	1	8	7.5	5.57	0	12	3208
1.54**	1	8	7.5	5.57	0	12	6176
*On the basis of the original lengths (1.5km flat, 1km slope, taking an average length of 1.25km/worker)							
**On the basis of the revised lengths (0.8km flat, 0.5km slope, taking an average length of 0.65km/worker)							

Source: Own calculations from KwaZulu Natal Department of Transport data

An operational change in July 2001 had a major impact on this comparative costing. The length of road maintained by each Zibambele contractor was revised downwards from 1.5km to 0.8km⁹⁴, without a reduction in wages, and maintenance costs per kilometer of road rose accordingly, from R3208 to R6176 per annum, see table 9. This reduction in the lengths of road maintained by each contractor was partly informed by the desire to increase the labour absorption capacity of the rural road network. However, under the revised specification the labour component of Zibambele maintenance became significantly more expensive than conventional maintenance per kilometer, which undermined the labour cost comparability of the Zibambele programme.

This analysis does not take into account the cost of capital inputs in conventional road construction techniques, due to the unavailability of this data in a disaggregated format within the Departmental Budget⁹⁵. This omission will underestimate the total cost of the capital intensive system relative to the labour intensive system, which has a lower capital input, by definition. This suggests that the Zibambele programme is likely to be cost-comparative or more cost-effective per kilometer than the conventional system, once capital costs are included, but highlights the need for further capital data analysis in order to confirm this assertion⁹⁶.

In terms of the comparative quality of output under the two approaches, maintenance quality is higher under the Zibambele scheme as it is carried out more frequently, and hence the outcome is superior in terms of reduced road deterioration⁹⁷. This is largely due to the fact that Departmental road

⁹⁴ The reduction is from 1.5km to 0.8km on the flat, and 1.0km to 0.5km on a slope, specified in the Manual for the Implementation of the Zibambele Road Maintenance System, Second Draft, KwaZulu Natal Department of Transport, June 2001

⁹⁵ Data on disaggregated capital input costs, depreciation rates etc, are not available from the KwaZulu Natal Department of Transport and so any calculation of the capital input cost per kilometer in the context of rural road maintenance is problematic. Further analysis of the Departmental budget is required in order to assess these costs.

⁹⁶ This assumes that management and overhead costs are comparable in the two programmes, in line with information from Manicum, Zibambele Programme Manager, KwaZulu Natal Department of Transport, June 2001.

⁹⁷ Interview with van Zyl, Senior Road Superintendent, Department of Transport, Estcourt, July 2001. The difference in road maintenance quality is evident when Zibambele-maintained and conventionally maintained segments of road are compared, in

teams are only scheduled to visit each kilometer of road twice in a year⁹⁸, while under the Zibambele system the road is maintained throughout the year. A poorly maintained road will deteriorate more rapidly than an adequately maintained one, and cost three to four times more to repair in the medium to long term⁹⁹. Over time an under-maintained road will deteriorate such that it is no longer repairable and reconstruction will instead be required (Ross 2001), indicating that there are long term cost saving benefits to investing in improved maintenance. The KwaZulu Natal Department of Transport has calculated that adequate maintenance of the provincial rural road network would result in savings to the wider community of R1.3 billion each year through a reduction in vehicle operating costs¹⁰⁰. Hence inasmuch as the labour intensive approach leads to enhanced road maintenance per unit of expenditure, investment in Zibambele job creation is also a positive investment in maintaining rural infrastructure in the medium to long term and contributes to reduced rural transportation costs.

Investment in rural roads was given low priority by the Department under the previous dispensation, and so in many instances Zibambele maintenance is not replacing conventional maintenance on rural roads, but represents a shifting of investment priorities to roads which were previously chronically under-maintained. In the case of district and provincial roads however, Zibambele maintenance is directly replacing conventional capital intensive Departmental approaches.

Analysis based on labour cost data and an extrapolation of capital costings suggests that the Zibambele programme is cost competitive with conventional approaches on the basis of the original contract specification. Whether this cost comparison is retained once the contract lengths are reduced needs to be appraised, and is contingent on capital cost inputs for the two approaches; there is a risk of undermining the programme's cost competitiveness and sustainability if contract distances are reduced while

terms of overgrown hedges, poor visibility, and increased incidence of potholes and erosion/landslide in the latter.

⁹⁸ The Departmental plan of two visits per annum per kilometer in some cases represents an ideal, rather than actual figure. More detailed data on this is not available from the Department of Transport.

⁹⁹ Interview with van Zyl, Senior Road Superintendent, Department of Transport, Estcourt, July 2001

¹⁰⁰ Personal communication from Mlawu, Director, Development Department, KwaZulu Natal Department of Transport

wage levels are maintained. If the Zibambele approach becomes more costly than the conventional approach under these conditions, programme sustainability then becomes a political, rather than an economic question, as there is a marginal cost for the creation of each workday created, in excess of the budget allocated for capital intensive road maintenance. The extent to which the Department of Transport is willing to invest in poverty alleviation, in addition to road maintenance will determine the sustainability of the programme under these conditions.

However, the critical point is that the Zibambele programme suggests that enhanced quality asset maintenance (with the attendant reduction in road deterioration) and employment generation may be attained without additional expenditure per kilometer of road maintained¹⁰¹, supporting the analyses of McCutcheon 1995 and 2001, Philips et al 1995 and others that additional employment may be generated by shifting from capital to labour intensive techniques without additional demands on the fiscus.

Zibambele Cost Effectiveness as a Job Creation Mechanism

While the Zibambele programme is a sustainable mechanism for job creation within the existing Department of Transport maintenance budget, the critical question is whether the approach is cost effective in terms of the cost of the employment created. This may be measured by counting the cost per job created, as well as the cost of a unit transfer to beneficiaries, compared to national and international norms using a framework developed by the World Bank for assessing public works programming globally.

Cost per Job Created

In the international literature the unit of measurement of success of a programme is conventionally workdays created (see Ravallion 1998 and Subbarao 1997), rather than the looser term ‘jobs created’, currently employed in much of the South African literature (Adato et al 1999,

¹⁰¹ The positive quality impacts identified by the Department of Transport were on the basis of the original contract length.

Department of Public Works 2000). In the South African discourse use of the term ‘jobs created’ makes relative cost effectiveness comparisons problematic since the structure of the jobs created is not known (short or long term, full or part time etc). Sometimes the terms ‘sustainable’ and ‘unsustainable’ are used but without a common definition, which leads to further analytical problems (see for example the 2001/2 South African Budget). There is a need to create a consistent terminology within the South African public works discourse to facilitate public works programme performance analysis, ideally based on the workdays created, complemented with common definitions of sustainability and long/short term in order to assess the risk benefit impact of the programme. However, in the absence of a consistent descriptive framework for public works achievements, some broad comparisons are possible, if certain assumptions are accepted.

Taking the broad index of ‘jobs created’ and accepting the limitations of this definition, the Zibambele programme may be compared to the main engine of national job creation during the 1990s, the National Economic Forum (NEF), see table 10 below.

Table 10: Comparison of Zibambele and National Economic Forum Job Creation Data

	Cost (millions of Rand)	Jobs created	Cost/ job/ annum	Duration	Salary as % of cost	Materials as % of cost	Management & supervision as % of cost
National Economic Forum 1992-98¹⁰² (1999 prices)	237.7	52,771	4,504	9 months (average)	48	41	11
	323.1*	52,771*	6,122*				
Zibambele 2001/2	40.4**	8,000	5,042	Permanent (8 days/ month)	73	4	23 (includes training)
Zibambele 2002/3)	58.7**	12,000	4,894	Permanent (8 days/ month)	82	6	12 (includes training)

* The total NEF costing for the creation of 52,771 jobs is actually R323.1 million, as an additional R85.4 million was utilised from other sources. This makes the average NEF cost per job substantially greater than under Zibambele. However, these additional costs are not included in the summary costing tables presented by the Ministry of Labour (1999). The cost per workday, taking this additional source into account is indicated by an asterisk.

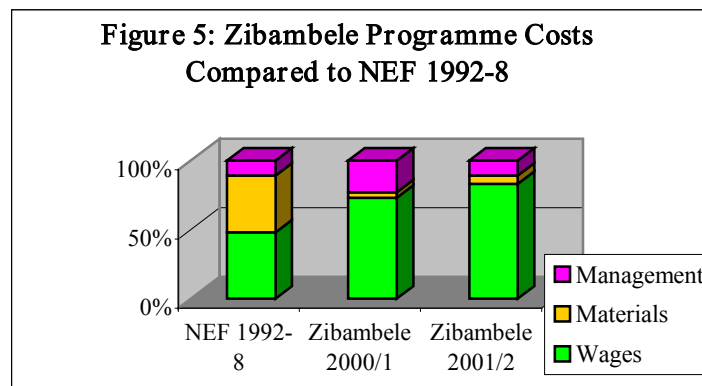
** The Zibambele total cost figures are calculated on the basis of the actual budget, adjusted for the mean number of Zibambele contractors recruited during the year¹⁰³ Source: *Department of Labour 1999 and McCord 2001*.

¹⁰² NEF data is given in 1999 prices

¹⁰³ The adjustment is calculated thus;

The NEF job creation programme was in operation from 1992 to 1998, and created 52,771 short term jobs at a cost of R237.7 million, an average cost of R4504 per job per annum (in 1999 prices)¹⁰⁴. In comparison the Zibambele programme has created 10,000 permanent jobs at an average cost of R5042 per annum (in 2001 prices), and hence the Zibambele programme is a cost-comparable with the NEF norms as a job creation mechanism. An important difference between the two schemes however is that in the Zibambele programme employment is permanent, while the average duration of NEF employment was only nine months, which would reduce the impact of the programme in terms of long term or dynamic poverty reduction¹⁰⁵.

A comparison with NEF also illustrates greater labour intensity in the Zibambele programme than the NEF average, in terms of the higher percentage of programme costs spent on salaries under the Zibambele programme, 73% and 82% in 2001/2 and 2002/3 respectively, compared to 48% in NEF, see figure 5.



Source: Own calculations from NEF and KwaZulu Natal Department of Transport data

(Rands)	2001/2	2002/3
Total Budget	40,955,730	61,671,573
Wage Budget	30,000,000	51,096,500
Actual Wage (adjusted for mean employment level)	29,414,000	48,153,600
Balance (wage budget less actual)	586,000	2,942,900
Actual Budget (total budget less wage balance)	40,369,730	58,728,673

¹⁰⁴ Department of Labour Annual Report, 1999. The basis for the calculation of the cost per job is not given in the Annual Report, and so may not be consistent with the Zibambele figure. However the order of cost is clearly of the same magnitude.

