The Economic Rationale for Agricultural Regeneration and Rural Infrastructure Investment in South Africa

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Abstract

This paper informs government policy insofar as it relates to the agricultural and rural development sectors and infrastructure investment within these sectors. The paper first quantifies the role of agriculture in the South African economy. This is done within the context of, inter alia, food security, agriculture's contribution to gross domestic product (GDP), economic linkages and multipliers with respect to the agricultural sector, as well as agriculture's employment creation and external stabilisation capacity. Investment in the agricultural and rural sectors are then analysed with a view of supporting the argument that agriculture's role in the economy is sufficiently important to warrant regenerative strategies, including renewed emphasis on agricultural and rural infrastructure investment by South African policy makers. The quantification of the agricultural sector in relation to the total economy and that of agricultural and rural infrastructure investment are investigated against the backdrop of declining government support, increasing production risks due to a variety of exogenous events like climate change, and increasing dynamic trade impacts. In this paper, the authors offer both supporting arguments in terms of current economic policy and recommendations for more decisive policy measures aimed at agricultural regeneration and rural infrastructure investment.

1 Introduction

The agricultural sector is the backbone of an economy. Its strategic importance lies in its forward and backward integration with the rest of the economy, the establishment and maintenance of food security, the economic welfare of rural areas and stabilisation capabilities in relation to the balance of payments. In developing countries, rural development plays a crucial role in economic development and the alleviation of poverty.

In spite of South Africa's plausible performance in terms of macro-economic stability and acceptable levels of economic growth over the past decade, the country's international competitiveness, mostly rated in terms of the strength of its institutional arrangements, has declined. In terms of equitability, South Africa has also performed poorly. In realising the weaknesses and failures of the economy and government policy in addressing the needs of the unemployed and poor sufficiently, former President, Thabo Mbeki recently pledged accelerated infrastructure investment in underdeveloped urban and rural areas to improve service delivery. In addition, agriculture is identified as one of the major sectors that can ensure the achievement of the Accelerated and Shared Growth Initiative of South Africa (ASGI-SA). In terms of agriculture, high priority areas are agricultural

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production and agro processing. More recently, attention has been focused on the development of a bio-fuels industry for South Africa.

The authors see this as a sign of government support of and belief in the crucial development potential of the rural and agricultural sector in providing a better life for all. The contribution of agriculture to accelerated growth is based largely on the Agricultural Sector Plan of the Department of Agriculture (DoA) (2001/2), with a vision of 'a united and prosperous agriculture'. The plan is underpinned by three core strategies: equitable access and participation, global competitiveness and profitability, and sustainable resources management. The development of an emerging agricultural sector forms an integral part of the strategy for agriculture.

This paper mainly targets decision and policy makers in all spheres of government. Although it is not possible to include all relevant research in a paper of this magnitude, the authors include a host of research, some very recent, in an attempt to advise on policies related to agricultural and rural development.

The aim of this paper is twofold. Firstly, the authors analyse and quantify the contribution of the agricultural sector to the South African economy. By doing so, the authors aim to find evidence that will either prove or disprove their contention that (*i*) government policy priorities and *(ii)* government resources are not optimally utilised to take full advantage of the agricultural sector's ability to promote a sustainable and welfare optimising economy. Secondly, it is the authors' contention that fixed investment expenditure by government should be applied in the most efficient way. Given a Kaldor-Hicks efficiency measure, it is required that the most welfare optimising and sustainable infrastructure investment takes priority.

2 Organisation of the Paper

The authors hypothesise that a regeneration of the agricultural and rural sectors are required for South Africa to ensure sustainable development, create employment, alleviate poverty and maintain long run food security for its population. This regeneration would, among other policy issues, require redirected government investment expenditure in agriculture as well as rural and agricultural infrastructure.

The authors first quantify the role of agriculture in the South African economy. This is done within the context of food security, agriculture's contribution to gross domestic product, economic linkages and multipliers with respect to the agricultural sector, agriculture's employment creation capacity and its external stabilisation capacity, i.e. its role as net foreign exchange earner. The authors then survey the rationale for rural infrastructure investment.

Finally, having quantified the agricultural sector in relation to the total economy and that of agricultural and rural infrastructure investment, the authors offer supporting arguments regarding both current economic policy and recommendations for more decisive policy measures for agricultural regeneration and higher levels of net fixed government investment in the rural and agricultural sector - especially investment in infrastructure.

3 Agriculture, Economic Development and Urbanisation

In a seminal article, Johnston and Mellor (1961) encouraged economists to view agriculture as a potentially positive force in economic development and emphasise the interdependence between agricultural and industrial growth. They argued that agriculture could make important contributions to the structural transformation of economies, e.g. it could provide labour, capital, foreign exchange and food to the growing industrial and urban sector and a market for domestically produced goods.

In many African countries, rural-urban migration appears to be accelerating, while the so called 'industrial pull for rural labour' has been absent, contributing to growing urban unemployment,

poverty, and other socio-economic problems such as higher pollution and crime (Harris and Todaro, 1970:126; Goldsmith, Gunjal and Ndarishikanye, 2004).

Stiglitz (1969) and Todaro (1997) argue that the best way to manage rural-urban migration is to increase agricultural investment and output. The Food and Agricultural Organisation (FAO) of United Nations (2003) agrees and argues that rural and agricultural development is crucial in combating national unemployment and poverty, as the majority of people in the developing world live in rural areas. Fig.1 illustrates urbanisation between 1998 and 2001 in South Africa and its nine provinces.

Fig. 1 illustrates an accelerated increase in the rate of urbanisation. In the absence of similar increases in urban employment growth, this results in large scale unemployment and poverty. According to Machethe (2004), approximately 65 percent of the poor in South Africa reside in rural areas.

[Insert Fig. 1 about here]

In a recent study, Asfaha and Jooste (2006) found that agricultural investments (such as adequate physical infrastructure) and enhanced land resources and technology (such as irrigation and fertilization) are not only consistent with policies meant to fight urban unemployment, but also boost agricultural income and reduce rural-urban migration.

4 Contribution of Agriculture to Food Security and Self-Sufficiency

Agriculture's contribution to the economy is illustrated by using a range of measures. In this section, the authors analyse the ability of the agricultural sector to provide sufficient food at affordable prices, especially at household level.

4.1 Food consumption

The importance of food to the domestic population was emphasised by Döckel and Groenewald (1970), who estimated the income elasticity of food to be 0.60 for the average South African. The rural population, as a lower income group, is inclined to spend a higher percentage of their earnings on food. This assumption is based on the law of Engel, which, in South Africa, was confirmed to hold by Breitenbach (1992) in a study of consumer patterns and consumer behaviour of different income groups.

On a macro-economic level, food consumption constitutes an average of 26 percent of total final expenditure by households. This is illustrated in Table 1.

[Insert Table *1 about here]*

4.2 Food provision

South Africa's record of accomplishment in food provision is not commendable. Despite the country being self-sufficient in the production of most major crops, nutritious food remains inaccessible to large parts of rural South Africa. More than 16 million people are suffering from malnutrition and facing starvation. Although food production has kept up with population growth, the nutritional status of the population is far from satisfactory. To illustrate this point, the cereal food balance for Southern Africa is provided in Table 2.

[Insert Table 2 about here]

Access to and availability and control of resources in society largely determine who will and will not suffer from malnutrition. In turn, the underlying causes of malnutrition are determined by ecological, technical, economic, social, political and ideological conditions. Causes of malnutrition at this level are referred to as basic causes. The resources referred to in this context consist of three

main types: human capabilities (people, their knowledge, skills and time); economic resources (assets, land, income, *etc.*) and organisational resources (formal and informal institutions, extended family and childcare organisations). Thus poverty, understood as a lack of resources and opportunities, and the structural factors that give rise to it, are basic causes of malnutrition.

