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P A P E R S

The Influence of Policy On the Roles of Agriculture in South Africa

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1. Introduction

The purpose in this paper is to provide a framework for the analysis of the relationship between different macroeconomic, sector and commodity policies and the multiplier effects of agriculture.

To this end, the paper starts with a listing of the macroeconomic, sector and commodity policies that have been included in the analysis. This should be considered in conjunction with the likely roles of agriculture along each of the dimensions of the environmental, social, poverty and cultural roles of agriculture. These policies and roles should be conceptualised as the vertical and horizontal axes respectively of a 'policy-role' matrix. The 'cells' of this matrix, i.e. the policy-role interactions, are discussed in the final two sections with respect to the immediate macroeconomic, agricultural economic, institutional and social impact of the policy change on the agricultural sector at farm, regional, national and multinational levels, and thereafter on the role of agriculture in terms of each of the dimensions identified above.

2. Policies

The policies that have the largest potential impact on the role of agriculture in South Africa are summarised in Table 1.

Table 1: Relevant policies

Spheres	Policies	Targets
Macroeconomic policies	Monetary policy	Inflation targeting
	Fiscal policy	Revenues Expenditures Management of the budget deficit Privatisation
	Trade policy	Tariffs Bilateral and regional agreements Multilateral agreements
	Labour market policies	Conditions of employment
Agricultural sector policies	Marketing policy	Field crops Horticulture Livestock
	Land reform	Land restitution Land redistribution Tenure reform
	Public sector institutions	Agricultural finance Research and development Provincialisation (including DFIs)
Environmental policies	Water law reform	Equitable access to water Efficient use of water Environmental sustainability
	Soil conservation	
	Veld management	Maintenance and rehabilitation of biodiversity Drought management

¹ This paper is taken from a report to be submitted to the FAO on 'Socio-Economic Analysis and Policy Implications of the Roles of Agriculture in Developing Countries'.

Social security policies	Education Health Housing Social security	Household food security Poverty alleviation
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3. Policy effects on the structure of agriculture

3.1 The effect of macroeconomic policy

Monetary, fiscal, trade and labour market policy are the main components of macroeconomic policy. These policies influence government spending, revenue (taxation), interest rates, the inflation rate, the exchange rate, the rate of growth in the economy, and the rate of employment. While South African interest rates and the exchange rate have fluctuated considerably since 1994, the period has been characterised by high real rates of interest and a declining real effective rate of exchange. During this period the rate of inflation decreased, while the growth rate of the economy and the rate of unemployment has increased.

In assessing the impact of these macroeconomic variables on the structure of agriculture, there are four interrelationships that need to be analysed:

- State policies regarding direct and indirect support to agriculture, including trade protection and direct spending on the sector;
- The relationship between the cost of capital and the cost of labour;
- The exchange rate, exchange controls and the returns to exports;
- The real consumer price of food and spending on non-durable goods.

3.1.1 State support to agriculture

State support to agriculture has historically been by means of indirect support aimed at ‘protecting’ farmers from the vagaries of the global market, and by means of direct subsidisation. The former is influenced mainly through trade policy, and the latter through fiscal policy.

The effects of trade policy

The key feature of post-1994 trade policy in South African agriculture has been the replacement of direct controls over imports and exports, exercised in terms of the Marketing Act of 1968, by tariffs, and the lowering of those tariffs below the bound rates agreed to in the Marrakech Agreement of 1993. In addition, countries in the Southern African region have been granted preferential access through the abolition of quantitative controls over agricultural trade within SACU, a range of bilateral treaties and the South African offer to SADC. Finally, South Africa has signed a free trade agreement with the EU. These changes came about in accordance with national trade policy, whose main purpose was to lower the average level of tariffs, to maintain a typical tariff escalation profile, and to simplify the tariff structure.

The most important implications of these policies for the agricultural sector have been that:

- The prices of field crops generally adjusted downwards to world market levels, and have thereafter fluctuated with the world market price. Commercial farmers have shifted quite rapidly to minimum and low-tillage production systems, and in certain cases even to no-till practices. The result has been a rapid decline in the use of inputs such as fertilisers, insecticides and herbicides, of tractors, combine harvesters and other implements, and of fuel in field crop production. This has been accompanied by an on-farm shift in field crop

production to better quality soils, and a sectoral shift in production out of more marginal areas such as the western parts of the North West and Free State provinces (mainly maize), and the north-western and south eastern parts of the Western Cape province (wheat). A further effect has been the adoption of crop rotation regimes, for example the introduction of crops such as medics and lupins into wheat systems in the Western Cape province and the gradual introduction of precision farming technologies. These locational and cropping pattern effects have allowed farmers to maintain total output of the major field crops while ploughing less land.

- Commercial farmers have adopted a wide variety of risk management strategies other than lower input use to cope with the greater instability that they face. These diversification strategies have been focused on income diversification (e.g. more part time farming, investment in on-farm agro-tourism facilities), and on asset diversification (large farmers have tended to diversify into different subsectors of agriculture, or into different regions within the same subsector, e.g. a maize farmer will diversify into horticulture, or a table grape farmer will buy additional land in a different production area). The result is a simultaneous consolidation of large commercial (industrial) farms with an increase in the number of smaller commercial farms, and an overall increase in the average farm size.
- The extent to which domestic producers of maize and wheat have reacted to changes in world prices has been attenuated by the application of a formula tariff, which fluctuates with the world price. The recent rapid increase in the world price, along with the devaluation of the domestic currency, created circumstances where the import tariffs should have been lowered immediately in order to cushion the effect on the farm gate prices. However, there has been widespread agreement that this mechanism was not used to good effect, as the adjustments in the tariff were delayed by red tape.
- South Africa has in the process also increased its imports of animal feeds based on oilseeds, as the evidence shows that commercial farmers in the country are not competitive in the production of these commodities. One of the possible locational effects of these imports has been a shift in the dairy industry to the coastal regions, i.e. to production systems based on natural pasturage.
- The notable exception in the effects of trade reform on field crop production is the sugar industry, which still enjoys high levels of tariff protection, partly because of the large investment required in the processing of sugar, partly because the world market in sugar is even more heavily distorted by the protectionism of the OECD countries than other agricultural products, partly because of the large number of small-scale sugar producers, and partly because of the greater lobbying power of the industry. Sugar producers even enjoy protection from producers in other SACU and SADC countries. While the domestic pricing structure has been liberalised to some extent in the past 8 years, the sector has not had to adjust to the same extent as have maize and wheat producers.
- The tariff structure that has resulted from the changes in trade policy in South Africa generally affords greater protection to value-added products as compared to commodities. One result is that farmers generally sell their products into oligopolistic markets, and buy their inputs from oligopsonistic suppliers, which adversely affects their terms of trade. Commercial farmers have been able to counter these effects by increasing multifactor productivity. However, continued increases in productivity are dependent on new technologies, which in turn are at least partly dependent on state funding. This issue will be discussed below.

- South Africa has traditionally been a net importer of red meat, with most imports sourced from Botswana and Namibia. The lowering of trade protection resulted in increased competition from non-traditional suppliers such as Australia (mutton and lamb) and the (subsidised) EU producers (mostly low quality beef cuts). Here the weakening exchange rate seems, however, to have resulted in a decline in these supplies in the past few years.
- The effects of trade policy changes on the horticultural sector are more the result of the new Marketing of Agricultural Products Act than of macroeconomic trade policy, and will be discussed later.