¹⁰⁵ For further discussion of risk benefits see Ravallion 1998, p16-17.

This implies that there is a greater transfer of resources to participants under the Zibambele than the average NEF programme, per unit of programme expenditure. This is a function of both management efficiency and also the nature of job creation activity initiated¹⁰⁶. Figure 5 also highlights the reduction in Zibambele management costs between 2000/1 and 2001/2 which is consistent with the projections of Phillips et al (1995), outlining the reduction of management costs of public works programming over time (see figure 3 above).

An additional domestic comparator for the Zibambele programme is the national Community Based Public Works Programme (CBPW)¹⁰⁷. While cost per workday may be accurately calculated for the Zibambele programme, the lack of data about the structure of the jobs created by the CBPW means that cost per workday must be derived for the CBPW programme on the basis of published data¹⁰⁸, and assumptions made regarding the term of employment created¹⁰⁹. Comparative costings summarised in table 11 below, indicate that the cost per workday created by the Zibambele programme (R52.6 and R51.0 respectively for 2001/2 and 2002/3) is substantially less than the cost of the CBPW created workday (R121.3). While the CBPWCBPW data offers only an approximation of cost per workday, the magnitude of the differential between the two figures indicates that the cost per workday created is substantially lower in the Zibambele programme than the CBPW programme, and that more 'sustainable' workdays are being created in the Zibambele programme than the CBPW programme. The implication is that the Zibambele programme is more cost effective than the overall CBPW programme in terms of the number of jobs created per unit of investment. For a more detailed comparison to be made, additional data would be required on the CBPW programme regarding the structure of employment created.

¹⁰⁶ The percentage cost of material inputs in a public works programme plays a key role in determining the proportion of programme costs being transferred to labour; the low material input costs in the Zibambele programme account for the high proportion of programme funds being transferred directly as wage costs.

¹⁰⁷ The rural component of the CBPW is implemented by the Independent Development Trust on behalf of the Department of Public Works.

¹⁰⁸ Department of Public Works Annual Report, 1999/2000.

¹⁰⁹ This estimate is based on reconstructing CBPW costings based on the assumption that 'sustainable' means full time for 12 months, and 'non sustainable' means full time for an average of six months. These assumptions err on the side of an overestimation of the number of workdays created, and hence the resultant figure of R121.3 is a minimum cost per workday for jobs created by the CBPW.

Table 11: Cost comparison of Zibambele and Community Based Public Works Programme

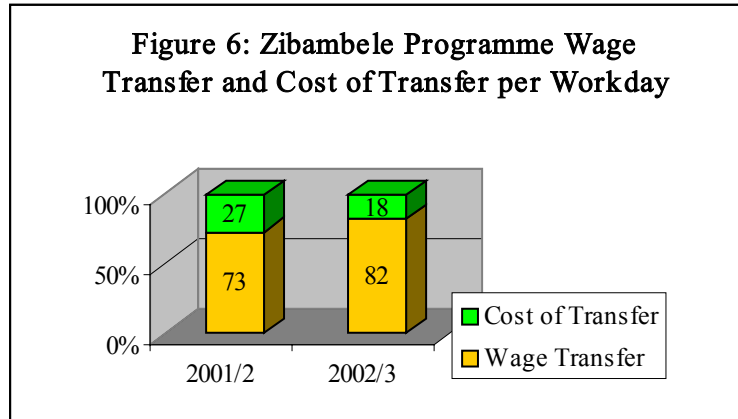
Zibambele Job Creation Impact (Yearly average)		
	2001/2	2002/3
Jobs Created*	8,000	12,000
Workdays Created**	768,000	1,152,000
Total Budget (Rands) - Adjusted	40,369,730	58,728,673
Total cost/day (Rands)	52.6	51.0
CBPW Job Creation Impact (1999/2000)*		
	'Sustainable'	'Non-sustainable'
Jobs Created***	2,196	21,612
Workdays Created***	3,107,478	
Total Budget (Rands)	377,000,000	
Total cost/day (Rands)	121.3	
* Yearly average given job creation is phased during the year		
** Number of jobs x 8 days/month x 12 months		
*** Estimates assuming 'sustainable' means full time for 12 months, and 'non-sustainable' means full time for an average of six months (working 5 days/week with average 20 days holiday/public holiday per annum pro rata)		

Source: McCord 2001 and Department of Public Works Annual Report 2000

Analyses by Adato et al (1999) identified a wide range of costs per workday created in one hundred and one public works programmes implemented in the Western Cape, ranging from R40 for the Working for Water programme to R183 for community based programmes, R229 for National Public Works pilot programmes and R749 for programmes in the transport sector (1999 prices), with the percentage of total costs to labour of 73%, 24%, 13% and 11% respectively, decreasing as the cost per workday increased (Adato et al 1999, p200). These findings indicate that some public works programmes are highly costly and inefficient in terms of job creation, with up to 89% of workday creation costs, or R776, being spent on non-labour costs¹¹⁰. Since the structure of employment created under the Zibambele programme is known, together with the number of workdays and the wage level, the proportion of programme cost allocated to wage transfer and management/materials can be calculated for comparison with the Western Cape data, see figure 6. In the case of the Zibambele programme the wage component

¹¹⁰ Discrepancies in the wage structure of these programmes, (with wages ranging from R29 to R82 a day), have implications in terms of equity and labour unrest as well as cost effectiveness, and indicate that wage setting mechanisms within public works programming needs to be explored further.

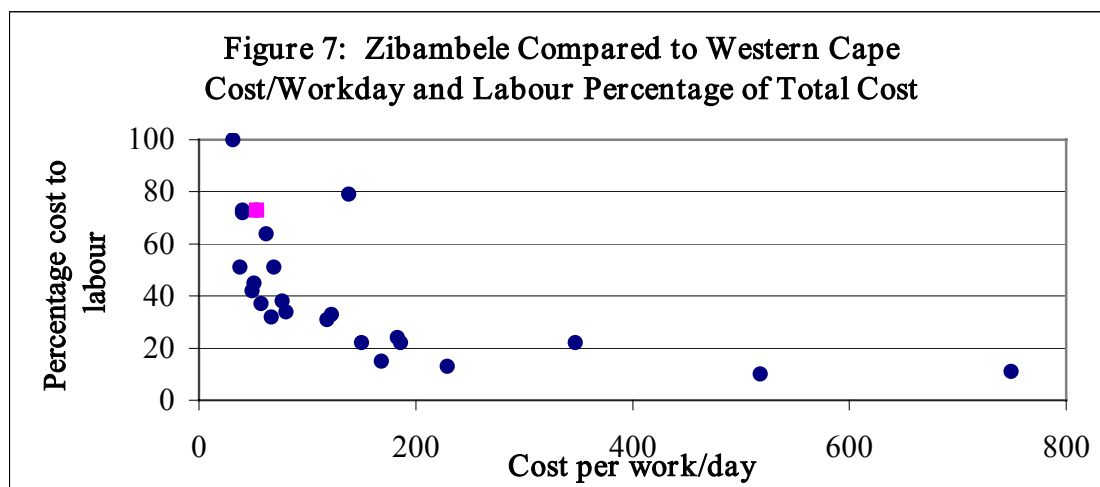
represents an increasing proportion of the cost per workday, comprising 73% in 2001/2 and 82% in 2002/3¹¹¹.



Source: Own calculations from KwaZulu Natal Department of Transport data

With total costs per workday created of R52.6 and R51.0 for 2001/2 and 2002/3 respectively, and 73% and 82% of total costs going to labour, the Zibambele programme is highly competitive with the Western Cape public works programmes in terms of both the low cost per workday created, and the high percentage of total costs going to labour. The Zibambele data for 2001/2 (represented by a square) is plotted with the Western Cape data in figure 7 below, illustrating the low cost and high percentage of total cost allocated to wages in the Zibambele programme, as well as the wide variation in the cost of each workday created, and the percentage of expenditure accruing to workers.

¹¹¹ This is based on wage rates of R38.3 in 2001/2 and R41.8 in 2002/3, see appendices 9 and 10



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

The most efficient programmes, with low cost per workday and a high percentage of total cost transferred as wages, fall in the upper left hand quadrant of figure 7.

For the majority of national 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 available¹¹², and hence the proportion of programme cost allocated to wage transfer and management/materials can not be calculated in this way. This makes analysis of the cost effectiveness of public works programmes and programme comparisons problematic.

Transfer Cost-Effectiveness Analysis

To undertake an internationally comparable cost-effectiveness analysis of the Zibambele programme we apply an appraisal framework developed at the World Bank and widely cited within the public works literature (Ravallion 1998). The framework calculates the share of government expenditure on public works which benefits the poor, or the ‘cost-effectiveness ratio’, in order to assess the effectiveness of public works programming as an instrument for making transfers to the poor in given contexts. The cost-effectiveness ratio is calculated by modeling the net gain

¹¹² Interview with de Bruyn, National Poverty Allocation, South African National Treasury, 2002.

to poor workers arising from a public works scheme, and from this ratio the unit cost of a transfer to the poor is derived. This approach does not include an appraisal of the distribution of programme benefits, or the welfare impact at household level. These omissions which are reflected in the mainstream international literature will be discussed in the subsequent section.

The methodology for modeling the cost effectiveness ratio, or share of government's outlay which benefits the poor, is outlined below, and can be decomposed into various components;

Labour intensity of public works projects

The share of all wages paid in total operating cost, as some participants may not be poor, is $W+L$, (L is leakage to non-poor) over $G+C$;

$$(W+L)/(G+C) \quad (i)$$

Budget leverage

Total budget is G (central and local government spending) + C (private co-financing);

$$G+C \quad (ii)$$

Targeting performance

The proportion of the wages paid out which goes to poor workers;

$$W/(W+L) \quad (iii)$$

Net wage gain

The share of the gross wage received by the poor which is left after subtracting costs of participating, including forgone income;

$$NW/W \text{ (NW is net wage)} \quad (iv)$$

The share of net wage gains to total cost

$$\frac{NW}{G+C} = \frac{NW}{W} \cdot \frac{W}{W+L} \cdot \frac{W+L}{G+C} \quad (v)$$

(iv) (iii) (i)

Indirect benefit

The indirect benefits to the poor eg, when assets are created in poor neighbourhoods.