4.3 Food self-sufficiency and food security

South Africa's food and agricultural policy historically emphasised national self-sufficiency. This goal, in South Africa, was largely met over the past 5 to 6 decades, as a surplus was produced in most agricultural commodities. Despite national self-sufficiency, large inequalities, inefficient food distribution networks, poverty and hunger continue to prevail in large parts of the urban periphery and rural areas of this country. Instability in South Africa's neighbouring country, Zimbabwe, has added fuel to the proverbial fire. It is estimated that millions of illegal Zimbabwean immigrants now populate squatter communities on the periphery of urban South Africa in search of a livelihood. Viewed with the almost complete collapse of food production (supply) in Zimbabwe, it is likely that the additional food demand will jeopardise South Africa's food security.

The availability of food and the ability to acquire it are two essential elements of food security. The hunger equation consists of the same two elements: food supply and demand.

It is therefore crucial that South Africa maintains a competitive agricultural sector able to meet the demand for basic foodstuffs. South Africa has, in the short run, no need to import food (on an average net basis), as the agricultural sector has succeeded in increasing production at a growth rate higher than that of the population. However, South Africa's self sufficiency has been declining as a result of a variety of factors. Some of these are briefly discussed below.

4.4 Agricultural production trends and food security

According to the Department of Agriculture (DoA), the estimated volume of agricultural production in 2005/6 was 6.4 percent lower than in the preceding period. The volume of field crop production decreased by 21.1 percent over the same period, mainly as result of a decline in the production of maize, sorghum and dry beans. Horticultural production increased by 4.6 percent, while animal production decreased by 2.3 percent over the corresponding period (DoA, 2006).

Total production of staple cereal crops and oilseeds are declining. In a study of production trends of grain crops and oilseeds in South Africa, Breitenbach & Meyer (2000) and Breitenbach & Fényes (2000) show that the area planted to these crops has declined as a result of trade liberalisation and deregulation of the agricultural sector.

The impact of climate change and drought on production and food security should also be taken into consideration. The most important restriction on agricultural production is the availability of water. Rainfall is unevenly distributed and South Africa is periodically affected by severe droughts. Water restrictions are expected to impact negatively on the availability of water for irrigation. Drought aid is limited or virtually non-existent. At present, there is also no clear policy or basis for the management of drought impacts, which affects both commercial and emerging farmers. Table 3 illustrates the decline in field crop production.

[Insert Table 3 about here]

The latest threat to food security comes from the planned replacement of fossil fuel with bio-fuels. With grain crop production at its optimal long term levels, additional demand for field crops to supply the bio-fuels industry is widely expected to put additional pressure on land and water resources. In turn, land, field crop and stock feed prices are expected to rise. Stock feed price increases impact directly on animal product price. This, together with an impounding water scarcity and adverse weather conditions, would promote the inaccessibility of nutritious food to large parts of rural South Africa, which, in turn, could be expected to spread to a large part of the South African population.

The long term sustainability of food supply will depend on the interrelationship of, amongst other factors, the natural resource base (affected by earth warming and climate change), energy supply (which is finite), international food production and competitive trends, demographic trends, level of technology, level of fixed investment and the research capability of a country.

According to Van Rooyen *et al.* (1996), this situation clearly emphasises the vital role of farm level production, environmentally adapted farm technology and early warning systems for future food policies and food security strategies. A productive farming sector at commercial and small scale levels must be viewed as an important feature in future food security strategies.

5 Gross Domestic Product (GDP)

Agriculture's contribution to GDP in South Africa (at current factor cost) has increased from R190 million in 1946 to R41 935 million in 2005. The economy grew at an average annual rate of 3.8 percent between 1946 and 2005. The value added by the agricultural sector grew by only 2.4 percent during this period, averaging a growth rate of 0.4 percent from 1996 to 2005. Strongly affected by climatic conditions, agricultural output growth was very volatile, with negative growth rates recorded for several consecutive years, as opposed to a more steady growth experience by the overall economy (see Fig.2).

[Insert Fig. 2 about here]

The growth in GDP was accompanied by a high degree of diversification. The lower growth rate of the agricultural sector, relative to that of the overall economy, caused the GDP to decline steadily. This formed part of a broader transformation of the economy over the past century from one dependant on the primary sector (agriculture and mining) to a broadly diversified manufacturing and services economy.

Table 4 shows the marked changes in the structure of South Africa's economy in the last 40 years. As can be seen from Table 4, the gross value added in the agricultural sector declined from 11.2 percent in 1960 to 3.8 percent in 2003.

[Insert Table 4 about here]

[Insert Fig. 3 about here]

Table 5 presents South Africa's real GDP from 2004 to 2006. GDP expanded at a rate of 4 percent in the first half of 2006. The sustained increase in GDP is mainly due to growth in the real value added in the secondary and tertiary sectors of the economy.

Following a decline of 1.7 percent in 2004, the real value added by the agricultural sector increased by 5.5 percent in 2005. Field crops, which contributed 27 percent to the real value added by the agricultural sector, performed well in 2005. Real output by the agricultural sector in 2005 peaked in the second half of the year, when growth in real value added accelerated to an annual rate of 6.7 percent.

The low price of maize in 2006 affected the area planted to maize, reducing the contribution of field crops to real value added by agriculture in the first half of 2006. Good rainfall raised the carrying capacity of the land, which prompted farmers to preserve livestock and expand their herds, thereby reducing real value added by the agricultural sector.

[Insert Table 5 about here]

6 Economic Linkages, Multipliersa and Labour

In terms of its forward linkages, agriculture supplies raw materials as input to other primary and secondary sectors. A large number of factories in South Africa are dependent on agriculture for raw materials. Through its backward linkages, agriculture also creates a demand for goods and services.

Regional studies confirm the importance of agricultural linkages and multipliers. In a study completed in 1989, the farm/non-farm linkages between the irrigation areas and the regional economy

of the south-western Free State were estimated. The output multiplier for irrigation agriculture is 1.7012, which means that, for every R1 of output in irrigation agriculture (which is the largest consumer of electricity); an additional output of 70.12 cents is generated in the intermediate and household sectors within the region.

[Insert Table 6 about here]

Table 6 shows that agriculture's linkages with manufacturing and animal feed are the largest. Approximately 58 percent of the value of agricultural products is supplied to processing plants. These agro-businesses significantly add to the value added by manufacturing, total fixed capital investment and employment in the economy. Linkages to farm input manufacturing and mechanisation are also substantial.

The Agro Food Task Group of the former National Economic Forum estimated that the so-called South African Manufacturing Agricultural Complex employs approximately 402 000 workers, *i.e.* 28 percent of total employment in the manufacturing sector. Agriculture also supplies 23 percent of all processed exports and utilises only 9 percent of imported inputs from the manufacturing sector.

The impact of agricultural sector changes on the economy as a whole can also be calculated by using sectoral multipliers. With the production structure as at the end of 1996, agriculture has one of the largest employment multipliers of all the economic sectors. This means that an increase in agricultural production will result in the creation of relatively more job opportunities in the economy than other industries.

Figure 4 is based on the results of a Social Accounting Matrix compiled by Conningarth Economists (2000), using a sector impact analysis (based on the South African SAM for 1998 released by Stats SA). Fig. 4 presents the cross sectoral impact of a R1 billion investment on employment. The agricultural sector can potentially create the most jobs (16 043), followed by tourism (12 850), compared to much lower figures in mining (511) and communication (3 417).

[Insert Fig. 4 about here]

According to Pollin *et al.* (2006), activities that will produce the biggest overall boost in job creation are not necessarily those that utilise the most labour-intensive production methods. This can be ascribed to the fact that some production activities may be relatively capital-intensive in their production techniques, but their backward linkages (purchase of intermediate inputs) to other labour intensive sectors in the South African economy is strong.

As such, jobs in agriculture will be created as a result of expansion in agro-processing. This relationship between the domestic agricultural and agro-processing industries - where agro-processing purchases products from agriculture - is termed 'upstream linkage'. Correspondingly, 'downstream linkage' refers to a relationship in which, for example, agro-processing firms sell products to other South African firms, such as breweries.

When using the method of Pollin *et al.* (2006) to calculate employment multipliers, an even rosier picture emerges. Pollin calculates the employment multipliers for each industry as the total number of formal jobs generated in South Africa when the industry produces R1 million worth of goods or services. When calculating employment creation per additional R1 million to final demand, Pollin finds that agriculture remains first in the rankings, generating a total of 27.9 jobs in South Africa for every additional R1 million in final demand. Agro-processing advances are third on the list, creating 18.0 domestic jobs per R1 million in final demand.