The effects of fiscal policy

Changes in fiscal policy have also affected the structure of farming in South Africa:

- South Africa's tax regime has changed considerably over the past 8 years. The two most important changes have been the elimination of special treatment for different sectors in the economy and the lowering of the overall tax burden. The main effect of the former on agriculture was the abolition of the special capital depreciation allowance (which allowed farm machinery to be written off fully in the year of purchase). The result is that farmers now enjoy a three-year depreciation allowance, as do enterprises in the rest of the economy.
- The South African Constitution places the powers to tax real property (land) in the hands of municipalities. The recent restructuring of local government has meant that all agricultural land now falls under the jurisdiction of municipalities for the first time in the country's history. While most municipalities are still investigating ways of exercising this power within the framework of national legislation, there is some anecdotal evidence that irresponsible use of these powers could adversely affect investment in agriculture. However, this is not expected to be a major influence.
- The other major effect of fiscal policy on the structure of agriculture has been through changes in government spending. Here the main trends have been the continued high proportion of consumption spending as opposed to investment in the national and provincial budgets, and the decline in direct expenditure on agriculture. The main effect of the lack of investment is evident in high domestic transport costs, coupled with the fact that the country's main consumer market is in the interior of the country in the Gauteng province, which is dependent on land transport. This serves to compartmentalise markets, and reduces efficiency in production and distribution systems. Wheat production in the Western Cape has, for example, historically been more than double consumption in that region. In the long run, Western Cape wheat production is expected to decline to a level that meets demand in the region, while millers in Gauteng import wheat to serve consumers in the interior.
- An increasing proportion of consumption spending since 1994 has been aimed at redistribution of access to health, education and social welfare spending, i.e. at human capital investment. The agricultural sector will benefit in the long run from this shift in priorities, first through increased consumption in starchy staples, then, as incomes rise, through increased protein consumption, and finally increased consumption of horticultural products.
- The main effects of the decline in direct government spending on agriculture at the national level are evident in the decline in state spending on agricultural research and technology transfer systems. It is important to note that, while this decline is a real concern, there is no evidence that private sector spending has changed. To the extent that private sector investment in agricultural technology has substituted for state spending, or even increased beyond that level, there would be little cause for concern. Nevertheless, farmers' ability to

remain competitive depends on their ability to increase levels of multifactor productivity, which is dependent on this investment.

- There are a number of anomalies in state spending on agriculture at the provincial level. While spending in the poorer provinces (Eastern Cape, Limpopo, KwaZulu-Natal) is higher than the national average, the proportion of spending on farmer support services is too low as a result of the high proportion of spending on wages and salaries. The direct result is that the unsatisfactory level of support services that were provided to small farmers under the previous regime has not been increased, and has in many cases deteriorated.
- While state spending on land reform has increased since the introduction of the programme, the pace of land transfers has been slow (with less than 2 percent of commercial farm land transferred to new owners) and newly settled farmers have not received farmer support services. The result is that private transfers of land have outstripped state-assisted transfers, while there is little evidence that new farmers have been able to build successful enterprises.

3.1.2 Capital versus labour intensity

The economic policy debate in South Africa is dominated by different views on the reasons for the lack of employment creating growth in the country. It is important to recall that the problem is one of increased overall employment, a decline in the number of unskilled workers employed and an increase in the number of skilled workers employed, together with an increase in the rate of unemployment. This trend has been evident in the face of high real interest rates and a declining unit cost of labour. These employment trends have been evident in agriculture as well, which has lost a third of its (unskilled) general workers over the past decade, but has experienced an increase in the employment of skilled workers. However, in this sector the overall number of employed workers has declined.

In agriculture, it seems as if the structural changes mentioned above, especially the risk management strategies of farmers, have resulted in an increased demand for fewer, more skilled workers and managers. This has also been accompanied by a less capital intensive growth path.

The rapid decline in the number of unskilled farm workers is a subject of controversy. Some argue that policies such as the Extension of Security of Tenure Act and the application of the Basic Conditions of Employment Act to agriculture (including the minimum wage as well as higher administrative costs such as compulsory formal employment contracts) have led farmers to cut down on the number of permanent workers in an effort to minimise non-wage costs of employment. Whatever the cause, these effects are felt more severely in the field crop and livestock subsectors, where the demand for part time workers is small, unlike the horticultural sector, where seasonal workers are hired for a range of activities including pruning and harvesting.

3.1.3 Exchange rate policy

The decline in the nominal and real rate of exchange of the Rand against the currencies of South Africa's main trading partners has benefited agricultural exports. In this sector, the evidence also shows that exports of value-added goods have increased at a faster rate than exports of raw commodities. The impact has differed between the field crop, livestock and horticultural sectors:

- In the field crop sector, output of all the major commodities fluctuates as a result of unpredictable weather patterns. The sugar industry, which is still heavily protected, is a net exporter of refined sugar, and has to compete directly with taxpayers in the EU and USA markets. While maize and wheat are imported and exported simultaneously, South Africa is a

net importer of wheat and a net exporter of maize over the long run. These industries benefit to the extent that there is an exportable surplus in any season. The domestic oilseeds industry, on the other hand, is a net importer, and is hence protected from competition by suppliers in South America (Argentina), Australia and elsewhere by the weakening currency. These trade patterns seem not to have affected the location of field crop production.

- As South Africa is a net importer of red meat, the same observation applies in this case – domestic producers are protected by the declining exchange rate, especially against non-traditional suppliers, e.g. Australia (sheep), the USA (poultry) and the EU (heavily subsidised beef). Because most red meat imports are sourced from Botswana and Namibia, whose currencies have not appreciated against the Rand (Namibia's, as a member of the Common Monetary Union, by definition), however, this trade has not been disrupted by movements in the exchange rate. South Africa has also in the process been able to increase its exports of specialty cuts of red meat, and of hides and skins. As other animal products such as dairy products are not traded to any significant extent, these need not be discussed further. There is also no direct evidence that these trade patterns have affected the location of production.
- The main source of the increase in South Africa's agricultural exports has been from the horticultural sector, especially fruit (only 3 percent of vegetable production is exported). Because most fruit exports are sourced from the Western Cape, that province has also benefited most from the change the exchange rate. Again, because the effects of trade policy changes on the horticultural sector are more the result of the new Marketing of Agricultural Products Act than of macroeconomic policy, this aspect will be discussed later.

3.1.4 Food prices and food consumption

The analysis in Part I showed that the real price of food in the rural areas has declined over the past decade (despite the rapid increase in food price inflation over the past six months) while per capita incomes in the country have increased. The most important effect of these trends has been that the sector has been deregulated and liberalised within a growing domestic market, which has served to ease the transition.

3.2 Marketing policy

It is evident that the effects of deregulation differed between the field crop, the horticultural and the livestock subsectors of agriculture, partly because of their different modes of production, and partly because the nature of control under the old Act differed between different commodities. The discussion of the effects of these changes on the structure of agriculture necessarily overlaps with the effects of changes in macroeconomic policy, especially trade policy. Nevertheless, the effects should be considered for:

- Field crops farming systems
- Livestock farming systems
- Horticultural farming systems

3.2.1 Field crops

The discussion above showed the real impact of trade policy reform on the performance of the field crop sector. Yet the process of deregulation of the agricultural marketing system encompassed more than just a change in the trade regime. The most important changes included the abolition of pan-territorial and pan-seasonal pricing mechanisms, the concomitant changes to physical access to the

market, and to the food processing sector, and a range of institutional impacts:

- Most of the major field crops were sold under a 'single channel fixed price' marketing regime, characterised by pan-territorial and pan-seasonal pricing. The main consequence of pan-territorial prices was that farmers closer to the market were effectively cross-subsidising those further away that faced higher transport costs. With deregulation prices started to become regionally differentiated to reflect transport costs and regional variations in demand and supply. Another consequence was that processors moved closer to the market, as they also paid the same price irrespective of the point of delivery. The main result of pan-seasonal pricing was that no grain was stored on-farm, and that the entire crop was sold immediately after harvest. This had a tendency to cause havoc on the money markets, especially when the maize crop was harvested, as farmers were paid in full on delivery to the cooperatives. The result was an over-supply of storage capacity, arguably also incorrectly located.
- Another feature of the regulated market was that the price differentials between different grades and cultivars of grains did not reflect differential demand. This was particularly evident in the wheat industry, where wheat produced in the Western Cape, for example, was unsuited to the production of bread, while there were few incentives to produce for specific baking qualities, or for the production of pasta, etc.
- With deregulation, the major grain industries (maize, wheat) become more differentiated as the location of production shifted in response to differential prices across space and over time. One of the first manifestations was that an increasing proportion of the maize crop is now milled by small-scale millers, both on- and off-farm (industry estimates suggest this can be as high as 30% of the crop). This has impacted the rural areas in three ways. First, there are increased opportunities for small and medium scale businesses in processing and distributing maize and maize products. This increased activity in the rural areas has provided a stimulus to rural economies. Second, there has been a marked increase in agro-tourism throughout the country. While agro-tourism has long been a feature of the wine industry, there has been a marked increase in farm stores, farm stays, etc. in most parts of the country. Third, small-scale farmers have, in theory at least, better access to the market than before, as the cooperatives that acted as agents under the single channel schemes would only take delivery in bulk. However, the slow pace of land reform (see below) means that few new entrants to agriculture have been able to take advantage of these benefits.
- The abolition of pan-territorial and pan-seasonal pricing has also had interesting consequences for the rural finance sector. Under the control schemes, the Control Boards appointed agents, mostly farmer co-operatives, to carry out the physical functions of receipt of the crop, payment, storage, and onward consignment to the processors. These input supply co-operatives therefore became effective regional monopolies, which enabled them to become preferred suppliers of seasonal credit to farmers. They generally used the Land Bank as their preferred source of funds. With deregulation, however, the commercial banks have been able to expand their share of this market.
- A final consequence of the abolition of pan-territorial and pan-seasonal pricing has been the advent of a wide range of strategies (increased part-time farming, contract farming, strategic selling throughout the season, price hedging, etc.) and institutions (the agricultural futures market, or SAFEX, grain trading firms, brokerage firms, etc.) that have enabled farmers to participate in the market with greater certainty and lower transactions costs. These institutional changes have generally served to lower the transactions costs of market participation.

3.2.2 Livestock

Control over the livestock industry was exercised in terms of a wide range of marketing control schemes. Red meat and eggs were controlled under ‘surplus removal (price support)’ schemes, whereby a floor price was set, with the relevant Board responsible for manipulating supply in order to maintain prices above this floor. In the case of red meat, the main consuming areas were designated as ‘controlled’ areas, and meat could only be sold there under a permit. Meat could also only be slaughtered in approved abattoirs, most of which were in the controlled areas. This created an artificial shortage in the consumer market and an artificial surplus in the producing areas, with the result that the holders of permits gained windfall rents. Wool and milk were controlled under ‘single channel pool’ schemes.

The major sources of animal feeds were also controlled, with maize under a single channel fixed price scheme, and oilseeds and lucerne under single channel pool schemes. The poultry industry was never subjected to statutory control.

The effects of deregulation on the livestock subsector have received relatively little attention, partly because of the heterogeneity of the sector, and partly because of the lack of reliable data, especially on consumption of red meat. Some effects include:

- An increase in the proportion of red meat sold in the informal sector directly into poor urban and peri-urban communities. Live sheep and cattle are bought on the farm, or even delivered to these townships, and slaughtered at the roadside, where the meat is sold raw or cooked in various forms. While it is known that this trade makes up a substantial proportion of total red meat sales, its exact magnitude has not been estimated. Similarly, there is an active market in pig and poultry by-products such as offal, chicken heads and feet (colloquially known as ‘walkie-talkie’), etc.
- Deregulation resulted in a rapid increase in the number of smaller abattoirs in the rural areas, mostly on-farm facilities that are combined with retail outlets or that supply directly to retailers in the formal market. One of the results is that the large metropolitan abattoirs are all running at less than a third of capacity, leading to severe financial problems for the holding company, Abakor.
- A relatively large proportion (up to 80% of formal sector sales) of South Africa’s red meat comes of feedlots, mostly as a final finishing phase, ostensibly because of the lack of winter grazing in the summer rainfall areas. It is not clear whether this practice has increased in the post-deregulation era, although there is little evidence that it has decreased. For this reason, red meat prices are particularly sensitive to changes in the cost of animal feeds. The decline in the real price of yellow maize, oilseeds and other components of animal feeds since deregulation has, therefore, resulted in relatively low red meat prices, at least until the recent increase in grain prices.

3.2.3 Horticulture

Most of South Africa’s fresh vegetable and subtropical fruit industry escaped controls under the old agricultural marketing regime, while the domestic market for fresh deciduous and citrus fruit was deregulated in the 1970s. Hence, the focus here is on exports of deciduous and citrus fruit. These products were marketed under ‘single channel pool’ schemes, whereby producers had to channel their produce into a pool operated by a statutory monopoly empowered by the Deciduous Fruit and Citrus Control Boards respectively. The main implications of the deregulation of these industries include the effect on the quality and quantities exported, as well as the destination of exports:

- The main advantage of the single channel export schemes was, obviously, the ability to manage the price of exports, and more specifically to use the monopoly power to keep prices high. The main disadvantage was that products were pooled (i.e. individual producers had no incentive to deliver a quality higher than the average), that prices were maintained at high levels by restricting output, that there was little incentive to develop new markets, and that there was little incentive to save on marketing costs. The result was that South African production lagged behind that of its competitors, that the country became vulnerable to changes in individual clients, given its concentration on the most lucrative short-term markets, that the country lagged in innovating new cultivars, and that the marketing costs were high. Deregulation changed the calculus in each of these dimensions.
- The first effect of deregulation in the fruit export industries was the entry of literally hundreds of marketers, and hence a sharp decline in price and in quality delivered into a global market characterised by a rising demand for new products and a stagnant demand for conventional cultivars. In this regard, the apple industry was hardest hit, and experienced a decline in exports in the period immediately after deregulation in the mid to late-1990s. As apples are grown in only a few specialised areas, these areas experienced a negative impact on farmer incomes and employment, while the impact on the wider economy was limited. Nevertheless, total fruit exports increased in volume and value in the post-deregulation era.
- Under the new, deregulated trading regime, producers were more exposed to the shifting demand for new fruit types and varieties. While this had a negative impact on sales in the short term, it has also resulted in a new investment boom as farmers have shifted replanting and new plantings to reflect this change in demand. In the citrus industry, for example, the Western Cape producing area has been favoured over Mpumalanga, Limpopo and Eastern Cape provinces, as the demand shifted to easy-peelers, which are more suited to the climate, with the result that the Western Cape has become the largest source of citrus exports.
- A further result of deregulation is that farmers are now better able to withstand shocks in individual markets. While the bulk of deciduous fruit and citrus exports are still destined for the UK market, the concentration of exports has diminished considerably, with new markets being exploited in Eastern Europe, South and East Asia, the Middle East and Africa. There is also anecdotal evidence that competition between marketers has resulted in a lowering of supply chain costs, although the market for shipping space and harbour facilities is not competitive, and South African exporters face higher costs than those of their competitors.
- Producers' ability to shift a wider variety of products to a wider range of markets has also provided a measure of protection against competition from heavily subsidised producers in northern hemisphere countries. New technologies have resulted in an extension of the production and marketing season for these producers, thereby closing the 'marketing windows' for counter-seasonal southern hemisphere countries. This advantage has been partially offset by new storage and shipping technologies for South African producers, but the reduction in state support for research and development presents a real threat to the deciduous fruit and citrus industries.
- The regions that have benefited most from these changes in market conditions and the new opportunities that have arisen as a result of deregulation include the new table grape production areas along the Orange River in the interior of the country, and the wine producing areas of the Western Cape. Table grape exports from South Africa have grown fastest among the different varieties of deciduous and citrus exports, largely because of the rapid expansion in production capacity in the Northern Cape province. This expansion has been driven largely by the early harvest, and hence the favourable market conditions, by

production technologies such as precision irrigation, and by infrastructural investments aimed at improving air and shipping transport.