IB/NW can be given as the product of three ratios; (vi) Poor people's share of the social benefits from the assets created by the project (ratio of indirect

benefits to the poor (IB) to the social benefits (SB), where the latter are assessed without distributional weights), (vii) the benefit to cost ratio for the project, the ratio of SB to G+C, and the inverse of (viii) the share of net wage gains to total cost;

$$\frac{IB}{NW} = \frac{IB}{SB} \cdot \frac{SB}{G+C} \cdot \frac{NW}{G+C} \quad (\text{ix})$$

(vi) (vii) (viii)

Cost-recovery rate

This is not applicable as the Zibambele programme is fully funded by the Provincial Department of Transport.

Net Gain to Poor Workers

$$\frac{B}{G} = \frac{G+C}{G} \cdot \frac{W+L}{G+C} \cdot \frac{W}{W+L} \cdot \frac{NW}{W} \cdot \left(1 + \frac{IB}{NW}\right)$$

(i) (iii) (iv) (ix)

The data used in the Zibambele appraisal are contained in table 12 below.

Table 12: Data Used for Zibambele Cost Effectiveness Analysis

Data	Value	Comment
Poverty rate in country/region	42.5%	Provincial figure, calculated on the basis of Household Subsistence Lines (HSLs), derived from 1998 KIDS panel study data (Carter & May 2001)
Average monthly income in lowest decile	R254	Provincial figure for the poorest decile in non-urban areas, from Labour Force Survey 2001 ¹¹³
Unemployment rate	57%	Provincial figure for the poorest decile in non-urban areas, from Labour Force Survey 2001
Labour intensity of workfare projects	0.73*/ 0.82**	Calculations based on Zibambele data, see table 10 above, * 2001/2 data ** 2002/3 data
Cost-recovery rate	0	There is no cost recovery in the Zibambele scheme
Extent to which projects are targeted to poor areas	N/A	Data on location of projects is not available.

¹¹³ Due to the categorical nature of wage data in the LFS, this figure represents the bottom 13%, rather than 10% of the distribution.

Construction of the Data

The main assumptions underlying the application of the Ravallion framework to the Zibambele programme are discussed below.

Leakage to the non-poor is an issue in all transfer interventions. In the absence of socio-economic data to assess the extent of leakage in the case of Zibambele, a leakage of 25% was assumed in the model, in line with the parameters outlined in Ravallion (1998), p14.

To calculate poor people's share of total benefits an IB/SB figure of 0.43, the provincial poverty rate, was selected on the basis that no targeting to poor areas took place within the programme.

The benefit cost ratio was assumed to be unity, in line with the assumption that projects produce benefits sufficient to cover their costs in Middle Income Countries, such that $SB/G+C = 1$, in line with Ravallion p13.

The net wage ratio (NW/W) is contingent on the expected net wage gain (NW) to workers from introducing the scheme. This is calculated on the basis that expected earnings without a programme are P^* (probability of finding extra work) at wage w^* , while the programme wage is w and the probability of finding work when participating in a programme are P , such that;

$$NW = (1-P)w - (P^* - P) w^*$$

The net benefits are dependent on the prevailing employment situation and prospects of finding formal or informal sector work.

A sensitivity analysis was carried out, setting the NW/W at 0.57 and 1, which gave results of a cost per unit transferred of R1.36 and R1.03 respectively, implying that the cost of a R1 income gain in terms of government investment will be lower by R0.33, than if NW/W is set at unity (in this case it is assumed that income is not foregone in order to participate in the Zibambele programme). Engagement in Zibambele labour is unlikely to cause workers to forego alternative employment or to reduce participation in informal income generating activity due to the low availability of employment opportunities and the part time nature of Zibambele work. In

the model the unemployment rate among participants is set at 57%, on the basis of 2001 LFS data.

In the case where no additional employment is available outside the programme, $P = P^* = 0$, no income is forgone to poor workers, and hence $NW/W = 1$, a situation which conforms to the deep rural situation in KwaZulu Natal. Setting NW/W at unity may therefore be appropriate for the Zibambele programme. The figures in parenthesis in table 6 reflect this assumption, and indicate that in this scenario the relative cost-effectiveness of the programme is enhanced.

Cost recovery is zero in the case of Zibambele, as the programme is not funded by any local taxation on usage of the assets created.

The Zibambele Cost Effectiveness Ratio

The main findings from the application of the Ravallion public works appraisal framework are set out in table 13 below¹¹⁴, along with comparator data from Middle and Lower Income Country public works programmes¹¹⁵.

Table 13: Zibambele Cost Effectiveness Analysis

Indicator	Zibambele	Zibambele	Comparators	
	01/2	02/3	MIC*	LIC*
Poverty rate	43%	43%	20%	50%
Budget Leverage: $(G+C)/G$	1.0	1.0	1.0	1.0
Labour Intensity: $(W+L)/(G+C)$	0.73	0.82	0.33	0.5
Targeting: $W/(W+L)$	0.75	0.75	1.0	0.75
Net wage gain: NW/W	0.57 (1)	0.57 (1)	0.6	0.75
Poor people's share of total benefits: IB/SB	0.43	0.43	0.2	0.25
Benefit/cost ratio: $SB/(G+C)$	1.0	1.0	1.0	0.5
Current and future gains to the poor per R1 of spending: B/G	R0.74 (R0.97)	R0.78 (R1.04)	0.4	0.41
Cost of R1 gain by the poor	R1.36 (R1.03)	R1.29 (R0.96)	2.50	2.50
Current earnings gain per R of programme spending: CB/G	R0.31 (R0.55)	R0.35 (R0.61)	0.20	0.28
Cost of R1 extra current earnings	R3.21 (R1.83)	R2.85 (R1.63)	5.00	3.60

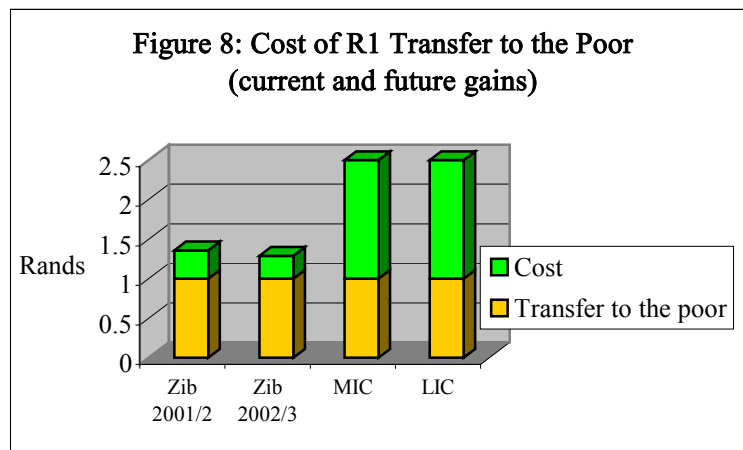
* Middle and Low Income Country indicative comparators, taken from Ravallion 1998, p15.

() Indicates cost if probability of finding work outside the programme is zero

¹¹⁴ See Appendices 1-8 for the full Zibambele analyses for each year, including sensitivity analyses varying NW/W and current and future benefits.

¹¹⁵ From Ravallion 1998, p15.

The key finding is that the Zibambele programme is cost-effective compared to international norms, with a cost effectiveness ratio of 0.74 (2001/2), and an associated cost of R1.36 for a R1 gain by the poor in terms of current and future benefits. If current benefits alone are considered, the cost of R1 additional current earnings transferred through the programme is R3.21. If employment projections for 2002/3 are met, the programme will be increasingly cost-effective, with the cost-effectiveness ratio increasing to 0.78, reducing to R1.29 the cost of a R1 increase in the current and future benefits for the poor, and R2.85 for a R1 increase in current earnings. These findings compare favourably with the Middle and Lower income country comparators developed by Ravallion, whose ratios were 0.4 and 0.41 respectively, implying unit transfer costs of 2.5 for current and future gains, see figure 8 below, and 5 and 3.6 respectively for additional current earnings. According to the Ravallion analytical framework the Zibambele programme is highly cost effective, compared to international comparators, with costs at the lower end of the Middle Income Country job creation scale (Subbarao 1997).



Source: Own calculations from Department of Transport data and Ravallion (1998)

In comparison to the Zibambele programme an analysis of public works programming in the Western Cape by Adato et al using the same framework revealed substantially higher costs for a R1 gain for the poor in all programmes with the exception of the Working for Water programme, which was lower, at R0.81. All other programmes fell within a range of R2.27 and R28.82 for each R1 gained by the poor (Adato et al 1999, p210), compared to R1.45 for Zibambele.

In terms of both domestic and international comparators, the Zibambele programme is extremely cost effective in terms of the unit cost of earnings

gains by the poor¹¹⁶. The high labour intensity of the Zibambele programme is the major factor determining this high cost-effectiveness ratio, a characteristic shared with the Working for Water programme¹¹⁷. The labour intensity ratios of the Zibambele programme (0.73 and 0.83 for 2001/2 and 2002/3 respectively) are high compared to those calculated by Adato et al for Western Cape public works programmes and are outside the range of values typically found in public works programming, (which on average falls between 0.3 to 0.5 (Subbarao 1997 and Ravallion 1998)). This reflects the low management and material programme input costs of the Zibambele programme, compared to the wage component. Such high labour intensity is unusual in public works infrastructure maintenance projects, and reflects the labour intensity of the Zibambele technical specification. The high labour share of the Zibambele programme makes the cost effectiveness of the programme robust to changes in a range of parameters included in the model, such as the benefit cost ratio, or the net wage gain, and suggests that Zibambele is a highly effective model for transferring resources to the poor.

Cost Effectiveness Conclusion

The Zibambele programme is cost effective in terms of;

- transferring resources from state to recipient
- the proportion of programme costs spent on labour
- the cost of the creation of a day's work

It compares favourably with other South African public works initiatives in terms of these three factors. It is also one of the largest scale initiatives in terms of workdays created per annum in South Africa, and one of the most sustainable. Internationally, the programme compares positively with programmes in countries of similar economic status. Preliminary data analysis also suggests that the programme is cost comparable with

¹¹⁶ This is true when both current and future gains, and also current earnings gains are considered.

¹¹⁷ A high labour share in outlays has a major impact on the functioning of the model and can greatly enhance impact on current poverty. Programmes with low intensity must yield large indirect benefits to the poor to be effective as job creation initiatives, since the lower the labour share of total cost, the higher the cost of a unit transfer to the poor through this scheme, as in the case of some Western Cape programmes discussed above.

conventional capital intensive methods for road maintenance, although additional research is needed to implement a formal cost comparison of labour intensive and conventional capital intensive road maintenance. The Zibambele programme is a cost effective public works programme and offers an excellent model for replication in terms of job creation and asset creation.