Table 7 shows that agriculture employs 17.1 percent of all formal workers in South Africa, but produces only 3.3 percent of total output. According to Pollin *et al.* (2006), these figures clearly suggest the substantial employment gains that could accrue in South Africa by utilising measures such as the public works programmes to target rural infrastructure investment.

Agriculture creates one out of every seven jobs in South Africa. If one is left unimpressed by this, or by agriculture's employment multiplier, note should be taken of a special characteristic of agricultural employment that is not present in other sectors. Agriculture is an important source of employment because of the large number of benefiting dependants per farm worker. Employment creation in agriculture could thus go a long way in alleviating the dependency burden in South

Africa.

[Insert Table 7 about here]

According to the 1996 Census, the ten major sectors of the economy generated 8.9 million jobs, of which 887 880 (13.2 percent) were in the agriculture, hunting, forestry and fishing sector (Table 8). In 2005, the number of employed people increased to 11.5 million, of which 741 570 (6.4 percent) were in the agricultural sector (DBSA, 2007).

[Insert Table 8 about here]

On average, the agricultural sector uses more workers for every R1 million value added than any other sector in the South African economy.

7 Agriculture as earner of foreign exchange

A country's exports can play one of three possible roles in economic development, *i.e.* a leading, stabilising or deterring role (Lindert & Kindleberger, 1982). Agricultural export can play a vital, if not leading role by acting as counterbalance to net foreign currency outflows via other sectors of the economy.

In South Africa, more than R22 billion in foreign currency earnings are currently generated by agriculture. If trends in exports as a whole are taken into account, it leads to the conclusion (Brand 1969) that agricultural export has played an essential and stabilising role that cannot be ignored. Brand (1969) states that, if agricultural export cannot claim to have been South Africa's 'engine of growth' during the twentieth century, it at least provided the lubrication without which the engine might have grounded to a halt.

Export earnings by agriculture increased gradually over the past two decades (Table 9). The value of agricultural products exported as a percentage of the total value of South African exports increased from 6.5 percent in 1985 to 7.6 percent in 2004.

[Insert Table 9 about here]

Despite relatively poor agricultural production conditions during the eighties and early nineties, as well as persistent recessionary conditions in the economy as a whole in the early nineties, agriculture has made an enormous contribution to foreign exchange earnings which, in turn, have helped the country to meet its foreign debt obligations - often under difficult circumstances.

Judged by structural trends in export, wool, mohair and skins constituted about 50 percent of the total value of agricultural exports during the sixties. This situation has since changed. Intensive industries, such as deciduous fruit, citrus and wine, now contribute more to the value of exports than wool, mohair, hides and other extensive industries.

SACU import and export values for agricultural products during 2004 (Table 10), highlight the relative demand and supply distribution of the various categories of agricultural products within the customs union.

[Insert Table 10 about here]

8 Investment in Agriculture

In this section, the main objective is to investigate investment in rural and agricultural infrastructure and the rationale behind sufficient infrastructure investment. The following subsection provides a brief synopsis of fixed investment in the South African agricultural sector.

8.1 Investment expenditure

Gross domestic fixed investment in agriculture prices decreased from R6 847 million in 1970 to R5 125 million in 2006. Total fixed investment, as well as fixed investment in agriculture, peaked in 1981 at R146 781 million and R11 478 million respectively.

[Insert Fig. 5 about here]

Total fixed investment in the economy, showed a continuous decline from 1981 until 1994, but then started increasing steadily to reach R221 583 million in 2006. In contrast, fixed investment in the agricultural sector showed a continuous decline (see Fig. 5).

Total real *net* fixed investment has declined since 1981, but remained positive after 1994 (see Fig. 6). Real net fixed investment in the agricultural sector declined significantly since 1981 and has been negative (i.e. depreciation exceeding investment) since 1983, resulting in a reduction in the fixed capital stock in agriculture (see Fig. 7). This means that the production capacity in agriculture has been declining for nearly twenty consecutive years. Likewise, due to several factors, resources in the economy were, over this period, redirected from agriculture (and the rural sector) to other sectors of the economy.

[Insert Fig. 6 and 7 about here]

Foreign investment in farming dropped from R30m in 1996 to R20m in 1997 and local investment from R2.3 billion in 1996 to R2 billion in 1997.

According to Vink (2007), sustainability in agriculture cannot be maintained without investment. Many possible reasons might be cited for the poor investment performance in agriculture. However, the fact that fixed direct investment in other sectors of the economy performed relatively well over the same period, suggests that investors, after having weighed risk and reward of investment in agriculture versus other economic sectors, found agriculture less rewarding.

Considering the fact that government is responsible for creating an institutional framework and environment conducive to investment, especially in sectors of strategic importance, this raises questions about government's position on the relative importance of rural and agricultural development and its view of long term food security.

In the following subsection, the authors briefly consider the position of infrastructure investment in the rural and agricultural sector in search of evidence to support their view that rural and agricultural infrastructure investment should be accelerated as part of an effective macro-economic policy.

8.2 The economic rationale for rural infrastructure development

This section addresses the importance of providing infrastructure and related services in rural areas by defining rural infrastructure and assessing its role in development. In addition, the need and level of investment in rural infrastructure is analysed.

8.3 Definition of rural infrastructure

According to Stilwell *et al.* (1998), infrastructure can be classified as either economic or 'hard' (e.g. roads, electrification, bridges and railways), social or 'soft' (e.g. health and education) or institutional (e.g. farmers' cooperatives and agricultural institutions).

Economic infrastructure is the section of an economy's capital stock that produces services for facilitating economic production or to serve as input in production. Institutional and social infrastructure are, however, equally important. Being the capital formation that provides services in agriculture, health, education and recreation, social infrastructure impacts both directly and indirectly on quality of life. Government (national, provincial and local), parastatals and the private sector are all stakeholders in generating and maintaining effective infrastructure.

The type of infrastructure referred to in this paper can essentially be classified as public goods and services, *i.e.* they are characterised by non-excludability and non-rival consumption. Should markets fail to provide this kind of infrastructure, government has the obligation to provide such goods and services. Government's inability to provide essential infrastructure may cause failure in the market for private goods and services and a collapse of marginal local economies in rural, agricultural and urban peripheral areas.

The rationale for any government policy on economic development is rooted in the welfare of society. Thus, before identifying and justifying arguments in support of government investment in rural infrastructure, the authors of this paper assess the level and distribution of poverty in South Africa. In the following section the authors briefly highlight their main concerns with certain infrastructure backlogs.

8.4 Socio-economic status of the rural population

Providing infrastructure as part of a local economic development plan could assist in the elimination of rural poverty. The level and depth of poverty in urban and rural areas (Table 11) were calculated using the Household Subsistence Level[1] (May, 1997). The poverty rate is measured by the number of people below a set poverty line, while the poverty share indicates the number of the poor living in a particular area (e.g. rural). According to Table 11, most rural dwellers (69 percent) are poor and most poor people (74 percent) live in rural areas.

In South Africa, as in most of the world, the poor are rurally based. Although they might not be directly engaged in agriculture, they rely on non-farm employment and income that, in some or other way, depends on agriculture (Pinstrup-Anderson and Pandya-Lorch, 1995). Producing more food through agricultural growth and development is not the only challenge. Of equal importance is creating income and employment for poor people in and outside of the agricultural sector.

[Insert Table 11 about here]

Poverty affects millions of people; the majority of which are women and children living in rural areas. Of the 17 million poor people in South Africa, at least 11 million live in rural areas. The rural economy is inextricably linked to agricultural production.