- The wine industry has also undergone radical structural changes. Exports have, for example, increased by more than threefold over the past decade, and from less than 10% of the total harvest to more than a third. These changes have been driven by investment to replace current production capacity and to create new capacity. In the wine industry, this implies a smaller total crop, as high-yielding grape varieties are replaced by low-yielding 'noble' cultivars. This also implies that the area under vines has grown only slowly, as most of the investment is targeted at replanting. Nevertheless, new areas in the Western Cape, including the Malmesbury district on the West Coast, and the Southern Cape have been the focus of a rapid expansion in wine grape production. At the same time the processing capacity of the industry has also been expanded, with new wineries being set up, mostly in the traditional high-quality producing areas of Stellenbosch and Paarl.

3.3 Land reform

Despite the well-formulated land reform policy and well-funded land reform programme, comprising programmes for land restitution, land redistribution and tenure reform, progress has been slow, to the extent that less than 2% of commercial farm land has been transferred, that production conditions in the communal farming areas have remained largely unchanged or may even have worsened after eight years of land reform, and that tenure forms have hardly changed in the communal areas despite attempts to provide greater tenure security. There is also no evidence that the supposed beneficiaries of land reform are better off as a result of their participation in the programme. Empirical evidence, in fact, shows that private transfers, some funded by mortgages from the Land Bank or the commercial banks, have occurred at twice the rate of state transfers. Nevertheless, there are some examples of land reform that have had local impacts, and that possibly serve as examples for future land reform:

- The best-known example of small farmer success in South Africa is the 20000-30000 small cane growers in the sugar industry. While the support programme to small-scale cane growers in KwaZulu-Natal predates the land reform programme by a few decades, it has recently been expanded considerably in Mpumalanga province where new sugar cane plantations have been established.
- During the early 1990s a project was launched to encourage the development of a land rental market on cropland in the communal areas by encouraging the traditional authority to adopt measures that would lower the transactions costs of land rental. As expected, this experiment has had interesting efficiency and equity results.
- A number of farm worker share equity schemes have been set up, mostly in the fruit export industries in the Western Cape, whereby farm workers use the land reform grant to buy shares in an operating farm business, mostly on the farm where they work. While the financial performance of these schemes still needs to be independently assessed, these schemes have attracted significant private sector investment.
- Concerns about the vulnerability of small producers of wool led the National Wool Growers Association and the government to set up a new wool marketing channel by building and equipping shearing sheds in villages throughout the Transkei and Ciskei region. In a first phase the focus was on the provision of material support (shearing shed, equipment and for some villages, a dipping tank). In the second phase, institutional support was provided to increase access to information on breeding and training for proper shearing and grading,

access and knowledge on the use of inputs, and a market outlet. The NWGA also organises contact with the brokers to market the wool. The NWGA prescribes that candidate villages should have a minimum number of sheep, but more importantly an active farmers association, whereby the wool farmers form a local 'Wool Growers' Association'.

- There are a range of empowerment schemes in aquaculture and mariculture (mussels, oysters, seaweed, abalone) that are situated along the west and south coasts of the country that have the potential benefit of undermining the considerable poaching that has taken place in these areas, in addition to providing new opportunities to small-scale producers.
- Similarly, there are a range of agricultural projects aimed at the production of specialty products such as rooibos tea, honeybush tea, indigenous flowers, medicinal plants, essential oils, hydroponics and organic products whose purpose is to build new markets and to empower new producers.
- While the planned privatisation of the South African Forestry Company (SAFCOL) has raised considerable controversy, it has been accompanied by a wide range of planned empowerment projects, either in forestry or in alternative land uses, mostly in the horticultural sector.
- There has always been an expectation that a successful land reform programme would result in a wider range of farm sizes, a diminution of the stark differences between commercial and 'traditional' agriculture, and a less marked border between the commercial and communal farming areas. At this stage, however, progress with the land reform programme has been too slow to produce noticeable effects.

3.4 Institutional reform

All public sector institutions in South Africa have undergone two transformations in the period since 1994, namely a redirection of their strategic focus and an internal process of affirmative action aimed at improving their ability to operate in the new political, social and economic environment. In this regard, the most important changes in the agricultural sector include the restructuring of rural financial institutions and the institutions that serve the agricultural research sector, and the new constitutional relationship between the national and the provincial departments of agriculture, and between the national, provincial and local spheres of government. While it is often too early to discern all the potential and actual structural impacts of these changes, there is some evidence from the following examples that there has been an impact:

- Under the previous regime, each of the 'homelands' established a range of parastatal development corporations, often with a parallel set of corporations specifically for agricultural development, marketing, finance, etc. The Strauss Commission of Inquiry into rural finance found that none of these institutions could be regarded as successful, and they constituted a considerable drain on public finances. Nevertheless, these institutions did provide support services such as input supplies, extension and advice, credit, ploughing services, irrigation infrastructure, etc. to small farmers, and these services were largely withdrawn after 1994, even though many of the institutions were transformed into provincial corporations or banks. The result is an almost total absence of small farmer support services in the country.
- The past decade has seen a rapid increase in the cash loans business as the banking sector was deregulated and commercial banks failed to move into the low-income market. While most cash loans are supplied in urban areas, anecdotal evidence shows that many borrowers

use the funds in small businesses, including distribution and retailing of fresh produce (vegetables, meat, fruit) in the poor urban and peri-urban areas.

- There has also been an increase in the volume of business conducted through the microlending industry, in this case also in the rural areas. As is common in other parts of Africa, a relatively small proportion of these funds are borrowed for farming purposes, but here there is also evidence that some of these funds are being invested in small scale processing, distribution and retailing of fresh produce.
- The Land Bank has also experienced a transformation in its business orientation, especially with regard to its role as a wholesaler of rural credit. The largest part of the loan portfolio of the Land Bank was traditionally in the market for mortgage financing of farm purchases. This part of the business of the Land Bank has changed to the extent that it now lends directly to beneficiaries of the land reform programme, and to private buyers of land from previously disadvantaged communities. With respect to its wholesale function, the Land Bank still lends money indirectly through farmer co-operatives, but at a lower volume than previously. The greatest challenge facing the Land Bank at present is arguably the search for new intermediaries to enable it to reach small farmers effectively.
- A number of industry Trusts (e.g. the Wine Industry Trust, the Maize Trust, the Red Meat Trust) were established as a device to hold the assets of the respective Control Boards after their abolition in 1998, and many of these have been charged with the responsibility to provide support to emerging farmers in those industries (in addition to funding research, information and generic advertising). Some examples have been provided above of the involvement of these Trusts in the land reform programme.
- As noted above, there has been a substantial shift in the agricultural research, development, and technology transfer sectors. State support to agricultural research is channelled directly through the Agricultural Research Council, and indirectly through the University Faculties of Agriculture and the Provincial Departments of Agriculture, and the evidence shows that state funding has declined. However, it is not clear to what extent private sector funding (through the above-mentioned industry Trusts, through voluntary commodity levies or through the corporate sector) has made up for this decline. What is evident is that research funding is easier to access for successful industries such as the wine and fruit export sectors, hence a province such as the Western Cape has benefited more from these changes than have the poorer provinces such as the Eastern Cape and Limpopo.
- Before 1994, South Africa had 14 separate, autonomous Departments of Agriculture, most of which experienced severe capacity constraints. The situation has hardly improved under the new Constitution, where agriculture is a concurrent responsibility of the provincial and national spheres of government, and where local authorities have for the first time had to take responsibility for their rural hinterlands and their new brief to take charge of local economic development. The result has, again, been a favouring of the wealthier provinces, especially in terms of farmer support services such as extension, infrastructure provision, ploughing services, etc.
- The provincial governments have also been charged with the responsibility to provide welfare services such as social welfare payments (pensions, child support grants, etc.), health services and education. While substantial progress has been made in ensuring equal access to these services, the rural areas generally lag behind urban areas, and the poorer provinces generally lag behind the wealthier provinces. Thus, the poorer provinces are defined by rural poverty in all its dimensions (income poverty and access to services).