Poverty Alleviation and Welfare Impact

While the cost effectiveness of the programme has been established, its poverty alleviation impact is less clear. The Ravallion framework is an incomplete appraisal mechanism in this respect as it does not address the poverty alleviation impact of an intervention focusing instead on the process of the transfer.

Assessing the welfare impact of employment created is critical to the appraisal of public works programming, given the explicit anti-poverty objective of most schemes. Creating employment is only of value in as much as it serves to reduce poverty, as ‘work does not necessarily guarantee a way out of poverty’ (Øyen and Wilson 1999, p207), and hence an assessment of the impact of the Zibambele programme on the welfare of participants is essential if the success of the programme is to be adequately assessed. However, this aspect is often omitted in the literature on evaluation of public works programming performance and has not been included in the monitoring of the Zibambele programme to date. From the data available it is not possible to assess either in the short or medium term;

- the impact of the programme in terms of poverty alleviation and welfare
- the impact of the programme on the local or provincial economy
- the effectiveness of targeting to the poor

In terms of poverty alleviation, there are two key areas i) the impact in terms of the risk benefits for participants arising from income and asset benefits and the resultant welfare improvements, and ii) the economic stimulus impact on the local economy of an infusion of wage income and asset creation. The omission of these dimensions of public works programming in the prevailing public works discourse is problematic, as it separates the

impact of the scheme from its execution, and ignores the indirect benefits arising from asset creation and economic stimulation.

The risk benefit impact of public works is critical in terms of reducing the vulnerability of poor households by guaranteeing regular income over an extended period, thereby allowing households to smooth their consumption over time, and withstand economic shocks which would otherwise undermine their livelihoods¹¹⁸. If the impact of public works programming on poverty is to be adequately assessed, then the risk benefit impact needs to be included in the appraisal framework. Ravallion acknowledges that the risk benefits from public works programmes can be large, but focuses on their transfer benefits, rather than their ‘insurance’ function in the context of chronic structural unemployment. The potential of public works to address these issues emerging in the area of dynamic poverty analysis has yet to be formally recognised in the literature or incorporated into conventional appraisal methodologies.

This issue is addressed in part by Datt & Ravallion (1994) who present a model to examine the poverty impact of public works programming, but their focus is on an income based definition of poverty, and time allocation models, rather than a more multidimensional approach, addressing the welfare impacts of public works interventions. To assess the poverty alleviation and welfare impact of the Zibambele programme in line with this critique, socio-economic data on Zibambele participants is required, however, as with most public works programming in South Africa, monitoring and evaluation processes are lagging behind programme implementation (Adato et al 1999, de Bruyn 2001). The monitoring component of the Zibambele programme is currently under development but to date no data is available about the poverty alleviation or welfare impact of the programme, or the success of its targeting, so it is not possible to provide a formal assessment.

To carry out a poverty impact assessment of the programme, a longitudinal socio-economic survey is required. This would facilitate assessment of the impact of the Zibambele programme over time, and the welfare situation of the Zibambele contractors could be compared to that of non-participants. Such a survey would also identify the socio-economic status of participants

¹¹⁸ For a fuller discussion of the role of economic shocks and consumption smoothing see Leibbrandt and Woolard 2001.

and hence permit an appraisal of the effectiveness of the Zibambele targeting process. Data on participant households is needed, including household composition, (gender, age), employment status, and income data, as well as control data from the wider population in order to ascertain whether the poorest are being targeted successfully. Labour force participation and the sources of income of Zibambele households should also be monitored to establish whether participation in the Zibambele scheme is correlated with other income generating or subsistence activities. How and where Zibambele income is spent is also of critical importance if the impact on the wider economy is to be modeled, and Zibambele multipliers calculated.

In addition to measuring the anti-poverty impact of the programme in terms of income, the dynamic poverty impact should also be assessed by examination of participating households' ability to manage risk and move out of poverty over time.

Indicators are also needed to assess the welfare impact of participation in the scheme in terms of the health status of household members, and the nutritional and educational status of children in the household, in line with the wider definition of poverty, as discussed in recent literature (Sen 1987, Kanbur 2002). Informal discussion with Zibambele contractors has emphasized the major welfare benefits from scheme participation as i) permanent and uninterrupted school attendance for children in the household, which had previously been sporadic and dependent on chance surplus income¹¹⁹, and ii) the ability to purchase or to take small scale credit from shops in order to purchase staple food, on the basis of guaranteed income at the end of the month, rather than being dependent on the generosity of friends and neighbours. Indicators of children's participation in education, and child nutrition would give formal evidence of welfare gains in these areas. Socioeconomic profiling of Zibambele households through ongoing survey work would enable the household and community impact of the programme to be modeled¹²⁰, to complement the cost effectiveness analysis already completed.

¹¹⁹ Zibambele contractors reported that participation in government schooling costs approximately R70 per annum, which can be paid in installments, plus the cost of school materials (interviews with Zibambele Contractors by McCord, June 2001).

¹²⁰ A Zibambele survey questionnaire is currently being developed in order to enable a formal poverty alleviation/welfare impact assessment of the programme to be carried out.

Secondary Benefits

Secondary benefits arising from the programme also need to be taken into consideration if its poverty impact is to be fully assessed, in terms of income and other welfare benefits. Lack of data has also prevented an assessment of the secondary benefits of the Zibambele programme on i) participating individuals and ii) the local community. Individual secondary impacts would include increased work opportunities resulting from participation in the Zibambele scheme, or a movement out of chronic poverty through the accumulation of assets and human capital. Likewise the secondary economic benefits of the programme on the community remain to be formally assessed, in terms of the multiplier effects of both the assets created (improved roads) and the transfer of resources into deep rural communities. The secondary benefits of an improved road network are likely to be substantial, and should explicitly be included in the formal modeling of the programme's impact. The implementation of the longitudinal survey and modeling using social accounting matrices would enable these impacts of the programme to be assessed.

A critical secondary benefit of the Zibambele programme which is not included in formal economic evaluation frameworks is the promotion of democratic accountability. This has been achieved through the establishment of the Rural Roads Transport Fora and the participation of the community in investment decisions related to Zibambele road prioritisation, and the selection of contractors. This is likely to have positive social and political implications, including creating a demand for accountability within other Departments, creating opportunities for coordination of Departmental activity at local level, and depoliticising the resource allocation process, which ultimately makes a contribution to stability and growth. The timeframe and transmission mechanisms of this benefit are too etiolated to be easily incorporated into an economic appraisal format, but these benefits should also be acknowledged when the broader social impact of public works is being considered.

Conclusion

A conventional economic analysis shows that the Zibambele programme offers a highly cost effective public works model in terms of creating

employment and transferring resources to participants, and its performance is superior to the majority of programmes currently being implemented in South Africa.

Nevertheless, from this analysis, it is not possible to confirm whether this cost effective programme is meeting its primary objective of assisting the poorest households, or having a positive welfare impact on participants, as the conventional analytical approach fails to assess the poverty alleviation and asset creation components of the programme in terms of household and community level impact.

To address this critical question of impact assessment, further socio-economic data and analysis is required, which must be considered in conjunction with the cost-effectiveness analysis.

The research agenda required to complete a cost effectiveness and impact assessment analysis of this programme would comprise four key elements;

- Poverty mapping in order to identify location of programmes in relation to poverty concentrations
- Socioeconomic data analysis from a longitudinal survey to examine; targeting, the income and welfare impact and secondary impacts from road maintenance.
- Labour and capital intensive costing analysis, assessing the relative costings of labour and capital intensive road maintenance and construction methods
- Economic modeling to assess the impact of both cash transfers to the poor and asset creation on the local/regional economy

Only once this further research has been completed can the success of the Zibambele programme in terms of its anti-poverty objectives be fully assessed.

Chapter 7: The Potential Economic and Job Creation Impacts of Public Works Programmes.

The impact of public works schemes is conventionally assessed through monitoring the number of jobs created¹²¹. This approach is limited as it fails to consider the poverty alleviation or transfer consequences of programmes, focusing on the means, rather than the ends of the initiative. It may be more valuable to assess the potential impact of public works programmes in terms of the number of workdays created, in combination with the macroeconomic impact of these jobs and their micro-economic poverty alleviation impact (as discussed in the case of the Zibambele programme in chapter 6).

The Employment Impact of Public Works

The two main mechanisms for promoting public works and generating workdays of employment in South Africa, discussed in chapter four, are i) individual public works projects initiated by line ministries and financed by the Treasury's Special Poverty Allocation, and ii) the labour intensification of state sector activity and contracts with the civil engineering sector. The potential of national public works schemes to generate employment is contingent on which of these mechanisms is adopted, and the implications of each will be discussed below.

Public Works through the Project Approach

In South Africa individual programmes administered by the Special Poverty Allocation, and the Department of Public Works under the National Public

¹²¹ The convention in international literature is to assess impact by calculating the number of workdays of work generated within a given period. This convention is not followed in South Africa, where a looser and less consistent terminology, involving 'jobs created' is the norm. The length of time over which the jobs are created, their full or part time status, and their sustainability in terms of future funding is not normally specified in the South African debate, (see for example, Ministry of Public Works Annual Report, 2000-2001).

Works Programme, have tended to have a limited impact in terms of jobs created¹²². The Special Poverty Allocation is not able to supply data on the total number of person/days created under its aegis, due to limited reporting by the implementing line ministries, and the NPWP reports the creation of only 1,200 sustainable¹²³ jobs in 2000/1, at a cost of R274 million (Department of Public Works 2001). This low level of employment creation accords with the findings of the comprehensive SALDRU study of public works programmes in the Western Cape (Adato et al 1999), which illustrated the limited impact in terms of number of jobs created, (both sustainable and temporary), skills transferred, and poverty alleviation of the majority of programmes investigated. Clearly the scope and impact of public works to date in South Africa does not represent a significant response to the massive labour demand deficit crisis, or approach the scale of national public works schemes implemented elsewhere where governments in low and middle income countries have made job creation through public works a priority. This is confirmed by comparing the scale of the NPWP programme, which creates approximately three million workdays per annum¹²⁴, with the national job creation programme in India which created more than 800 million workdays per year during the 1990s and programmes on the continent in countries as diverse as Botswana, Egypt and Ethiopia which have implemented programmes creating between seven and thirty million workdays per annum in recent years (World Bank 2002b).