International research done by Stilwell *et al.* (1998) on the socio-economic impact of rural infrastructure and services revealed the following results:

- In India, better infrastructure led to substantially higher poverty reduction rates.
- China experienced remarkable growth over the last two decades. It was found that support programmes had a significant impact on the living standards in the targeted areas.
- In Bangladesh, it was concluded that infrastructure directly affects agricultural production through diffusion of technology and, use of inputs and its effect on prices. Not only did it cause household incomes to rise, but indirectly it also encourages savings through its positive effect on income.
- Agricultural multipliers and consequently growth were found to be lower in Africa than in Asia due to a lack of several factors, including infrastructure.
- Locally, a DBSA survey on migration patterns on the eastern seaboard shows that the majority of rural dwellers were spatially more mobile and those who decided to migrate chose to move to the urban periphery where there was security of land and better infrastructure.

8.5 Backlogs in rural infrastructure investment

Adequate infrastructure investment is important in the diversification of trade and industry and allows the country to benefit more from globalisation (DBSA, 1997). Infrastructure is a key to sustainable economic growth and is vital in meeting basic needs for water, electricity, transport and

[1] The Household Subsistence Level, calculated by the Institute of Development Planning Research at the University of Port Elizabeth, is a "poverty line" which, for analytical purposes, serves to separate the poor from the non-poor and is based on the expenditure required to obtain a minimum standard of nutrition and other basic needs. While the level of the said line is often a matter of dispute, its main value lies in providing a measure to assess change of the level and depth of poverty over time (May, 1997).

telecommunication. Table 12 presents the large disparities between urban and rural infrastructure backlogs in South African service provision in 1995.

[Insert Table 12 about here]

Without improved infrastructure, living standards and South Africa's ability to compete on international markets will remain under threat. The abovementioned services have different effects on improving quality of life. Access to clean water and sanitation can reduce mortality and the availability of transport provides access to markets, employment opportunities and social services such as health and education. Access to communication networks can aid in improved levels of education and literacy.

According to the World Competitiveness Report (1995), South Africa was ranked nineteenth overall in the world in terms of the extent and quality of its infrastructure. More recent competitiveness reports place South Africa third last among 200 countries. Whichever report one decides to go by, they all seem to show South Africa's relative competitive position worsening, mainly because of weakening infrastructure.

8.6 Role of rural infrastructure in economic development

Rural infrastructure serves many economic and social purposes. For instance, it creates an array of livelihood choices in commercial and small-scale farming. Many micro socio-economic studies have pointed to the economic development outcomes achieved with small-scale infrastructure interventions in rural and agricultural contexts. Most of these studies confirm that livelihood choices are broadened in these communities. A good example is that of small-scale information and communication technology infrastructure commissioned by the Agricultural Research Council in a small irrigation farming community at Thabina in the Limpopo Province. Many development outcomes were recorded, among which improved farming practices, better yields and human development through improved access to education (Breitenbach, *et al.* 2006).

8.7 Selected rural and agricultural infrastructure that require intervention

Most agricultural industries are bound to their locality, e.g. mills and cotton gins, dairies and fruit warehouses. A lack of infrastructure discourages complementary investment by the private sector in establishing labour-intensive, value-adding industries.

8.7.1 *Resources: Water and Energy*

Irrigation farming is currently one of the major consumers of electricity in agriculture. Approximately 50 percent of the country's water is utilised to irrigate approximately 1.3 million hectares of land. In commercial farming areas, 30 percent is planted to intensive crops, 50 percent to extensive crops (*i.e.* crops that are also grown in dry land conditions) and 16 percent to pastures. Limited information is available on cropping patterns in the former homeland areas, which cover a total of 100 000 ha. Limited water resources and the high cost of schemes are the major constraints to new irrigation development in South Africa, estimated at 178 000 ha. The high cost of creating infrastructure emphasises the importance of upgrading existing facilities and schemes where the primary water supply infrastructure is in position. The key to improved irrigation lies in more efficient use of water and the use of more cost-effective technology. Global warming and climate change are increasingly affecting natural rainfall patterns and therefore the available stock of water.

The competitive usage of water resources in a growing industrial sector, irrigation farming and forestry and residential use of a growing population are increasing the total demand for water.

Scientists estimate that supply of the resource is diminishing. The challenge for government is thus indeed a huge one. Estimates by Wakeford (2007) on the rate of depletion of traditional energy

sources pose a similar challenge; the demand for the resource is growing, whilst the supply thereof is finite. According to Wakeford, 90 percent of South Africa's energy sources are non-renewable. This has two major disadvantages: firstly, it continues to contribute to global warming and climate change and secondly, continuous GDP growth depends on an infinite supply of resources. This means that, at some point, due to fossil fuels and other non-renewable sources of energy becoming depleted, the economy is set to stop growing.

8.7.2 *Institutional Infrastructure: Research and Development*

Investment in agricultural research and development is crucial in increasing agricultural productivity and competitiveness. Less developed countries are, however, under-investing in agricultural research. South Africa is a case in point. Further public investment reductions in agricultural research will reduce yield growth, thus impacting severely on global food production.

8.7.3 *Institutional Infrastructure: Agricultural Support Services*

The quality of rural support services delivery is deteriorating at an alarming rate. The public sector's increasing inability to deliver support services, which are necessary to maintain agriculture's competitive position at an international level (Willemse, 2000), poses great concern.

The abolition of the Development Corporations in the former homeland areas has dealt a major blow to the provision of agricultural support services to small-scale farming, resulting in a total collapse of farming operations in these areas. The same applies to institutional aspects. In the past, commercial farmers had better access to research, technology and co-operatives than small-scale farmers.

8.7.4 *Hard Infrastructure: Roads and Railways*

The competitiveness of the agricultural sector largely depends on how efficiently it can transport its products to the markets. Investment in economic infrastructure (roads, bridges, dams, electricity, water *etc.*) has decreased from 28 percent of total fixed investment in 1987 to less than 23 percent in 1994. South Africa's road and rail density compares favourably to world averages and is far better than the average for Africa. However, poor road conditions and uncompetitive rail transport are currently hampering the agricultural sector in attaining high levels of efficiency and competitiveness. In the first quarter of 2007, grain mills ordered 12 993 railway trucks for the transport of 571 692 tonnes of grain. South African rail operator Spoornet could only supply 9 501 railway trucks to transport 418 044 tonnes of grain. The country's road network has its own problems, with 72 percent being older than twenty years (Rapport, 2007).

8.7.5 *Institutional Infrastructure: Markets and Periodic Markets*.

The attempt to assure food security and international competitiveness also brings about infrastructural and marketing challenges. In many remote rural areas, food marketing costs are extremely high. The implementation of the Marketing of Agricultural Products Act of 1996 resulted in the deregulation of the agricultural sector. Producers were ill-prepared for operating under the new deregulated environment. As production volumes increase and new markets continue to develop, the shortage of logistic infrastructure capacity during peak periods is becoming more and more evident.

When discussing access to food by the poor in an earlier section of this paper, it was mentioned that the food being produced does not reach the poor. The first and most likely reason is that the poor might not be able to afford it. However, markets are not effective in bringing goods to the poor. The alternative, in many cases, is poor serving poor, mainly by hawking and selling bulk-break. Reynolds (2004), studied the working of markets, first in rural Zimbabwe and then in South

Africa. He contends that periodic markets are an effective means of supplying the poor with food and providing wealth creating economic activities able to circulate money in rural local communities, thus increasing local multipliers. The current market structure favours the haves, not the have nots. The development of proper working and wealth creating markets forms part of soft infrastructure provision and could be integrated with current rural and agricultural extension services, whether by means of periodic markets or not. The development of working markets could furthermore form part of local economic development strategies; markets are, after all, how it began and the reason why we currently have modern working economies.

9 Current government commitment to infrastructure investment

In the current year, 2007/8, budgeted expenditure for the payment of (total) capital assets by government amounts to R4.6 billion. As far as infrastructure is concerned, government, in its Medium Term Expenditure Framework for the years 2006/7, 2007/8 and 2008/9, allocated R372 billion to capital projects and infrastructure development. This translates to R124 billion per year. By analysing this expenditure allocation, the impact on different sectors can be determined to a large extent.