4. Structural effects on the roles of agriculture

The discussion thus far has concentrated on the structural impacts on agriculture of changes in a wide range of policies that affect the agricultural sector directly and indirectly. In this section, the attention is turned to the economic, social and environmental spillover effects of this impact on the wider South African economy and society.

4.1 The environmental spillovers

There are a wide range of macro and sector-level policies and laws in South Africa whose main objective is to protect the environment. Many of these have a specific bearing on the agricultural sector. In this section, the purpose is to summarise the impact that this has had, or will potentially have, on water, soils and biodiversity resources available to the agricultural sector, i.e. on the environmental spillover effects of agriculture.

4.1.1 The impact of agriculture on water

Groundwater degradation refers to both the quantity and quality of the resource. The relatively low natural storage potential of the hard rock formations in South Africa, the low velocity of movement of water along the interstices and the generally low rainfall to recharge aquifers make all boreholes susceptible to overuse. This vulnerability is a major concern, especially where the majority of rural communities depend solely on groundwater for household needs. A reduction in the quantity of water is evaluated by the measurement of the free surface water level or a reduction in the flow quantity delivered, or both. As regards the **quantity of water**, therefore, the following observations can be made:

- Most situations of overexploitation of water resources in South Africa relate to the use of borehole water for irrigation. In 1980 it was estimated that 215 000 ha (about one seventh of the total area under irrigation in the country) was under irrigation from this resource. Subsequent surveys in 1990 indicate a reduction in the use of groundwater for irrigation.
- The Department of Water Affairs and Forestry (DWAF) has published data on groundwater levels at some 281 monitoring stations located in the drier western and northern areas of South Africa. In virtually all cases the water level has dropped significantly over the last twenty years. The report indicates that rainfall has also dropped over the same period. In some areas there is clear evidence of over extraction. In the past, such areas could have been subject to control as Subterranean Government Water Control Areas in terms of the 1956 Water Act. The purpose of declaring such areas was to protect the groundwater resource. Unfortunately, the state did not have the resources to enforce regulations on users.
- It is often difficult to determine the cause of the reduction in the quantity of groundwater. However, the failure of a borehole is frequently the result of a badly sited position, the collapse of the lining of the hole, or damage to the equipment used to extract water. This was particularly the experience in the Government drought relief project in Northern KwaZulu-Natal and Limpopo Province during the drought earlier this decade. It was not uncommon for rural women to walk ten km each day to fetch water or to stand in a queue at a borehole for several hours for ten litres of water. In most cases communities had access to a borehole fitted with a hand pump. Most of the drought relief that the Government provided was used to repair or replace hand pumps. In most cases, a technical solution to the problem was all that was required.

- A reduction in the quantity of available groundwater has been noted in areas where there has been competition for the resource, usually in semi-arid areas where groundwater is used for irrigation and is facing increasing demand from towns where surface resources are minimal. In the case of the Springbok flats in Limpopo Province, extensive irrigation from boreholes has taken place. Surveys in the southern part of this area showed that from 1985 to 1990 the recharge was less than extraction for four of the six years. Recharge in the wet periods was however significant so that the overall balance indicated a gain. A similar study was undertaken in the area close to Mafikeng in the North West Province. In this area between 4000 and 4500 ha is under irrigation from groundwater sources. This study clearly indicates that extraction is twice the recharge for the granite aquifer.

Degradation in groundwater **quality** usually occurs because of the concentration of activities such as feedlots, industrial development and even uncontrolled human settlement. During the last century, the establishment of gold and coalmines in South Africa resulted in the creation of industrial areas surrounding the major cities, which directly or indirectly supported the mining industry. Many of these were metal processing factories. Processed and unprocessed effluents were discharged into streams or ponds and were found to contain quantities of heavy metals.

While industrial point sources of pollution in South Africa are controlled, diffuse sources are still in need of further attention. These relate in particular to human and domestic waste from informal settlements and the over application of fertilizer. Attempts to reduce these threats have been made, but the effect will not be noticeable immediately. Only two attempts have been made to determine trends in water quality in the Springbok flats area, but no significant changes in quality could be detected over the fifteen to twenty year period.

In many instances, however, degradation of groundwater quality is the result of natural phenomena and not pollution. In the Kalahari area, nitrate concentrations in excess of 50 mg/l occur over a large area, while the standard is 10 mg/l for drinking water. This concentration cannot be due to recent human activities because of the extremely low population density and extensive agricultural activities. It has been postulated that it is the natural result of the gathering of herds of animals in this area many years ago. There is no information on how this phenomenon has changed over time.

In some areas, high concentrations of mineral salts are derived by natural processes within the rock formations. In diamond mining areas there is also a presence of arsenic, which occurs naturally in such geological formations, and which cannot be regarded as degradation. The assessment of degradation must therefore take account of the inherent water quality that may have existed prior to utilisation.

Farmers, especially in KwaZulu-Natal, have complained that the quality of borehole water has deteriorated over time. Little has been found in the literature to confirm this. It is however possible that overpumping has caused a drop in the groundwater level. This draining of the surface level, which is more mobile due to recharge, might have released deeper or adjacent water with a higher concentration of salts. This problem can also occur in coastal boreholes: the problem of seawater intrusion has occurred at Walvis Bay and signs of the same phenomena were identified at Strandfontein and at Saldanha Bay on the West Coast. Similar problems are suspected in the coastal sand regions in KwaZulu-Natal. In other areas where high nitrate concentrations occur (e.g. the Springbok Flats in the Northern Province) the causes are clearly more closely related to agriculture. A study in magisterial districts in the North West Province also yielded high nitrate levels in boreholes used for the supply of domestic water. However, this is also unlikely to be due solely to the use of fertilisers.

Groundwater was always regarded as “pure”. While in certain instances it may be more reliable than surface water, it is now clear that the potential for contamination is significant. In the USA the main source of contamination is believed to be the disposal of industrial wastes in impoundments and landfills. Individual site-specific studies have been undertaken but these cannot be interpolated as representative of the area or the country. It is important, however to realise the significance of potential problems in this regard.

Stock losses due to nitrate poisoning have occurred in Namibia and in the North West Province. In these cases the nitrate concentration was usually several hundred mg/P. Stock losses occur when concentrations of nitrate exceed 110 mg/P. Dairy cows may be more susceptible. In South Africa the guideline level for the water for dairy herds is 90.3mg/P. It is possible to denitrify water, but this can increase the cost of water treatment by 50%.

4.1.2 The impact of agriculture on soils

Land use certainly influences soil losses. Despite difficulties in direct comparison caused by differences in measurement techniques, length of measurement period, data presentation, crop management and local conditions, and although there is no usable information on a number of crops, a crude, comparative classification is possible, in terms of the effects of a few South African crops on soil loss. Highest losses may be expected from bare ground. Maize, pineapples and cassava, depending on natural environment and growth conditions, are the most susceptible crops. Significantly less soil loss can be expected from sugar cane, wheat, bananas, and some legume and hay crops. Low but detectable erosion results from planted pasture, controlled grazing and wilderness recreational uses, whilst soil losses from natural veld are low. Vegetation burning is also known to affect erosion, and timing of burns with respect to season may well be critical in determining whether soil loss is accelerated or not.