The Zibambele programme offers a more positive view of the potential performance of public works programmes in South Africa. Since its inception in 2000, the programme has created a total of 10,000 permanent jobs, which represents 0.77 million workdays in 2001/2, and the Department of Transport plans to create a total of 40,000 jobs by 2006 (rising to 3.84 million workdays per annum). South Africa has a total road network of 567,000km, of which 354,000km comprises provincial roads (paved and unpaved), 7,800km national roads, and 145,000km formal and informal urban roads. If the Zibambele programme were expanded nationally, and focused solely on the maintenance of the 38% of the provincial road network estimated to be in poor condition (Ministry of Transport 2002), a maximum of 134,500 jobs could be created, on the basis of employing one worker per

¹²² The notable exception to this statement is the Working for Water Programme which created 21,713 jobs in 2000/1 at a total cost of R300.9 million (Working for Water Annual Report, 2000/1). The structure of the jobs is not specified in the report.

¹²³ The meaning of 'sustainable' in this context is not specified.

¹²⁴ See table 11

kilometer, at a cost of R691million per annum¹²⁵. If the programme were implemented more widely on the maintenance of rural access roads, provincial roads and national roads, as well as associated beautification initiatives, the total employment absorption potential could approach 500,000 sustainable (long term) jobs country-wide¹²⁶.

However, it is also critical to note that the spending implications underlying these potential labour absorption projections do not take into account current fiscal constraints on the road maintenance and construction budget, which faces an investment backlog of R27billion, with an additional backlog of R13billion in the rural access road sector (Ministry of Transport 2002). Hence, the amount of employment generated with current spending levels would be less than the maximum possible, and constrained by the level of Provincial transport allocations.

Analysis of the Zibambele programme supports work by McCutcheon et al that labour intensive maintenance can be cost competitive with conventional techniques if correctly implemented (McCutcheon 2001b). Shifting current transport sector expenditure at provincial and national level to labour intensive methods would create a major expansion of employment (creating a conservatively estimated minimum of 100,000 jobs), with no cost to the fiscus or reduction in quality. To reach the maximum labour absorption potential mentioned above, increased investment in the transport sector would be required. Such an investment would have the dual benefit of both employment and asset generation; this ‘matching’ of surplus labour supply with a backlog of infrastructural investment for two-fold national benefit underlay the large scale public works programmes in the US during the 1930s, and the more recent Swedish employment scheme whereby when unemployment reached a trigger level, preplanned infrastructure construction programmes were initiated based on the creation of prioritised national assets (Rifkin 1996). This approach would be particularly appropriate for South Africa given the severe backlog of transport infrastructure, and its negative impact on rural mobility and poverty (Kingdon & Knight 2001).

¹²⁵ Based on the cost per person/day of work created in the Zibambele programme

¹²⁶ Progress towards this maximum would be achieved incrementally, with the length of the roll out period depending on the capacity of the state to create the necessary institutions. Analysis by Philips et al (1995) indicates that the time take-up for the realisation of maximum employment through the labour intensification of construction is between 3 to 6 years.

An indicative estimation of the potential scale of public works employment creation in South Africa with existing investment levels can be made by calculating the workday impact if the R377 million spent by the Integrated Development Trust to implement the Community Based Public Works Programme for the financial year 2001-2 had been used to create jobs using the Zibambele approach. In this case the total amount of workdays created would have been 7.4 million workdays, rather than the estimated 3.1 million actually created¹²⁷. This crude estimate suggests that there is great potential within existing budget allocations to have a substantially increased impact on job creation, and thereby poverty alleviation.

Public Works through the Labour Intensification of Public Spending

The second, and far more extensive form of public works job creation is increased labour intensity in the civil engineering sector and throughout the range of line ministries in their asset creation and maintenance activities. This approach was outlined in the initial objectives of the National Public Works Programme (NEF 1994). This approach has no international comparators and is significantly more ambitious than the project or sectorally-based initiatives outlined above. Such a programme would be aimed at ‘fundamentally changing the way in which publicly funded infrastructure is built so that employment and skills transfer are maximised for the unemployed’ (Phillips 1995, p23). The labour absorption implications of this approach in terms of the employment generated by shifting government expenditure from capital to labour intensive methods, have been subject to extensive technical analysis by McCutcheon (2001b). Table 14 gives data from the conveyances and road sub-sectors and illustrates that the use of labour intensive techniques can increase employment generated per rand of expenditure by 700% and 900% respectively, by increasing both the budget share going to labour, and the quantity of labour utilised.

¹²⁷ These numbers are crude estimates derived by dividing the total CBPW budget by the cost per workday of the Zibambele programme, based on estimated data in table 11, and are included only for the purpose of highlighting the potential scale of employment creation which could occur if existing funds were used more effectively.

Table 14: Employment Generation Potential of Labour Intensive Methods

Sub Sector	% Total construction budget to labour		Increase in employment generation using labour intensive methods compared to capital intensive methods (%)
	Conventional Capital Intensive	Labour Intensive	
Conveyances	15	50	700
Roads (high standard gravel)	15	50	900

Source: McCutcheon, 2001b, p281

Using this data McCutcheon argues that for the annual expenditure of R15.2 billion which the African Development Bank estimates is required for the next decade to meet transport infrastructure backlog needs¹²⁸, 120,000 jobs would be created using conventional methods, while if labour intensive methods were adopted, with the same level of expenditure and output, 460,000 people could be employed (Crosswell et al 2001). In terms of current annual expenditure McCutcheon estimates that ‘the implication for all civil investment would be additional increased opportunities for more than 100,000 in an industry currently employing about 60,000’ (McCutcheon R, 2001a, p277). This estimate applies to the civil engineering sector alone, and if this argument were extended to the building sector, which currently employs 230,000 people it is likely that shifting to labour intensive techniques would imply the creation of several hundred thousand additional jobs. Formal modeling of the job creation and economic benefits of the labour intensification of the industry is required if the potential impact of this approach to job creation is to be adequately assessed.

The work carried out thus far to assess the potential for increasing labour intensity in the civil engineering sector does not model the potential national employment gains arising from shifting line ministry activity towards increased labour intensity. In order to do this it would be necessary to analyse the preceding data in conjunction with line ministry budgets at both national and provincial level, in terms of the proportion of the budget which was eligible for labour intensification, and apply the McCutcheon employment ratios for each sub-sector of activity to this data. On this basis

¹²⁸ This infrastructural investment backlog comprises; backlog of primary and secondary rural roads R7.9 billion, prevention of deterioration R4.12 billion, and new road construction road R3.2 billion (DBSA 1998).

the potential employment gain thereby created could be modeled, and the impact on the macro-economy estimated. This is a critical area for further work, as modifying existing work patterns within both the government and the civil engineering sector can only be adequately justified if the macro-economic and employment gains from making these modifications are known. Drawing on experience from the transport sector in KwaZulu Natal, and McCutcheon's estimates for the intensification potential of the construction sector, a tentative estimate of the labour absorption potential of a Governmental wide process of labour intensification, with current levels of expenditure, would be in excess of 500,000 jobs, which would be introduced incrementally over a period of years¹²⁹

The Macroeconomic Impact of Public Works

The implementation of a large scale national public works programme, or of increasing the labour intensity of state funded civil works, would be likely to have a positive impact on South Africa's macro economy and growth path, if the scale of employment creation were sufficiently¹³⁰ large. The main mechanisms through which increased demand for unskilled labour would impact on national economic growth would be the stimulation of aggregate demand. This is particularly important in the South African context given the identification of constrained domestic demand as a key factor underlying low levels of investment and poor economic growth (Lewis 2001a). Stimulating demand among the poor would shift the composition of demand towards labour-absorbing sectors of the economy¹³¹, and in this way the stimulus of increased demand would promote second round labour demand multipliers. Reynolds (1984) has suggested that the multiplier effect of expenditure on public works in South Africa would be between 5 and 8, with 25% of the final demand created being for basic food items. Given the high

¹²⁹ This level of employment creation would be subject to the development of appropriate government structures etc, as discussed above.

¹³⁰ The scale of programme required to generate a significant macroeconomic impact has not been established in the literature.

¹³¹ This argument is made by Samson et al (2002) who argue on the basis of the consumption coefficients of the poor drawn from the 1993 National Social Accounting Matrix (Stats SA 1993), that increasing consumption by the poor will increase demand for basic consumer durables and agricultural products, goods which tend to be produced domestically, and absorb a greater proportion of labour in their production, compared to goods consumed by the rich.

rate of under-utilised capacity and surplus labour in the economy, these increased consumption demands should be met without the risk of negative inflationary pressures.

An analysis of the macroeconomic impact of large public works schemes is almost universally omitted in the international literature. The impact of public works on various sectors of the economy has not been formally assessed, but could be modeled using a national or provincial model such as the Stats SA Social Accounting Matrix. This would facilitate a national assessment of the net economic benefits of investing in public works schemes, and inform the current debate, moving it beyond the immediate poverty alleviation and micro-economic impacts to look at the possible wider consequences.

Social and political stability are also likely to be enhanced by increased employment, (Louw & Shaw 1997), and inequality reduced, given the close correlation between unemployment and inequality in South Africa discussed in chapter 1. Combined with the increase in domestic demand stimulated by the transfers, these factors are likely to make South Africa a more attractive market for both domestic and international investment¹³² and hence stimulate macroeconomic growth. This analysis is in line with the arguments linking severe inequality with poor rates of economic growth (Alesina & Rodrik 1994) and is recognised in the DTI's 'Human Resource Development Strategy for South Africa' (2001), which confirms that ongoing poverty and inequality undermine prospects for 'increased aggregate demand for goods and service, therefore limiting economic growth'¹³³.

In addition to the contribution to national growth, public works programmes also have the potential to stimulate the local economy in the immediate environs of the programme. The extent of the impact would depend on the concentration of transfers in a given area, the amount of cash retained in the local area, and the spending patterns of those participating in the scheme. Given the limited amount of money circulating in many of the poorest areas of the country with the ongoing reduction of wage labour activity, particularly in deep rural areas, the injection of funds through public works

¹³² See BusinessMap 2001 for a summary of recent survey findings regarding the role played by insecurity in deterring both foreign and domestic investment.

¹³³ The relationship between inequality and growth however remains the subject of considerable debate, see for example Bourguignon 2000.

wage transfers could stimulate local markets and informal employment activity. In order to assess this potential, and the income threshold required to stimulate local economic dynamism, so that public works employment and growth multipliers could be estimated, econometric modeling and analysis of the spatial spending patterns of participants would be required. This question of modeling the local multiplier effects of public works schemes in order to analyse the role they have to play in generating secondary labour demand and stimulating local economic activity, has been largely ignored in the international literature. This is a critical area for future analysis, if the potential growth and anti-poverty impacts accruing from public works interventions are to be adequately assessed.