Over a three-year period, government's commitment to infrastructure development is as follows: a grant of R21.5 billion towards municipal infrastructure (to provide for basic water infrastructure, sanitation, roads and other infrastructure), R4.4 billion towards the national electrification programme; R2.5 billion for neighbourhood development; R23 billion towards housing; R3.1 billion for soccer stadiums; R4.1 billion for hospitals; R15.1 billion in respect of the provincial infrastructure grant (to build clinics, schools and provincial roads); R14.3 billion for transport infrastructure, of which R1.9 billion has been allocated for new national roads, R1.6 billion for passenger rail and R3.5 billion for public transport infrastructure and systems; R1.2 billion towards science and technology and R3.2 billion for the national public works programme.

No specific allocation has been made for infrastructure development in agriculture. Some of the infrastructure investment would admittedly impact on rural and agricultural economies, but then mainly through the R36.6 billion allocated to provincial and local government for building schools, clinics and provincial and local roads.

10 Conclusions

Agriculture's employment generation capacity and potential (on a sustainable basis) by far exceed that of any other sector in the economy through its linkages with other economic sectors. This is especially true for the alleviation of poverty in rural South Africa. Were South Africa endowed with a highly skilled labour force, the argument might easily have gone the other way. No other economic sector has more potential to assist South Africa in meeting its Millennium development goals, halving unemployment by 2014 and feeding its nation, than the rural and agricultural sector. Most other sectors have already reached steady state levels of capital formation and are facing capacity constraints. Capital formation in agriculture -and therefore capacity - is at an all time low, which means from this point it can leap-frog into high and sustainable levels of output. What is required of government is to realise this and initiate action by means of direct support and real tangible monetary participation in order to reinvigorate and regenerate the agricultural sector and again substantially increase the size of the sector's contribution to GDP.

Nowhere is this argument confirmed more explicitly and convincingly than by Kofi Annan, former Secretary General of the United Nations and current Chairman of The Alliance for the Green Revolution in Africa, at the World Economic Forum (WEF) meeting in Cape Town, South Africa,

on June 14^{th} 2007 (Rapport, 2007), when he pronounced that Africa's road to welfare starts on the crop fields of small farmers. He sees the Green Revolution as the only sustainable solution for Africa, with the underlying motivation of food security for the African continent and the integrity of the small farmer (Sake 24, 2007).

The realisation of the strategic importance of agriculture compels most developed countries to maintain their agricultural sector – sometimes even at a high cost. Although it seems to be making the right noises in terms of policy and political announcements, government is not decisive (aggressive) enough in creating a vibrant agricultural sector. This is mostly evident from the fact that the South African government lags far behind its counterparts in the European Union and the United States when it comes to active participation in and direct support of farmers.

The authors contend that a regeneration of the agricultural sector will create the most cost-effective jobs, take care of the hungry poor, and, if afforded the opportunity to have enough natural resources left for the next generation, will turn back the hands of time by becoming a sector that can be relied on to create welfare for its citizens.

On the issue of infrastructure development, the authors are especially critical of the fact that the South African government grants far too few government resources to long term investment in renewable natural resource infrastructure - especially investment in renewable energy resources and long term water security strategies. The authors question the fact that current proactive initiatives regarding the creation of renewable natural resources for Africa do not emanate from within Africa. A case in point is the initiative by Eskom, British Columbia Hydro (Canada) and Vattenfall (Sweden), to supply 70 000 people in Lesotho and The Democratic Republic of Congo with hydro electricity (Sake 24, 2007).

Far too few resources (and too little action) are devoted to critical and competitive transport network infrastructure, institutional infrastructure (systems that move goods faster through customs and border points) and effective working markets (especially those that can help the small farmer to transport goods to markets fast and cost-effectively). South Africa's inadequate progress with infrastructure investment was underlined by the WEF Workgroup on Infrastructure on June 14^{th} 2007 (Sake 24, 2007).

The whole world will soon experience the real results of the neglect of earth when global warming and climate change kick in and when, on top of that, finite resources start declining and put additional upward pressure on basic life-sustaining food product prices. At the same time, South Africa will start experiencing pressure from its ailing infrastructure unless policy makers rise to the challenge of unprecedented making good. This (negative) development can be turned around by government directing large scale investment expenditure towards much needed infrastructure, especially in rural and agricultural contexts. In this regard it is worth noting that a serious energy crisis would debilitate millions travelling to and from work and markets and prevent businesses from transporting goods freely and at any good cost (cost-effectively) to markets. This would necessitate localisation of especially food production and consumption.

Responsible and strategically prioritised infrastructure is required alongside a strong rural and agriculturally viable sector for it to be successful. The planet's six billion people, of which nearly 4 billion live in the developing world, increasingly compete for finite resources. In no uncertain terms: South Africa's attitude and political will towards its resources, infrastructure and opportunities today, will determine its fate and that of its children in the years to come.

References

[1] Abstract. (2006) Abstract of Agricultural Statistics. National Department of Agriculture. Pretoria.

[2] Asfaha, T.A. and Jooste, A. (2006) The agricultural input elasticity of rural urban migration in South Africa. *Agrekon*. Vol. 45 (1): 89- 105.

[3] Brand, S.S. (1969) *The contribution of agriculture to the economic development of South Africa since 1910.* D.Sc. (Agric) thesis, University of Pretoria.

[4] Breitenbach, M.C. (1992) A Micro-economic analysis of consumer patterns and consumer behaviour in Mamelodi. Unpublished M Com Dissertation. Vista University, Pretoria.

[5] ___ and Fényes, T.I. (2000) Maize and wheat production trends in SA in a deregulated environment, *Agrekon,* Vol. 39 No. 3, September.

[6] ___ and Meyer, N.G. (2000) Modelling fertiliser use in the grain crop and oilseed sectors of SA, *Agrekon,* Vol. 39 No. 3, September.

[7] ____, Van der Merwe, D. and Van Zyl, J.C. (2006) Making Telecentres work – A case study of a successful rural agricultural Telecentre at Thabina in the Limpopo Province of South Africa. *The Journal of Development Communication.* Vol. 17 (2), December, pp 1-19.

[8] Conningarth Economists. (2000). Social Accounting Matrix. CSIR: Pretoria.

[9] Development Bank of Southern Africa. (DBSA) (1997) Operational information. Development Information Business Unit, DBSA, Midrand.

[10] _____. (2005) Operational information. Development Information Business Unit, DBSA, Midrand.

[11] _____. (2007) Operational information. Development Information Business Unit, DBSA, Midrand.

[12] DOA. (2006) Department of Agriculture. Trends in the Agricultural Sector. Pretoria.

[13] Döckel, J.A. and Groenewald, J.A. (1970) Die vraag na voedsel in Suid Afrika. *Agrekon* 9(4): 15-20.

[14] FAO. (2003) Food and Agriculture Organization. *World agriculture towards 2015/2030.* http://www.fao.org (sited Jan. 7, 2005).

[15] Goldsmith, P.D., Gunjal, K. and Ndarishikanye, B. (2004) Rural-Urban migration and agricultural Productivity: The case of Senegal. *Agricultural Economics*, Vol. 31(1): 33-45.

[16] Harris, J.R. and Todaro, M.P. (1970) Migration, unemployment and development: A two-sector analysis. *American Economic Review*, Vol. 60 (1): 126–138.

[17] Harvest Forecast Committee. (2007). Operational information. National Department of Agriculture. Pretoria.

[18] Johnston, B.F. and Mellor, J.W. (1961) The role of agriculture in economic development. *American Economic Review*, Vol. 51, No 4: 567-593.

[19] Lindert, P.H. and Kindleberger, C.P. (1982) *International economics,* 7^{th} ed. Homewood: Irwin, 1982.

[20] Machethe C. (2004). *Agriculture and poverty in South Africa. Can agriculture reduce poverty?* Paper presented at the Overcoming Underdevelopment Conference held in Pretoria, 28-29 October 2004.

[21] May, J. (1997) *Poverty, Livelihoods and Food Security in South Africa: A Proposal for Monitoring and Measurement.* Draft prepared for the Food Security Working Group.

[22] National Department of Agriculture. 2000. *Abstract of Agricultural Statistics.* Pretoria.