The principle effects of soil degradation are impoverishment of the soil, causing greater susceptibility to droughts and making agricultural production more difficult and expensive; silting of water storage reservoirs so that they become uneconomic to operate; silting of harbours, rivers and estuaries; and the modification of both land- and water-based ecosystems. Some of the results of soil degradation are considered below:

- **Plant growth and biodiversity.** Since most forms of soil degradation modify physical and chemical soil characteristics, it is reasonable to expect that persistent and long term degradation will affect both the plant species which can survive in an area, and their rate of growth. Wheat yields in the Western Cape, for example, were increased by up to 60% by breaking up surface crusting on soils, but other than this, readily available local data on both agricultural and biodiversity effects seem to be almost non-existent.
- **Reservoir siltation.** One obvious and well-documented result of erosion is reservoir siltation. The paucity of fresh-water resources means that South Africa has to utilise almost every possible suitable site for dam construction. Many dams are located in catchments, which are eroding rapidly, and they act as traps or sinks for eroded material. Regular reservoir surveys on most large dams show the extent of the problem. In KwaZulu-Natal, Hazelmere dam has lost more than 25% of its original design capacity since its completion in 1975. Inanda Dam in the early 1990's was accumulating 3,5 million tonnes of material per year (1,3% of storage capacity).
- **Eutrophication** – the enrichment of water systems and lakes with plant nutrients, which often results in the over-abundant increase in algae or aquatic plants - often accompanies sedimentation caused by soil erosion. The main culprits are phosphates, from fertilisers as

well as some chemicals from informal settlements and urban areas. In extreme cases, sediment entering stream channels can control primary production and therefore the functioning of river ecosystems. This is the case in the Vaal River, for instance.

- **Estuaries.** South Africa has 343 coastal estuaries, which, unless they are regularly flushed by high discharges of tributary rivers or strong tidal currents, are inevitably sites of sediment accumulation. This is a natural process and, unless for some reason sedimentation and water quality indicators show an increasing trend in the medium to long term, estuaries tend to maintain a physical and ecological balance. The Department of Environmental Affairs and Tourism reported in 1997 that many estuaries located between the Great Fish River (Eastern Cape) and the Mozambique border are in some way degraded through accumulation of catchment-derived sediment. The Nahoon and Quinira estuaries near East London are examples of this and many east coast estuaries have demonstrated long term sediment accumulation trends. Literature shows, however, that other estuaries have also been affected by sediment inflows.
- **Sustainable Land Use Practices and Food Security.** Agriculture loses some 34 000 ha of land annually to other kinds of development and to forestry. Losses to soil erosion, acidification, salinization and compaction are not documented but must increase this total. Since estimated reserves of land which is potentially arable but not used stand at 1,3 million ha, it is likely that within about thirty years losses of arable land will exceed any remaining potential to cultivate new land. Current population growth rates means that by the year 2050 only about 0,2 ha per capita of arable land will be available. This is less than accepted international norms, and will have the effect of reducing South Africa's chances of achieving food security.
- **Economic implications.** Perhaps the most telling evidence for the importance of soil degradation is economic. Amelioration of soil acidity, caused by acid rain in Mpumalanga, will cost in the region of R25 million annually, not including losses to livestock, corrosion and veld deterioration. Annual costs accruing from the loss of soil Nitrogen, Phosphorous and Potassium would be counted in billions rather than millions of Rand. Estimates of national annual losses through erosion of the same nutrients were 30 000 tonnes, 26 400 tonnes and 363 000 tonnes respectively. Replacement costs for these would exceed R1,5 billion annually. The worst consequence of soil erosion is the selective removal of organic matter and clay minerals, reducing the water retention capacity of the soil. Although almost impossible to value, the main consequence is that low yields and crop failures are often the result of diminished water storage capacity in the soil. Drought, floods and desertification are at least partly related to soil degradation brought about by erosion. Off-site costs may also be significant. Assessment of costs of sedimentation in reservoirs, sediment deposition on croplands and sediment damage to infrastructure was about R200 million in 1999. To this may be added the costs of dealing with eutrophication in reservoirs.

4.1.3 The impact of agriculture on biodiversity

Veld condition

Generally, it is in the higher rainfall, grassland biome in the eastern parts of the country, in Gauteng, KwaZulu-Natal, Eastern Cape and North West Province that loss of cover is perceived as the most important veld degradation problem. Parts of the savannah biome in the eastern part of the Northern Province also experience loss of cover. In the drier Northern Cape, Western Cape and, to some extent, the more arid part of the Northern Province, the loss of cover is not perceived as a priority. In nearly 80 % of the communal districts, participants perceived the problem to be either a first, second or third order veld degradation priority. However, this was the case in less than half of

the commercial areas.

In contrast to perceptions about the loss of cover, problems of species composition change reside predominantly in the arid areas of the Northern Cape and Western Cape and in the grassland areas of KwaZulu Natal, Mpumalanga and the Free State, often in association with a loss of cover. A change in species composition is considered a greater problem in commercial areas than in communal areas. This highlights the impact of selective grazing regimes associated with the relatively low stocking densities in many commercial livestock production systems.

Bush encroachment

In South Africa, bush encroachment includes the concept of bush thickening. It has come to mean both the large-scale conversion of former grassland vegetation to a savannah physiognomy by encroaching indigenous trees, as well as the increase in size and density of woody plants (usually trees) within historical savannah areas. Bush encroachment is usually described as a successional sequence in which small-leaved, leguminous woody species, often *Acacias*, initiate the process. These species are then followed by broad-leaved woody species and, in some instances such as in the dry, hot river valleys of the subtropical east coast, by succulent elements. The overall trend in affected areas is towards a closed-canopy woodland.

The determinants of bush encroachment can be divided into primary and secondary factors. Primary factors include high rainfall periods, drought and increase in atmospheric CO₂, while secondary factors include elimination of a diverse indigenous browser element; replacement of browsers with cattle, changes in the fire regime, and reduction in fuel wood harvesting by people due to electrification.

The negative effect of grazing pressure on fire frequency was found to be the most important factor. Of less importance were initial shrub cover, browsing pressure and annual rainfall. Bush encroachment occurs when heavy grazing by cattle reduces the biomass of the grass layer, which in turn suppresses fire frequency and results in increased rates of bush encroachment.

Bush encroachment is seen as a serious problem in South Africa, regarded as a first, second or third order veld degradation priority in 154 of the 367 magisterial districts of South Africa. The problem appears to be most acute in the North West, the Northern Cape, the Eastern Cape and the Northern Province. The most important effect of bush encroachment is to lower grass production and reduce the grazing capacity of the veld, especially for cattle production. Estimates of the reduction in grass cover with increasing woody plant cover range from 40-90%. The reduction in grazing capacity has also been shown to be dramatic.

Alien plants

About 750 alien tree species and several thousand alien shrub and herbaceous species have been introduced to South Africa for use in horticulture, agriculture and forestry. Most of these species are potentially *invasive*, that is, they have the potential to invade areas where they have not been introduced.

Human activities have played a key role in facilitating alien plant invasions from early on in human history, both directly, by introducing alien species and indirectly, by transforming environments and the processes in natural systems. Many of South Africa's top twenty-five invading species were introduced after about 1820. Seeds of a wide variety of species were imported for food and fodder production, shelter and driftsand reclamation. The desirable species were needed and provided the food and other resources needed for development, but some also had unwanted impacts.

Invasions by alien plants have a number of significant direct and indirect impacts on natural

systems and on those which humans have partially or completely transformed. The direct impacts are those generally recognised by the landowner or manager, for example, the loss of potentially productive land and the associated loss of grazing and livestock production or poisoning of stock. The indirect impacts are caused by the impact on processes that are essential for maintaining the health of ecosystems. The most obvious effect is the reduction of biodiversity caused by alien plants displacing, suppressing and eliminating indigenous species and communities. The true costs of these impacts have not yet been estimated for South Africa, but limited information is available for some resources and from local case studies.

The direct costs of the water used by aliens are also difficult to estimate but are undoubtedly substantial when compared with the alternative uses for that water. Analyses of specific catchments and data collated for management plans show that clearing aliens is cost effective compared with building dams to provide the same volume of water. Dams will also not be effective if alien plants are using the water they were built to store.