Microeconomic Impacts

The impact of public works programmes at the micro-economic, or household level is of primary importance in terms of the achievement of poverty alleviation objectives, particularly in the case of South Africa, where the incidence and depth of poverty is so severe. While the process of implementing public works schemes has been widely discussed in the international public works literature, their poverty alleviation outcome has been largely overlooked, and there is only limited discussion of the microeconomic impact of public works transfers in terms of reducing poverty. The focus of the debate is the quantity of funds transferred, and the cost of transfer, rather than analysis of the direct poverty alleviation impact of the transfer, a critical omission in the majority of programmes for which poverty alleviation is the explicit objective¹³⁴. There is no norm, such as percentage reduction in the poverty gap of programme participants which is used as an indicator of impact, and also no norm in terms of assessing the socio-economic status of programme participants, both of which make an assessment of the poverty impact of public works schemes highly problematic. Despite this omission in the international literature, the primary anticipated anti-poverty impacts of public works programming at household level in South Africa can be modeled, drawing on research from other transfer programmes.

¹³⁴ This criticism holds true in the case of South Africa, and in the mainstream international literature on public works programming.

Recent economic studies have evaluated the impact of income transfers on the welfare of poor households in South Africa, (Case 2001, Duflo 1999, Samson 2002), and identified positive correlations between receipt of a pension and household health status and school participation¹³⁵. While the pension represents a monthly transfer of R602¹³⁶ which is substantially higher than the typical part time public works transfer¹³⁷, it is comparable to full time public works wages, and illustrative of the general welfare impact and consumption shifts engendered by a regular household income transfer.

Drawing on recent South African survey data¹³⁸, Case (2001) illustrates the positive health impact of the pension, arguing that a transfer is correlated with improved adult health, measured by self-reported health status, and also a reduction in malnutrition, as indicated by stunting, among children in transfer receiving households¹³⁹. This relationship between transfer receipt and a reduction in child malnutrition has been found to be particularly strong where the pension recipient is female, but almost negligible where the recipient is male (Duflo 1999), a finding which indicates that the targeting of women as participants in public works schemes may be the most effective way of ensuring a transfer is translated into improved household welfare. The primary mechanisms by which these positive changes are achieved are identified by Case as improved nutrition, improved sanitation, and the reduction of psychosocial stress associated with extreme poverty.

In the area of education, there is a significant correlation between receipt of pension transfers and school participation, with the effect being particularly strong among the poorer quintiles (Samson 2002). The implication of these findings is that a transfer to poor households is likely to enhance school participation by reducing financial barriers to participation, and also by reducing the opportunity cost of children's participation, by enabling families to forgo a child's contribution to the household economy.

¹³⁵ These effects are strongest in households where pension transfers are pooled, which according to Case 2001, is the predominant strategy in poor households.

¹³⁶ 2002 South African pension rate

¹³⁷ For example, the Zibambele transfer is R334, for eight days work per month

¹³⁸ Langeberg Survey, SALDRU, University of Cape Town, 1999

¹³⁹ Stunting is indicated by height-for-age measurements, and is the most income-sensitive measure of malnutrition. Given the pension transfer has been universal since January 1994 it is possible to examine the long term nutritional impacts on children in recipient households in this way.

Interviews with Zibambele workers have confirmed that the receipt of a regular income from public works schemes is likely to have a major impact at the microeconomic level, in terms of the welfare of participating poor households, particularly in the areas of nutrition and education (McCord 2001). However, in order to assess the poverty alleviation impact empirically, panel survey data is required to examine the socio-economic status of participants over time and their dynamic poverty profile, in line with the dynamic poverty analyses of Liebbrandt & Woolard 2001¹⁴⁰. There is a need for systematic survey work to assess the poverty impact of public works in South Africa in order to address this question, as only in this way can the impact of public works transfers on both short term poverty alleviation and longer term household mobility be assessed, and the real value of the intervention calculated.

While the poverty alleviation benefit of public works programming has not been subject to formal assessment, the research of Case and Samson indicates that a sustained transfer to poor households does have a positive impact on welfare, particularly health and education. These positive impacts are likely to be spread more widely than the immediate individual recipient or household which receives the transfer, due to the fact that ‘the working poor provide the primary social safety net for the ultra poor’, in the absence of a formal state support structure, (Samson et al 2002, p22). Currently the impact of the South African social safety net is negligible on the poorest households which lack pension-eligible members¹⁴¹, and in the absence of an expanded social safety net to support poor households, the role of complimentary initiatives, such as public works, to effect transfers to the poorest becomes all the more critical.

In addition to the direct welfare effects of a transfer, there are critical indirect benefits arising from reducing poverty and inequality, in terms of both domestic and broader social instability. Louw & Shaw (1997) argue that research conducted in townships around Durban confirms the link between violence and poverty in South Africa, and hence inasmuch as transfers reduce inequality and poverty they contribute to reduced social

¹⁴⁰ See Chapter 1 for a fuller discussion of this work.

¹⁴¹ Samson et al (2002) argue that 81% of adults and 76% of children live in households with no pensioners, and that most of the poor live in households which receive no transfer from the state. Samson et al also discuss the impact of the pension and the child allowance on reducing the poverty gap in more detail in this paper.

instability¹⁴². Public works transfers promote not only immediate economic welfare, performing a social safety net function, but also domestic and social stability, with their attendant social, political and economic benefits. These linkages were recognised by Subbarao et al (1997), who argued that ‘the foregone cost of not accounting for the poor may compromise economic growth in the long-run. In order to survive, the poor may... resort to criminal or marginalised activities... Moreover, denying the poor access to economic and educational opportunities accentuates inequality – an outcome likely to retard economic growth.’ In line with this analysis the World Bank explicitly endorses the role of public works as an instrument to promote social (and political) stability, particularly during periods of high unemployment during macroeconomic restructuring and liberalisation, such as that currently experienced by South Africa (Mangum, Mangum & Bowen 1992)¹⁴³.

Conclusion

Public works programming can play a major role in job creation, as well as having significant micro and macroeconomic benefits, through both immediate and secondary impacts, while simultaneously creating and maintaining assets and redressing the inequitable distribution of infrastructure under the previous dispensation. The potential impact of public works programming in South Africa could be significant in terms of reducing poverty and stimulating growth, if existing budgets for infrastructure creation and maintenance were shifted to increasingly labour intensive practice, and existing public works allocations were spent more effectively, with the development of appropriate institutional structures and adoption of long term time frames.

Such programmes have been implemented on a large scale throughout the developing world, in both middle and low income countries, and have been endorsed by the World Bank as an appropriate strategy to compensate for the

¹⁴² Samson estimates that the pension transfer reduces the poverty gap for recipient households by between 46 and 62% (Samson 2002).

¹⁴³ It is interesting to note that despite its identification of public works as a core tool for promoting welfare and reducing social and political instability (Mangum et al 1992) the World Bank has not promoted either public works schemes, or the related Social Fund concept, in the context of South Africa.

contractionary labour market impact of adjustment (Mangum et al 1992), which is currently exacerbating the South African labour market situation.

Given the continuing failure of the market to absorb unskilled labour, the secular rise in unemployment since the 1970s, and the structural changes occurring within the South African economy, the unemployment situation will continue to deteriorate in the coming years. The resulting unemployment is skewed towards the rural unskilled poor, who are increasingly excluded from the economy, and a radical and extensive response is urgently required to address this problem.

While public works programming does not offer a solution to the crisis of unemployment in South Africa, it can make a significant contribution, and represents a pragmatic response to this economic, political and ultimately moral problem. The Zibambele programme illustrates that it is possible to implement such a programme within the current South African context. The challenge now is to extend the operation of large scale public works programming nationally, in order to contribute to a reduction in the gross inequalities between those who participate in the labour market and those who are excluded from it.

Appendix 1. Cost-Effectiveness Ratio - Share of government's outlay which benefits the poor, Zibambele 2001/2

Current and future gains, NW/W = 0.57

W+L	29,414,000.00	Total wage bill
L	7,353,500.00	25% estimated leakage to the non poor
W	22,060,500.00	Wage received by the poor
G	40,369,730.00	Government spending
C	0.00	Other sources of funding
P	0.43	Probability of finding work when participating in programme
P*	0.43	Probability of finding work without a programme
w*	254.00	Average monthly wage in lowest decile
w	306.00	Monthly Zibambele wage
IB/SB	0.43	Poverty rate - assuming no targeting to poor areas

Labour intensity of workfare projects

The share of all wages paid in total operating cost, as some participants may not be poor, is $W + L$ (leakage to non-poor), over G ;
 $(W + L)/(G + C)$ (i) 0.73

Financial benefit-cost-ratio

The cost effectiveness ratio is the share of government's outlay which benefits the poor, and can be decomposed into various components;

Budget leverage;

Total budget is G (central and local government spending) + C (private co-financing);

$G+C$ (ii) 40,369,730.00

Targeting performance

Proportion of the wages paid out which goes to poor workers;

$W/W+L$ (iii) 0.75

Net wage

Expected net wage (NW) to workers from introducing the scheme is;

$(1-P)W - (P^* - P) W^*$ (iv) 174.42

Net wage gain

The share of the gross wage received by the poor after subtracting costs of participating, including forgone income;

NW/W (NW is net wage) (v) 0.57

IB are indirect benefits to the poor, such as when assets are created in poor neighbourhoods;

IB/NW (vi) 1.36

$$\frac{IB}{NW} = \frac{IB}{SB} \cdot \frac{SB}{G+C} \cdot \frac{NW}{G+C}$$

$NW/G+C$ 0.31

Net gain to poor workers;

$$\frac{B}{G} = \frac{G+C}{G} \cdot \frac{W+L}{G+C} \cdot \frac{W}{W+L} \cdot \frac{NW}{W} \cdot \left(1 + \frac{IB}{NW}\right)$$

0.74

$(G+C)/G$ 1.00

$(W+L)/(G+C)$ 0.73

$W/W+L$ 0.75

NW/W 0.57

Cost of R1 gain by the poor 1.36

Appendix 2. Cost-Effectiveness Ratio – Share of government's outlay which benefits the poor, Zibambele 2001/2

Current and future gains, assuming no employment found outside programme

W+L	29,414,000.00	Total wage bill
L	7,353,500.00	25% estimated leakage to the non poor
W	22,060,500.00	Wage received by the poor
G	40,369,730.00	Government spending
C	0.00	Other sources of funding
P	0.43	Probability of finding work when participating in programme
P*	0.43	Probability of finding work without a programme
w*	254.00	Average monthly wage in lowest decile
w	306.00	Monthly Zibambele wage
IB/SB	0.43	Poverty rate - assuming no targeting to poor areas