[23] Pinstrup-Anderson, P. and Pandya-Lorch, R. (1997) *Food security: A global perspective.* Paper read at the International Conference of Agricultural Economists (IAAE), Sacramento, California.

[24] Pollin, R., Epstein, G, Heintz, J. and Ndikumana, L. (2006) An Employment-Targeted Economic Program for South Africa. Political Economy Research Institute (PERI), University of Massachusetts-Amherst.

[25] Rapport, (2007) Sake-Rapport, 10 June 2007: 2 Naspers, Johannesburg.

[26] Reynolds, N. (2004) Periodic Markets Handbook. Unpublished. Johannesburg.

[27] SADC. (2008). Food Security Early Warning System. Food security update – July 2008 Southern African Developing Community. FANR Directorate: SADC Secretariat, Gaborone, Botswana.

[28] Sake 24, (2007) Sake 24, Sake Beeld, Napers, Johannesburg. 15 June 2007.

[29] SA Reserve Bank (SARB) (1997) *Quarterly Bulletin.* Pretoria.

[30] _____. (2006) Operational Information. Pretoria.

[31] _____. (2008) Operational Information. Pretoria.

[32] SARSouth Africa (Republic of). (1996) *Marketing of Products Act (No 47 of 1996).* Government Gazette. Cape Town.

[33] Statistics South Africa & National Department of Agriculture, (2000) *Employment trends in agriculture in South Africa.* Government Printer, Pretoria. South Africa. Pretoria.

[34] ___. (2001). *Population Census of the Republic of South Africa.* 2001.

[35] ___ (1997). *Rural Survey. Statistical release P0360*, Pretoria. 1999.

[36] ___ (1996). *Annual commercial agricultural surveys. Report no 11-01-01.* (1996) Pretoria.

[37] Stiglitz, J. (1969) Rural–Urban migration, surplus of labour and the relationship between urban and rural wages. *Eastern Africa Economic Review.* Vol 2: 1–28.

[38] Stilwell, T. and Atkinson, D. (1998) The economic rationale and modalities for rural infrastructure development: developmental local government in rural service delivery. DBSA, Midrand.

[39] The National Electricity Regulator. (1995) Operational Information. www.info.gov.za/acts/1995/a60-95 - accessed on 24 April 2008.

[40] Todaro, M. (1997) Urbanization, unemployment and migration in Africa: Theory and policy. Paper prepared for *Reviewing Social and Economic Progress in Africa.* No. 104 Macmillan.

[41] Van Rooyen, C.J., Carstens, J. and Nortje, A. (1996) *The role of agriculture in South African Economy: A research and technology challenge.* Annual Report of the Agricultural Research Council (ARC), Pretoria.

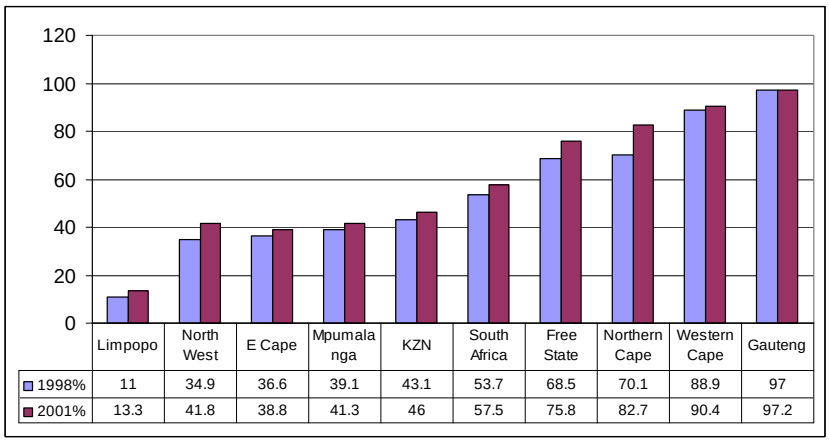
[42] Vink, N. (2007) South African melt down. From the News Archive of www. AfricanCrises.org. Rapport: March 26, 2007, Naspers, Johannesburg.

[43] Wakeford, J. (2007) Peak Oil and South Africa: Impacts and Mitigation. Association for the study of peak oil and gas. University of Cape Town. Cape Town.

[44] Willemse, J. (2000) *Vyfjaarplan nodig vir landbouhulp.* Landbouweekblad, 17 Maart 2000, Kaapstad.

[45] World Competitiveness Report. (1995).

Tables and Figures



	Limpopo	North West	E Cape	Mpumalanga	KZN	South Africa	Free State	Northern Cape	Western Cape	Gauteng
1998%	11	34.9	36.6	39.1	43.1	53.7	68.5	70.1	88.9	97
2001%	13.3	41.8	38.8	41.3	46	57.5	75.8	82.7	90.4	97.2

Figure 1.Urbanisation in South Africa and its Provinces between 1998 and 2001
Source: Stats SA Census, 2001

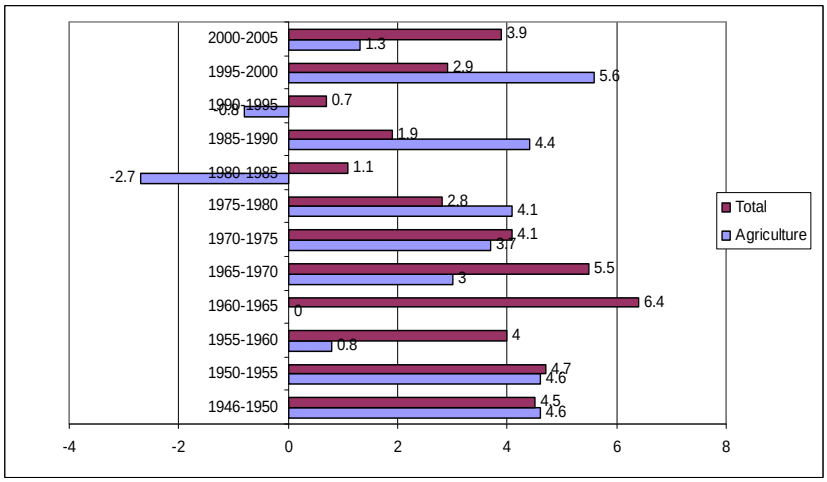


Figure 2. Average annual growth in the GDP, 1946 - 2005
Source: SARB, 2006

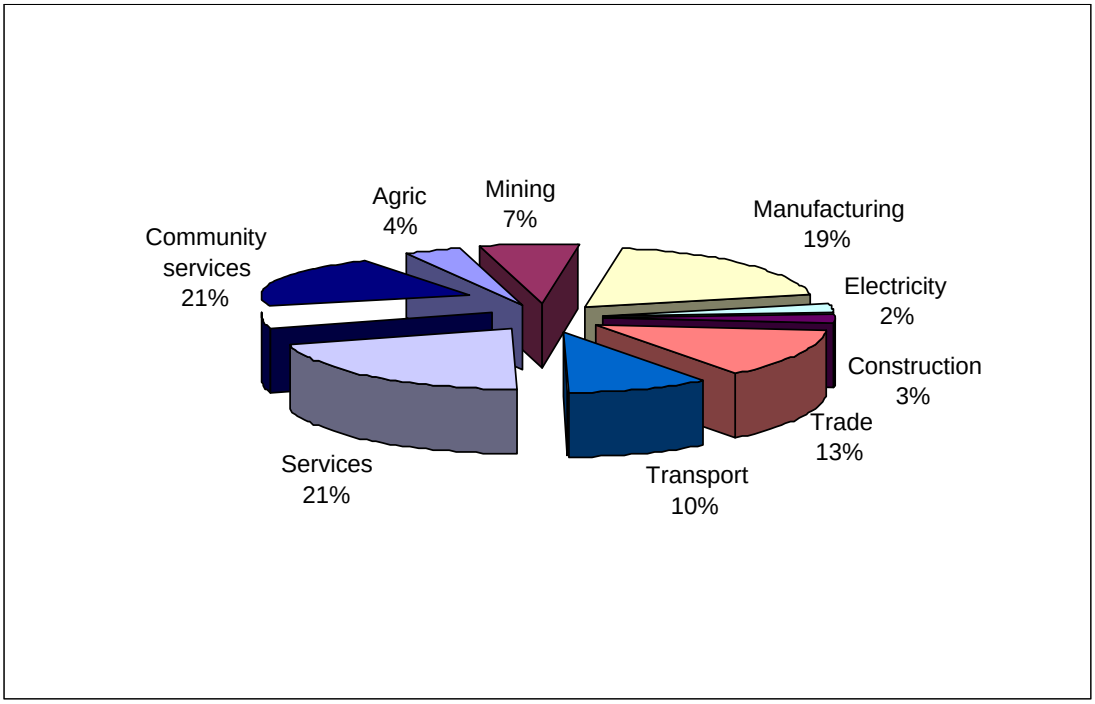


Figure 3: GDP at factor cost: percent contribution by sector, 2003
Source: DBSA, 2005