The indirect effect of alien invaders on arid areas is more subtle. The moist upper catchment areas are the worst invaded and show the greatest losses. They produce about 60% of the total annual volume of runoff and more than 80% of the dry season flows. Reduction in runoff from these areas, particularly low flows, will have a disproportionate effect on the flows in rivers in dry regions.

Invasions by alien plants not only reduce the volume of water in streams and rivers available for human use; they can also alter the proportion of the rain ending up in spates after storms and can reduce groundwater recharge. Alien plants can alter sediment dynamics in stream and river courses, contributing to the silting up of dams. Woody aliens typically invade channel banks and floodplains. Invaders stabilise riverbanks by establishing colonies on open areas or destabilising the banks (e.g. during floods). Stabilisation can aggravate flood damage by obstructing and narrowing the channel, or tightening the curvature of bends, increasing flow rates and the energy available for scouring.

Invasions by woody aliens generally result in changes in species composition and vegetation structure, which, in turn, will alter the ecological functioning and resilience of ecosystems. It is easy to observe the reduction in the biodiversity in natural communities caused by alien plants displacing, suppressing and eliminating indigenous species. Some centres of diversity in South Africa are among the areas most heavily affected by alien invaders, for example the Cape, Albany and parts of the Succulent Karoo and Wolkberg centres and the flora of the Agulhas plain. Although there seem to be no documented losses of aquatic or riparian species due to alien plant invasions, the degree of invasion of riparian zones suggests that the impacts of the fragmentation of the natural communities could be substantial, for example, the loss of genetic diversity. Other effects are more subtle. For example, invaders compete with indigenous species or alter the vegetation structure to make habitats unsuitable for pollinators and seed dispersers; invaders modify disturbance regimes by changing fire frequencies or changing the primary productivity of natural systems by increasing the levels and availability of nutrients.

The direct economic impacts of invasions by alien plants include the loss of potentially productive land, loss of grazing and livestock production, poisoning of humans and livestock, increased costs of fire protection and damage caused by fires. They also include opportunity costs, where the money spent on control operations could have been spent on other activities.

The costs of controlling alien invaders are high and typically increase exponentially with increasing density from R300/ha for sparse to R4 000 for dense stands. Poplars and eucalypt species typically require repeated applications of herbicides to achieve 100% control. *Acacia* species are particularly difficult to control as they have very long-lived seeds, accumulate large seed banks and some species are able to sprout after cutting. Successful control of *Acacia dealbata* may require twenty-

five to forty years on heavily infested farms. Farmers are typically loath to clear wattle on low potential land (e.g. in kloofs, steep rocky hillsides and on the banks of streams) and prefer to contain existing invasions to prevent encroachment on high potential land. One consequence is that seeds are transported by water and invade areas downstream of the original infestation.

The estimated 10.1 million ha of South Africa, which has been invaded by alien plants to some degree, generally excludes invasions by herbaceous and succulent species. The total invaded area is not known but it is undoubtedly greater than 10 million ha. The invaders are estimated to be using an additional 3 300 million m³ of water per year compared with the vegetation they have replaced. The impact will increase significantly in the next five to ten years, resulting in the loss of much, or possibly even all, of the available water in certain catchment areas. The total costs associated with alien plant invasions also are not known. Simply getting invasions under control over the next twenty years could cost as much as R5.4 billion. Most of the major invading species in South Africa also produce useful products (wood, fodder) and provide substantial income to large numbers of people. It is also unfortunately true that, in many cases, the alien species most suitable for use in woodlots or land rehabilitation are known to be invaders in South Africa or elsewhere in the world. The ideal solution would be to replace these alien species with indigenous species or non-invasive alien species. In many cases this cannot be done and the only solution is to educate the communities managing the woodlands or the rehabilitation projects to detect new invasions and to control them at an early stage.

Deforestation

Unlike bush encroachment, which is a relatively recent phenomenon, deforestation has been an important environmental issue for more than a century, especially within the communal areas of South Africa. Research indicates that current demands on woodland resources, mostly for people's energy and construction needs, are impacting heavily on these environments. It is generally accepted that the current unsustainable rates of wood consumption are a serious threat to the forests and woodlands of the communal areas of South Africa.

Deforestation is inseparable from the more general problems of poverty, racial and gender inequality and rural development and neglect. While many of these issues have their roots in South Africa's colonial and apartheid past, few generalizations are possible. Certainly, betterment planning has played an important role. People were resettled at high population densities without the provision of basic services such as electricity, thereby making them dependent on natural resources for their basic needs. Yet in many cases, traditional control measures and the social cohesion of rural communities have also been eroded over time. Since woodland resources in the poverty-stricken communal areas are generally considered to be 'free', their unsustainable exploitation has been unavoidable. Other significant causes include the clearing of woodlands for agricultural land and settlements, the cutting of live timber for construction and craft purposes, the exploitation of woodlands for medicinal plants and the disruption of important plant recruitment processes caused by overgrazing and browsing by cattle and goats.

The burning of wood for heating, cooking and other household purposes contributes about 8% to the overall primary energy consumption pattern of South Africa. Fuel wood is used primarily by people living in rural areas and, since only about 10% of rural dwellings are electrified, approximately 17 million people in 3.2 million households depend heavily on fuel wood for their energy needs. The most important source of fuel wood in the rural areas is from natural shrubland or savannah woodland, with other sources (e.g. indigenous forests, alien plants, commercial exotic plantations, woodlots) being negligible.

There are both environmental as well as social costs associated with deforestation but, because the woodlands provide many other products beside fuel wood, it is difficult to isolate the impact of fuel

wood collection on woodland ecosystems and human society. Some of the most important environmental costs of deforestation include increased rates of soil erosion, disruption to the hydrological and nutrient cycles and the loss of biodiversity. Increased rates of soil erosion are usually measured in woodlands denuded of tree cover. Although less effective than grasses, trees can reduce the kinetic energy of raindrops and attenuate erosion rates. Tree roots also bind the soil and assist in reducing soil erosion. When accompanied by heavy grazing of the ground layer, erosion rates in deforested areas can be extreme. Deforestation can also lead to significant changes in the hydrological cycle in affected areas. Greater discharge rates during high rainfall periods and lower discharge rates during drier rainfall periods are thought to occur in denuded areas. It is possible that deforestation may similarly affect nutrient cycling processes through the loss of soil carbon because of lowered inputs.

Perhaps the most important impact that deforestation has on the environment is its influence on ecosystem composition and diversity. A decline either in tree species richness, in tree density or an alteration in the size class profile has been recorded at several heavily utilised communal sites in Mpumalanga and KwaZulu-Natal. The general pattern in these areas is conversion from an open savannah with tall, older trees to shrubby woodland.

Some investigations suggest that the removal of dead wood may have catastrophic effects on invertebrate and vertebrate diversity alike. For example, it is estimated that between 35% and 50% of resident forest bird species in southern Africa rely on cavities either for roosting or breeding or both. Invertebrates may be similarly affected by the removal of nesting material. A study of the habitat requirements and impacts of land use on the diversity of aculeate wasps and bees in the semi-arid areas of South Africa showed that the removal of nesting material may have important implications for the healthy functioning of these ecosystems. Aculeate bees and wasps are important pollinators of many plant species. They also prey on numerous phytophagous and non-phytophagous insects and spiders and are host to a number of parasitic wasps and beetles. Since they are habitat specialists and adapt poorly to change, the removal of nesting material may lead to local extinctions and a cascade effect on ecosystem function.

The denudation of woodlands also has important social costs, especially for women who collect the wood. The most important social costs of deforestation include the increased time spent collecting fuel wood, heavier wood loads, the negative effects of coping in the home with limited fuel wood supply and the increased cost of paying for alternative fuels. There are also obvious health costs associated with the carrying of heavy loads of wood over long distances over several years or decades. Other health costs arise when fuel wood scarcity forces the introduction of various “cost-cutting” measures or coping strategies such as the implementation of bulk cooking, reduced cooking time, or fewer cooked meals. Finally, as fuel wood scarcity increases, people may be forced to spend more of what little money they have on commercialised fuels, thus exacerbating the already dire problem of rural poverty.