Labour intensity of workfare projects

The share of all wages paid in total operating cost, as some participants may not be poor, is $W + L$ (leakage to non-poor), over G ;

$$(W + L)/(G + C) \quad (\text{ii}) \quad 0.73$$

Financial benefit-cost-ratio

The cost effectiveness ratio is the share of government's outlay which benefits the poor, and can be decomposed into various components;

Budget leverage;

Total budget is G (central and local government spending) + C (private co-financing);

$$G+C \quad (\text{ii}) \quad 40,369,730.00$$

Targeting performance

Proportion of the wages paid out which goes to poor workers;

$$W/W+L \quad (\text{iii}) \quad 0.75$$

Net wage

Expected net wage (NW) to workers from introducing the scheme is;

$$(1-P)W - (P^* - P) W^* \quad (\text{iv}) \quad 174.42$$

Net wage gain

The share of the gross wage received by the poor after subtracting costs of participating, including forgone income;

$$NW/W \quad (\text{NW is net wage}) \quad (\text{v}) \quad 1.00$$

IB are indirect benefits to the poor, such as when assets are created in poor neighbourhoods;

$$IB/NW \quad (\text{vi}) \quad \frac{IB}{NW} = \frac{IB}{SB} \cdot \frac{SB}{G+C} \cdot \frac{NW}{G+C} \quad 0.78$$

$$NW/G+C \quad 0.55$$

Net gain to poor workers;

$$\frac{B}{G} = \frac{G+C}{G} \cdot \frac{W+L}{G+C} \cdot \frac{W}{W+L} \cdot \frac{NW}{W} \cdot \frac{IB}{NW} \quad (\text{vii}) \quad 0.97$$

$$(G+C)/G \quad 1.00$$

$$(W+L)/(G+C) \quad 0.73$$

$$W/W+L \quad 0.75$$

$$NW/W \quad 1.00$$

$$\text{Cost of R1 gain by the poor} \quad 1.03$$

Appendix 3. Cost-Effectiveness Ratio - Share of government's outlay which benefits the poor, Zibambele 2001/2

Current gains, NW/W=0.57

W+L	29,414,000.00	Total wage bill
L	7,353,500.00	25% estimated leakage to the non poor
W	22,060,500.00	Wage received by the poor
G	40,369,730.00	Government spending
C	0.00	Other sources of funding
P	0.43	Probability of finding work when participating in programme
P*	0.43	Probability of finding work without a programme
w*	254.00	Average monthly wage in lowest decile
w	306.00	Monthly Zibambele wage
IB/SB	0.43	Poverty rate - assuming no targeting to poor areas

Labour intensity of workfare projects

The share of all wages paid in total operating cost, as some participants may not be poor, is $W + L$ (leakage to non-poor), over G ;

$$(W + L)/(G + C) \quad (\text{ii}) \quad 0.73$$

Financial benefit-cost-ratio

The cost effectiveness ratio is the share of government's outlay which benefits the poor, and can be decomposed into various components;

Budget leverage;

Total budget is G (central and local government spending) + C (private co-financing);

$$G+C \quad (\text{ii}) \quad 40,369,730.00$$

Targeting performance

Proportion of the wages paid out which goes to poor workers;

$$W/W+L \quad (\text{iii}) \quad 0.75$$

Net wage

Expected net wage (NW) to workers from introducing the scheme is;

$$(1-P)W - (P^* - P) W^* \quad (\text{iv}) \quad 174.42 \quad 174.42$$

Net wage gain

The share of the gross wage received by the poor after subtracting costs of participating, including forgone income;

$$NW/W \text{ (NW is net wage)} \quad (\text{v}) \quad 0.57$$

IB are indirect benefits to the poor, such as when assets are created in poor neighbourhoods;

$$IB/NW \quad (\text{vi})$$

$$\frac{IB}{NW} = \frac{IB}{SB} \cdot \frac{SB}{G+C} / \frac{NW}{G+C} \quad 1.36$$

$$NW/G+C \quad 0.31$$

Net gain to poor workers;

$$\frac{B}{G} = \frac{G+C}{G} \cdot \frac{W+L}{G+C} \cdot \frac{W}{W+L} \cdot \frac{NW}{W} \quad 0.31$$

$$(G+C)/G \quad 1.00$$

$$(W+L)/(G+C) \quad 0.73$$

$$W/W+L \quad 0.75$$

$$NW/W \quad 0.57$$

$$\text{Cost of R1 gain by the poor} \quad 3.21$$

Appendix 4. Cost-Effectiveness Ratio - Share of government's outlay which benefits the poor, Zibambele 2001/2

Current gains, assuming no employment found outside programme

W+L	29,414,000.00	Total wage bill
L	7,353,500.00	25% estimated leakage to the non poor
W	22,060,500.00	Wage received by the poor
G	40,369,730.00	Government spending
C	0.00	Other sources of funding
P	0.43	Probability of finding work when participating in programme
P*	0.43	Probability of finding work without a programme
W*	254.00	Average monthly wage in lowest decile
W	306.00	Monthly Zibambele wage
IB/SB	0.43	Poverty rate - assuming no targeting to poor areas

Labour intensity of workfare projects

The share of all wages paid in total operating cost, as some participants may not be poor, is $W + L$ (leakage to non-poor), over G ;

$$(W + L)/(G + C) \quad (ii) \quad 0.73$$

Financial benefit-cost-ratio

The cost effectiveness ratio is the share of government's outlay which benefits the poor, and can be decomposed into various components;

Budget leverage;

Total budget is G (central and local government spending) + C (private co-financing);

$$G+C \quad (ii) \quad 40,369,730.00$$

Targeting performance

Proportion of the wages paid out which goes to poor workers;

$$W/W+L \quad (iii) \quad 0.75$$

Net wage

Expected net wage (NW) to workers from introducing the scheme is;

$$(1-P)W - (P^* - P) W^* \quad (iv) \quad 174.42$$

Net wage gain

The share of the gross wage received by the poor after subtracting costs of participating, including forgone income;

$$NW/W \text{ (NW is net wage)} \quad (v) \quad 1.00$$

IB are indirect benefits to the poor, such as when assets are created in poor neighbourhoods;

$$IB/NW \quad (vi)$$

$$\frac{IB}{NW} = \frac{IB}{SB} \cdot \frac{SB}{G+C} \cdot \frac{NW}{G+C}$$

$$0.78$$

$$NW/G+C \quad 0.55$$

Net gain to poor workers;

$$\frac{B}{G} = \frac{IB}{G} \cdot \frac{SB}{G+C} \cdot \frac{NW}{W+L} \cdot \frac{W}{W}$$

$$0.55$$

$$(G+C)/G \quad 1.00$$

$$(W+L)/(G+C) \quad 0.73$$

$$W/W+L \quad 0.75$$

$$NW/W \quad 1.00$$

$$\text{Cost of R1 gain by the poor} \quad 1.83$$

Appendix 5. Cost-Effectiveness Ratio - Share of government's outlay which benefits the poor, Zimbabwe 2002/3

Current and future gains, NW/W = 0.57

W+L	48,153,600.00	Total wage bill
L	12,038,400.00	25% estimated leakage to the non poor
W	36,115,200.00	Wage received by the poor
G	58,728,673.00	Government spending
C	0.00	Other sources of funding
P	0.43	Probability of finding work when participating in programme
P*	0.43	Probability of finding work without a programme
w*	254.00	Average monthly wage in lowest decile
w	334.00	Monthly Zimbabwe wage
IB/SB	0.43	Poverty rate - assuming no targeting to poor areas

Labour intensity of workfare projects

The share of all wages paid in total operating cost, as some participants may not be poor, is $W + L$ (leakage to non-poor), over G ;

$$(W + L)/(G + C) \quad (\text{ii}) \quad 0.82$$

Financial benefit-cost-ratio

The cost effectiveness ratio is the share of government's outlay which benefits the poor, and can be decomposed into various components;

Budget leverage;

Total budget is G (central and local government spending) + C (private co-financing);

$$G+C \quad (\text{ii}) \quad 58,728,673.00$$

Targeting performance

Proportion of the wages paid out which goes to poor workers;

$$W/W+L \quad (\text{iii}) \quad 0.75$$

Net wage

Expected net wage (NW) to workers from introducing the scheme is;

$$(1-P)W - (P^* - P) W^* \quad (\text{iv}) \quad 190.38$$

Net wage gain

The share of the gross wage received by the poor after subtracting costs of participating, including forgone income;

$$NW/W \text{ (NW is net wage)} \quad (\text{v}) \quad 0.57$$

IB are indirect benefits to the poor, such as when assets are created in poor neighbourhoods;

$$IB/NW \quad (\text{vi})$$

$$\frac{IB}{NW} = \frac{IB}{SB} \cdot \frac{SB}{G+C} \cdot \frac{NW}{G+C} \quad 1.21$$

$$NW/G+C \quad 0.35$$

Net gain to poor workers;

$$\frac{B}{G} = \frac{G+C}{G} \cdot \frac{W+L}{G+C} \cdot \frac{W}{W+L} \cdot \frac{NW}{W} \cdot \left(1 + \frac{IB}{NW}\right) \quad 0.78$$

$$(G+C)/G \quad 1.00$$

$$(W+L)/(G+C) \quad 0.82$$

$$W/W+L \quad 0.75$$

$$NW/W \quad 0.57$$

$$\text{Cost of R1 gain by the poor} \quad 1.29$$

Appendix 6. Cost-Effectiveness Ratio - Share of government's outlay which benefits the poor, Zimbabwe 2002/3

Current and future gains, assuming no employment found outside programme

W+L	48,153,600.00	Total wage bill
L	12,038,400.00	25% estimated leakage to the non poor
W	36,115,200.00	Wage received by the poor
G	58,728,673.00	Government spending
C	0.00	Other sources of funding
P	0.43	Probability of finding work when participating in programme
P*	0.43	Probability of finding work without a programme
w*	254.00	Average monthly wage in lowest decile
w	334.00	Monthly Zimbabwe wage
IB/SB	0.43	Poverty rate - assuming no targeting to poor areas

Labour intensity of workfare projects

The share of all wages paid in total operating cost, as some participants may not be poor, is $W + L$ (leakage to non-poor), over G ;

$$(W + L)/(G + C) \quad (\text{ii}) \quad 0.82$$

Financial benefit-cost-ratio

The cost effectiveness ratio is the share of government's outlay which benefits the poor, and can be decomposed into various components;