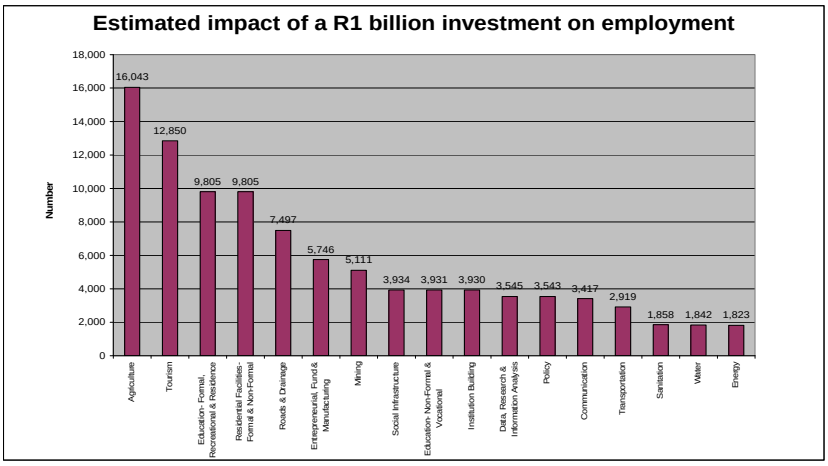


Figure 4. Estimated impact of a R1 billion investment on employment
Source: Conningarth Economists (2000)

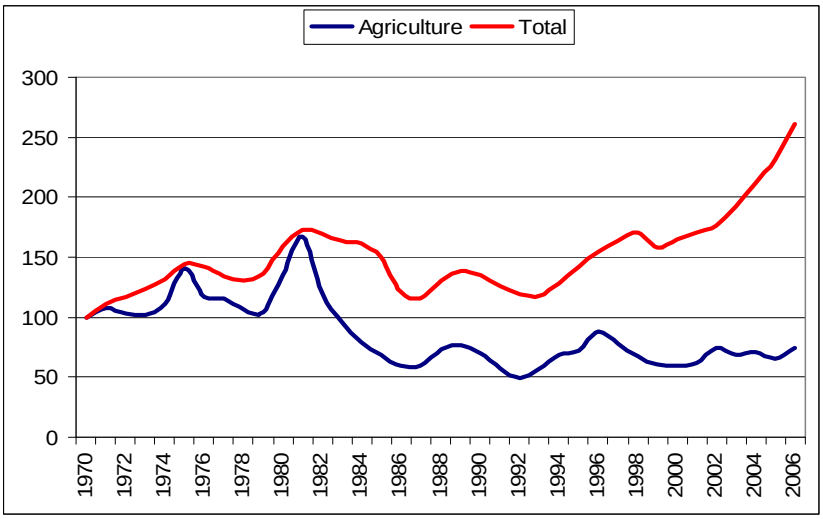


Figure 5. Real Gross Domestic fixed investment (indices 1970=100)
Source: SA Reserve Bank, 2006

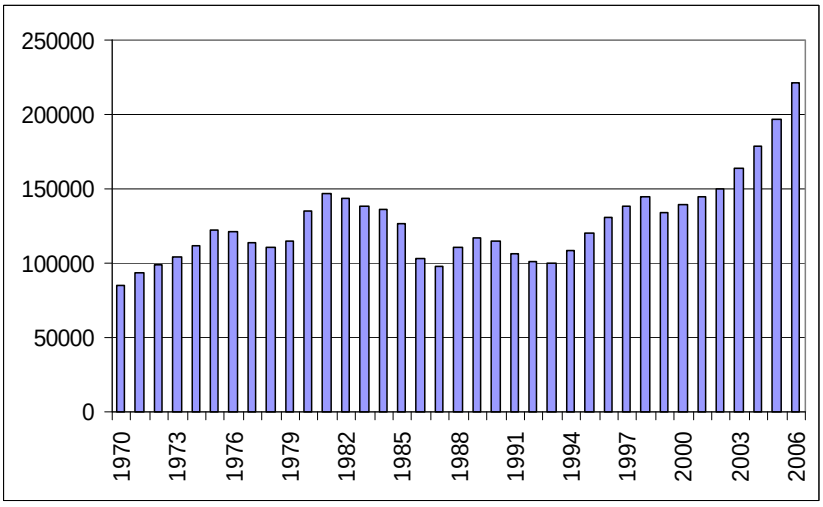


Figure 6. Total real net fixed investment 1970-2006
Source: SA Reserve Bank, 2006

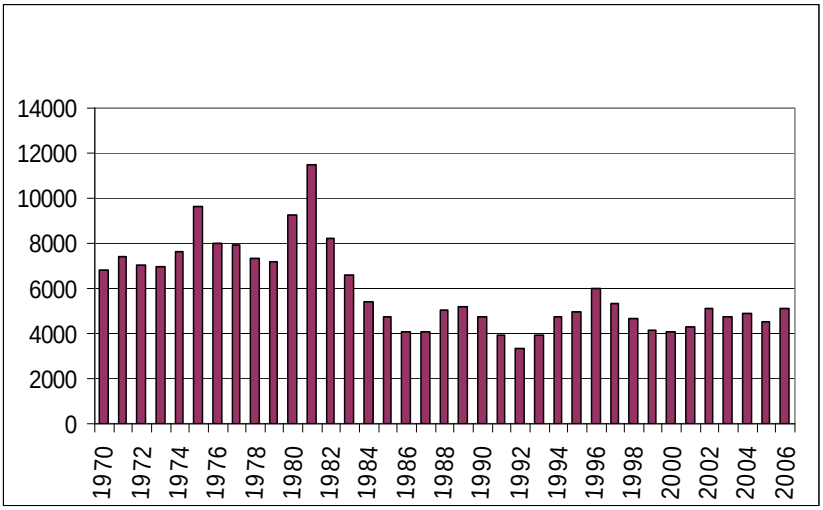


Figure 7. Real net fixed investment in agriculture, 1970 – 2006
Source: SA Reserve Bank, 2006

Table 1. Final consumption expenditure by households (R millions)*

	Food, beverages and tobacco	Total	Percent of Total
2000	152 519	580 802	26.3
2001	166 060	639 800	26.0
2002	191 987	722 091	26.6
2003	211 163	785 632	26.9
2004	232 091	870 506	26.7
2005	252 977	965 764	26.2
2006	265 536	1 088 852	24.4
2007	328 580	1 234 155	26.6

* At current prices

Source: South African Reserve Bank, 2008

Table 2. 2006/07 All Cereal Requirement, Demand and 2006 Production Estimates Compared to 2005 and 10 Year Average ('000 tonnes) as at August 8th 2006.