Budget leverage;

Total budget is G (central and local government spending) + C (private co-financing);

$$G+C \quad (\text{ii}) \quad 58,728,673.00$$

Targeting performance

Proportion of the wages paid out which goes to poor workers;

$$W/W+L \quad (\text{iii}) \quad 0.75$$

Net wage

Expected net wage (NW) to workers from introducing the scheme is;

$$(1-P)W - (P^* - P) W^* \quad (\text{iv}) \quad 190.38$$

Net wage gain

The share of the gross wage received by the poor after subtracting costs of participating, including forgone income;

$$NW/W \text{ (NW is net wage)} \quad (\text{v}) \quad 1.00$$

IB are indirect benefits to the poor, such as when assets are created in poor neighbourhoods;

$$\frac{IB}{NW} \quad (\text{vi})$$

$$\frac{IB}{NW} = \frac{IB}{SB} \cdot \frac{SB}{G+C} \cdot \frac{NW}{G+C} \quad 0.69$$

$$NW/G+C \quad 0.61$$

Net gain to poor workers;

$$\frac{B}{G} = \frac{G+C}{G} \cdot \frac{W+L}{G+C} \cdot \frac{W}{W+L} \cdot \frac{NW}{W} \cdot \left(1 + \frac{IB}{NW}\right) \quad 1.04$$

$$(G+C)/G \quad 1.00$$

$$(W+L)/(G+C) \quad 0.82$$

$$W/W+L \quad 0.75$$

$$NW/W \quad 1.00$$

$$\text{Cost of R1 gain by the poor} \quad 0.96$$

Appendix 7. Cost-Effectiveness Ratio - Share of government's outlay which benefits the poor, Zimbabwe 2002/3

Current gains, NW/W = 0.57

W+L	48,153,600.00	Total wage bill
L	12,038,400.00	25% estimated leakage to the non poor
W	36,115,200.00	Wage received by the poor
G	58,728,673.00	Government spending
C	0.00	Other sources of funding
P	0.43	Probability of finding work when participating in programme
P*	0.43	Probability of finding work without a programme
w*	254.00	Average monthly wage in lowest decile
w	334.00	Monthly Zimbabwe wage
IB/SB	0.43	Poverty rate - assuming no targeting to poor areas

Labour intensity of workfare projects

The share of all wages paid in total operating cost, as some participants may not be poor, is $W + L$ (leakage to non-poor), over G ;

$$(W + L)/(G + C) \quad (\text{ii}) \quad 0.82$$

Financial benefit-cost-ratio

The cost effectiveness ratio is the share of government's outlay which benefits the poor, and can be decomposed into various components;

Budget leverage;

Total budget is G (central and local government spending) + C (private co-financing);

$$G+C \quad (\text{ii}) \quad 58,728,673.00$$

Targeting performance

Proportion of the wages paid out which goes to poor workers;

$$W/W+L \quad (\text{iii}) \quad 0.75$$

Net wage

Expected net wage (NW) to workers from introducing the scheme is;

$$(1-P)W - (P^* - P) W^* \quad (\text{iv}) \quad 190.38$$

Net wage gain

The share of the gross wage received by the poor after subtracting costs of participating, including forgone income;

$$NW/W \text{ (NW is net wage)} \quad (\text{v}) \quad 0.57$$

IB are indirect benefits to the poor, such as when assets are created in poor neighbourhoods;

$$IB/NW \quad (\text{vi})$$

$$\frac{IB}{NW} = \frac{IB}{SB} \cdot \frac{SB}{G+C} \cdot \frac{NW}{G+C} \quad 1.21$$

$$NW/G+C \quad 0.35$$

Net gain to poor workers;

$$\frac{B}{G} = \frac{G+C}{G} \cdot \frac{W+L}{G+C} \cdot \frac{W}{W+L} \cdot \frac{NW}{W} \quad 0.35$$

$$(G+C)/G \quad 1.00$$

$$(W+L)/(G+C) \quad 0.82$$

$$W/W+L \quad 0.75$$

$$NW/W \quad 0.57$$

$$\text{Cost of R1 gain by the poor} \quad 2.85$$

Appendix 8. Cost-Effectiveness Ratio - Share of government's outlay which benefits the poor, Zibambele 2002/3

Current gains, assuming no employment found outside the programme

W+L	48,153,600.00	Total wage bill
L	12,038,400.00	25% estimated leakage to the non poor
W	36,115,200.00	Wage received by the poor
G	58,728,673.00	Government spending
C	0.00	Other sources of funding
P	0.43	Probability of finding work when participating in programme
P*	0.43	Probability of finding work without a programme
w*	254.00	Average monthly wage in lowest decile
w	334.00	Monthly Zibambele wage
IB/SB	0.43	Poverty rate - assuming no targeting to poor areas

Labour intensity of workfare projects

The share of all wages paid in total operating cost, as some participants may not be poor, is $W + L$ (leakage to non-poor), over G ;

$$(W + L)/(G + C) \quad (\text{ii}) \quad 0.82$$

Financial benefit-cost-ratio

The cost effectiveness ratio is the share of government's outlay which benefits the poor, and can be decomposed into various components;

Budget leverage;

Total budget is G (central and local government spending) + C (private co-financing);

$$G+C \quad (\text{ii}) \quad 58,728,673.00$$

Targeting performance

Proportion of the wages paid out which goes to poor workers;

$$W/W+L \quad (\text{iii}) \quad 0.75$$

Net wage

Expected net wage (NW) to workers from introducing the scheme is;

$$(1-P)W - (P^* - P) W^* \quad (\text{iv}) \quad 190.38$$

Net wage gain

The share of the gross wage received by the poor after subtracting costs of participating, including forgone income;

$$NW/W \text{ (NW is net wage)} \quad (\text{v}) \quad 1.00$$

IB are indirect benefits to the poor, such as when assets are created in poor neighbourhoods;

$$IB/NW \quad (\text{vi})$$

$$\frac{IB}{NW} = \frac{IB}{SB} \cdot \frac{SB}{G+C} \cdot \frac{NW}{G+C} \quad 0.69$$

$$NW/G+C \quad 0.61$$

Net gain to poor workers;

$$\frac{B}{G} = \frac{G+C}{G} \cdot \frac{W+L}{G+C} \cdot \frac{W}{W+L} \cdot \frac{NW}{W} \quad 0.61$$

$$(G+C)/G \quad 1.00$$

$$(W+L)/(G+C) \quad 0.82$$

$$W/W+L \quad 0.75$$

$$NW/W \quad 1.00$$

$$\text{Cost of R1 gain by the poor} \quad 1.63$$

Appendix 9. Zimbabwe Budget 2001/2

1 Zimbabwe Programme Support Budget

Head Quarters	No	Salary	% time Zib	Zimbabwe Cost
Deputy Director - Zimbabwe	1	194,820	80	155,856
Support Officers	2	76,697	80	122,715
Clerks	1	42,036	80	33,629
Regional Staff				
Super-Regional Zimbabwe Managers	4	135,918	80	434,938
District Road Superintendents	20	76,697	80	1,227,152
Services Officers (Zib Managers)*	40	42,036	100	1,681,440
Consultancy Inputs				
Lead Consultants**				2,800,000
Social Consultants				1,000,000
Total				7,455,730

2 Zimbabwe Operational Budget

Salary Allocation	30,000,000
Tools	1,500,000
Training	2,000,000
Total	33,500,000

3 Overall Programme Budget

Support Costs	7,455,730	18.2
Operational Costs	33,500,000	81.8
Total	40,955,730	

Appendix 10. *Zimbabwe Budget 2002/3*

1 Zimbabwe Programme Support Budget

Head Quarters	No	Salary	% time Zib	Zimbabwe Cost
Deputy Director – Zimbabwe	1	206,509	80	165,207
Support Officers	2	81,299	80	130,078
Clerk	1	44,558	80	35,647
Regional Staff				
Super-Regional Zimbabwe Managers	4	144,073	80	461,034
District Road Superintendents	20	81,299	80	1,300,781
Services Officers (Zib Managers)*	40	44,558	100	1,782,326
Consultancy Inputs				
Technical Consultants**				1,000,000
Social Consultants				1,000,000
Total				5,875,073

2 Zimbabwe Operational Budget

Salary Allocation	51,096,500
Tools	2,700,000
Training	1,000,000
Technical Support (Dig, load and haul)	1,000,000
Total	55,796,500

3 Overall Programme Budget

		%
Support Costs	5,875,073	9.53
Operational Costs	55,796,500	90.47
Total		61,671,573

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The CSSR is an umbrella organisation comprising five units.

The Aids and Society Research Unit (ASRU) supports quantitative and qualitative research into the social and economic impact of the HIV pandemic in Southern Africa. Focus areas include: the economics of reducing mother to child transmission of HIV, the impact of HIV on firms and households; and psychological aspects of HIV infection and prevention. ASRU operates an outreach programme in Khayelitsha (the Memory Box Project) which provides training and counselling for HIV positive people

The Data First Resource Unit ('Data First') provides training and resources for research. Its main functions are: 1) to provide access to digital data resources and specialised published material; 2) to facilitate the collection, exchange and use of data-sets on a collaborative basis; 3) to provide basic and advanced training in data analysis; 4) the ongoing development of a web site to disseminate data and research output.

The Democracy In Africa Research Unit (DARU) supports students and scholars who conduct systematic research in the following three areas: 1) public opinion and political culture in Africa and its role in democratisation and consolidation; 2) elections and voting in Africa; and 3) the impact of the HIV/AIDS pandemic on democratisation in Southern Africa. DARU has developed close working relationships with projects such as the Afrobarometer (a cross national survey of public opinion in fifteen African countries), the Comparative National Elections Project, and the Health Economics and AIDS Research Unit at the University of Natal.

The Social Surveys Unit (SSU) promotes critical analysis of the methodology, ethics and results of South African social science research. One core activity is the Cape Area Panel Study of young adults in Cape Town. This study follows 4800 young people as they move from school into the labour market and adulthood. The SSU is also planning a survey for 2004 on aspects of social capital, crime, and attitudes toward inequality.

The Southern Africa Labour and Development Research Unit (SALDRU) was established in 1975 as part of the School of Economics and joined the CSSR in 2002. SALDRU conducted the first national household survey in 1993 (the Project for Statistics on Living Standards and Development). More recently, SALDRU ran the Langeberg Integrated Family survey (1999) and the Khayelitsha/Mitchell's Plain Survey (2000). Current projects include research on public works programmes, poverty and inequality.