	2006/07 Required* ('000 tons)	2006/07 Available** ('000 tons)	2006 Produc-tion ('000 tons)	2005 Produc-tion ('000 tons)	2006 percent Change Over 2005	10-year Average	
						Produc-tion ('000 tons)	2006 percent change
Angola	1,514	696	672	881	-24	600	12
Botswana	356	56	49	19	159	29	66
DR Congo	Na	Na	Na	Na	Na	Na	Na
Lesotho	415	173	126	120	5	143	-11
Madagascar	Na	Na	Na	Na	Na	Na	Na
Malawi	2,456	2,833	2,754	1,302	111	1,942	42
Mauritius	209	6	2	2	0	2	0
Mozambique	2,638	2,265	2,098	1,836	14	1633	28
Namibia	306	143	110	100	10	105	5
South Africa	14,347	13,835	8,269	13,884	-40	11,618	-29
Swaziland	195	81	61	67	-10	88	-31
Tanzania	6,216	5,300	5,189	5,068	2	4,124	26
Zambia	1,600	1,618	1,597	1,060	51	1,161	38
Zimbabwe	1,711	2,102	2,026	880	130	1,839	12
SADC	32,961	29, 109	22,951	25,218	-9	23,282	-1

* Includes requirements for SGR

** 2006 production plus carried over stocks. NA – Data not available

Source: SADC (FANR Directorate and Member States), 2008

Table 3. Production trends ('000 ton), 2004/05-2006/07

Production season	2004/05	2005/06	2006/07
White maize	6 510	4 187	3 800
Yellow maize	4 909	2 430	2 300
Sunflower seed	620	520	200
Soya beans	272	424	180
Groundnuts	64	74	30
Dry beans	96	67	35
Total	**12 501**	**7 702**	**6 545**

Source: Harvest Forecast Committee, 2007

Table 4. Gross value added by type of economic activity, R million

Year	Agriculture, Forestry and Fishing R million	Percent of Total	Gross value added at basic prices R million
1960	559	11.2	4 988
1970	861	7.2	12 020
1980	3 654	6.2	58 972
1990	12 184	4.6	263 151
2000	25 375	3.2	793 993
2003	41 935	3.8	1 100 929
2004	39 432	3.2	1 250 953
2005	37 243	2.7	1 372 374
2006	43 043	2.8	1 543 934

Source: Abstract of Agricultural Statistics, 2006

Table 5. Real GDP, percentage change at seasonally adjusted annualised rates, 2004-2006

	2004	2004	2005	2006
	Year	1st half	Year	1st half
Primary sector	1.50	4.50	3.25	-7.25
Agriculture	-1.75	4.75	5.50	-17.50
Mining	2.75	4.50	2.50	-2.75
Secondary sector	5.00	2.50	4.25	5.00
Manufacturing	4.50	1.50	4.00	3.50
Electricity, gas and water	2.50	1.00	1.50	3.75
Construction	10.75	10.00	10.00	13.50
Tertiary Sector	4.75	5.50	5.25	5.25
Commerce	5.75	6.25	6.00	6.25
Transportation and communication	4.50	5.50	5.25	5.75
Financial and other services	7.50	8.50	7.75	7.50
Non-agricultural sector	4.50	4.75	5.00	4.50
Total	4.50	4.75	5.00	4.00

Source: SARB, 2006

Table 6. Flow of capital into other economic sectors, 2001/02-2005/06

Item	2001/02	2002/03	2003/04	(1) 2004/05	(2) 2005/06	% (2)/(1)
Fuel	3 654	3 894	3 487	4 371	5 174	18.37%
Repair and maintenance	3 097	3 659	4 036	4 195	4 473	6.62%
Fertilizer	3 111	3 678	3 142	3 524	3 056	-13.28%
Dips and sprays	2 665	2 886	2 832	2 839	2 981	5.00%
Feed	9 302	11 175	11 249	11 504	12 049	4.74%
Packaging	2 294	2 387	2 507	2 582	2 652	2.71%
Total intermediate	*32 659*	*37 514*	*37 930*	*40 409*	*42 591*	5.40%
Labour	8 201	8 781	9 175	9 542	9 923	4.00%
Interest	4 231	4 465	4 210	3 859	3 898	1.00%
Gross investment: vehicle, machinery and implements	2 923	4 281	4 253	4 044	3 815	-5.64%

Source: National Department of Agriculture, 2000

Table 7. High employment growth industries as share of South Africa's output and employment

	Industry output as share of total output (%)	Employment as industry share of total employment (%)
Agriculture	3.3	17.1
Agro-processing	4.2	2.7
Wood/paper/furniture	2.6	2.9
Accommodation/transportation	7.1	4.4
Social/community services	4.9	7.7
Total	22.1	34.8

Source: Pollin *et al.*, (2006)

Table 8. Formal employment by province, 1996 & 2005

Province	Total 1996	Agriculture 1996	%of Total	Total 2005	Agriculture 2005	%of Total
Eastern Cape	718 791	76 561	10.7	921 025	64 246	7.0
Free State	680 287	118 235	17.4	686 303	97 193	14.2
Gauteng	2 816 772	43 560	1.5	3 815 638	36 085	0.9
KwaZulu-Natal	1 341 757	116 370	8.7	1 804 768	99 379	5.5
Limpopo	523 284	92 406	17.7	735 618	77 046	10.5
Mpumalanga	614 947	112 389	18.3	818 640	99 279	12.1
Northern Cape	199 635	52 854	26.5	232 956	43 440	18.6
North West	649 073	85 766	13.2	810 092	70 606	8.7
Western Cape	1 441 581	189 740	13.2	1 759 838	154 296	8.8
South Africa	**8 986 127**	**887 880**	**9.9**	**11 584 880**	**741 570**	**6.4**

Source: DBSA, 2007

Table 9. Total agricultural imports and exports, 1985 - 2004

	R million				
Years	**Agricultural imports**	**Agricultural exports**	**Total exports**	**Percentage**	**Ratio Exports to Imports**
1985	1 298	2 382	36 410	6.5	1.84
1990	1 936	4 625	60 770	7.6	2.39
1995	6 834	8 142	102 417	7.9	1.19
2000	9 644	15 819	210 022	7.5	1.64
2001	10 704	20 074	245 447	8.2	1.88
2002	14 939	25 460	314 927	8.1	1.70
2003	13 841	22 793	273 126	8.3	1.65
2004	16 430	22 074	292 078	7.6	1.34

Source: Abstract, 2006

Table 10. SACU Import and Export value of agricultural products, 2004

Imports			**Exports**	
Other	6 117 396		Other	4 679 290
Rice	1 323 509		Wine	3 345 106
Wheat	1 271 734		Citrus fruit	2 912 042
Soya-bean oilcake	1 064 881		Grapes	2 034 661
Alcoholic beverages	917 067		Apples, pears and quinces	1 678 925
Palm oil	788 986		Sugar	1 422 889
Cotton	752 211		Preserved fruit and nuts	1 221 761
Tobacco	738 366		Maize	725 700
Meat and edible offal of poultry	727 095		Fruit and vegetables	613 243
Bread mixtures Jellie powders	484 060		Wool	576 766
Maize	472 146		Undenatured ethyl alcohol	428 966
Sunflower - and cotton-seed oil	395 576		Raw skins of sheep and lambs	374 433
Preparations used in animal feeding	277 458		Apricots, cherries, peaches, plums fresh	339 371
Dried leguminous vegetables	180 960		Cigars, cheroots, cigarillos and cigarettes	274 455
Malt	177 414		Tobacco	269 006
Coffee	170 398		Food preparations	234 075
Hide and skins of bovine	149 485		Dates, pineapples, avo's, figs, guavas and mangoes	221 829
Peptones	138 465		Undenatured ethyl alcohol	204 819
Meat of sheep or goats	87 421		Raw hides and skins of bovine	178 776
Barley	67 013		Other meat and edible meat offal	178 747
Milk and cream	38 180		Sugar confectionary	69 485
Total	16 340 791		Total	22 074 345

Source: Abstract, 2006 (as adapted)

Table 11. Distribution of poor individuals by rural/urban classification*

	Population share (percent)	**Poverty share (percent)**	**Poverty rate (percent)**
Rural	51	74	69
Urban	49	26	27
All	100	100	48

Source: May, 1997

* Note: The definitions of urban and rural (non-urban) applied here, differ slightly from those released as part of the PSLSD data-set.

Table 12. Major backlogs in service provision, 1995

Sector	**Percentage of population without access to**		
	Electricity	**Water**	**Sanitation**
Urban	23.50	20.00	20.00
Rural	79.40	65.00	95.00
Total	49.60	39.70	52.80

Source: The National Electricity Regulator, 1995