4.2 The impact of agriculture on poverty alleviation and household food security

The South African government has identified poverty alleviation as an important target of development programmes, and has instituted a wide range of policies to address this issue, especially in the rural areas. The poverty alleviation and food security role of agriculture in South Africa is addressed in the Poverty Module, and is focused mainly on the role in the context of the former homeland areas, where the majority of poor and rural poor reside.

A large percentage of rural households in the communal areas participate at least in transitory agriculture, and compared to informal work, a comparatively large proportion of households remain permanently involved in agriculture. Looking at the relationship between poverty and agricultural

production, it seems that agriculture forms a small but important buffer against poverty for some households, and acts as a cushion for the poorest, while also acting as a strategy for wealth creation for wealthier households.

In a recent report on the impact of deregulation on household food security completed for the National Agricultural Marketing Council, it was concluded that the single most important determinant of food security in South Africa is cash in hand. This implies that the more serious issues to be addressed are the sources and levels of income for households to be able to purchase food. This is an important conclusion showing that South Africa is different to other African (or developing) nations. This also means that unless agricultural production moves out of subsistence to some scale of commercialisation, little impact is possible on food insecurity and poverty.

This argument links up with the results from a growth multiplier analysis, which suggests that an increase in farm income has the potential to stimulate economic growth in the communal areas but that this growth may be considerably lower than government expects from the small-scale agricultural sector. This was further confirmed by the SAM analysis of export growth in Western Cape agriculture. Export growth stimulates economic activity, especially in the chemical industry; the trade, transport and communications industry; and wood and paper industry. Skilled agricultural workers, followed by the workers in elementary occupations, experience the greatest increase in labour incomes. Technicians and professionals benefit least. There is no notable income redistribution from high-income households to low-income households or from one population group to another. The results also showed that rural household incomes increase relatively more than urban household incomes, which suggests a positive impact on rural poverty.

Agriculture's contribution to household food security has been analysed in nutritional studies, showing that, households that are involved in agriculture have better nutritional status. The participating households grew and sold a variety of crops and many kept livestock. Such households are likely to participate in production beyond the level of subsistence. Thus the improvement of agricultural productivity in less-developed areas of South Africa has the potential to improve household and child nutritional status.

There is sufficient evidence that agriculture ensures a more stable food supply and improves nutrition at household level. This takes place directly through improved dietary diversity and increased macronutrient intake, and indirectly through income replacement behaviour that seems to have a greater impact on improving energy intakes. The magnitude of the nutritional benefits seems primarily based on whether the scale of production is beyond the subsistence level.

The poverty/food security role of agriculture depends to largely on the policy and institutional framework within both sectors of the dualistic economy. In the commercial agricultural sector of South Africa, various past and current policies have influenced the structure of agriculture as well as the input intensity of the sector. Capital subsidies, guaranteed prices and import protection contributed to larger farms and thus a decline in the number of farm families. The policies of cheap credit and tax write-offs favoured the use of more capital equipment in agriculture leading to huge losses in agricultural jobs during the 1970s and 1980s. More recently, various labour policies such as minimum work conditions and minimum wage legislation all have the potential of contributing to further shedding of jobs in commercial agriculture, negating some of the potential poverty and food security benefits of agriculture.

Another example of policy changes that have affected employment levels has been the withdrawal of labour intensive public works programmes in rural areas. This not only reduced employment but also put a halt to efforts to improve much-needed rural infrastructure. Nevertheless, the government announced in July 2003 that it would embark on renewed labour intensive public works

programmes in the rural areas of the country.

Although agricultural policy is not the only policy factor that impacts on food security and poverty, only agriculture-related policies are discussed in Table 18 below, apart from a mention of Constitutional change and over-riding national policy frameworks such as the ANC's Reconstruction and Development Policy that formed the framework for societal transformation in South Africa after 1994.

Table 2: The structural impact of agriculture on poverty and food security

Policies impacting on Food Security & poverty	Impact on Food Security	Impact on poverty
Constitution of 1994	South Africa is among some 20 countries where the right to food is enshrined in the constitution. Section 27 of the Constitution states that every citizen has the right to access to sufficient food and water and that "the state must by legislation and other measures, within its available resources, avail to progressive realisation of the right to sufficient food".	Seemingly none, as there is no evidence of improvement for the poor. Lack of definitive poverty line makes it impossible to determine and monitor the impact of transition over time.
RDP	Social schemes such as feeding schemes; free health for children under 6, pregnant and lactating women; child support grants; pensions; food for work programmes; provincial community food garden projects; land reform; farmer settlement; production loan schemes for small farmers; infrastructure grants or small farmer; and the Presidential tractor mechanisation scheme. Little has changed in rural areas where inadequate infrastructure increases transaction costs for farmers and constrains further development.	Although access to basic services such as health, welfare, water and electricity have been broadened and intensified, there is an urban bias in delivery, thus little evidence that poverty has decreased and that households are better off than before.
Marketing of Agricultural Products Act No 47 of 1996.	NAMC report 2002 shows that market deregulation has had little or no impact on household food insecurity and poverty for those who most need assistance. Small and emerging farmers have not benefited from deregulation of markets nor export opportunities. Fluctuating currency, initial weak Rand lead to food price rise, strengthening of the Rand has not translated into reduced market prices for consumers.	As for food security impact
Water rights & Water Act, No 36 of 1998	Although this act favours small-scale producers and provision of 600kl of free water per household, little impact yet. The intensified provision of on-site water to previously disadvantaged households and the basic free delivery has the potential to impact positively on household food security due to possible improved sanitation and food safety.	
Labour Relations Act (1995) Basic Conditions of Employment Act (1997) Skills Development Act (1998) Employment Equity Act (1998)	Introduction of new labour laws and minimum wage rates has seen the reduction of employment in the agricultural sector and increased mechanisation of commercial agriculture. This spells food insecurity for agricultural labourers and their families.	Increased poverty and unemployment rather than a positive effect although for some households, fixing a minimum wage may increase incomes, but for many households, enforcement of minimum wages will lead to loss of employment.

<p>Integrated food security strategy 2002</p> <p>Goal is to eradicate hunger and food insecurity by 2015 (in line with FAO World Food Summit Goals).</p>	<p>Prior to 2002, food security was seen as the nation's "Cinderella". Due to the wide scope of food security there was a lack of agreement among government departments as to how to address the issue. Combined with no clear definition of what food security means, household subsistence was commonly labelled food security and denied importance by government who did not want to be seen to support subsistence agriculture and petty informal activities associated with poverty.</p> <p>Prior to 2002, community garden projects were the focus of provincial food security programmes initiated by Departments of Agriculture and Health. The National Agricultural Marketing Council study of the impact of market deregulation (2002) identified cash in hand as a key component to improving food security, and driven by preparation for the World Food Summit and World Summit on Sustainable Development, government has been able to link their strategic initiatives to improve incomes and generate employment to the need to move farm households towards commercialisation of production while underpinning the most vulnerable segments of the population. South Africa lacks a food security monitoring and evaluation system as well as early warning systems and food aid strategies to cope with disaster. This makes the vulnerable more vulnerable in the wake of shocks.</p>	<p>The poor are most vulnerable to economic, health and environmental shocks. South Africa lacks effective safety nets to protect and underpin the poor in times of rising prices, natural disasters and health shocks such as HIV/AIDS.</p>
<p>Land reform</p>	<p>Farmer settlement programme settled a large number of households on agricultural land but as most did not farm, productive land was lost and the food security status of land reform participants worsened. While some have been given land, land reform has only shifted households into geographical positions where they have fewer opportunities for income generation and lack the skills to generate agricultural incomes. Whether households have moved to urban, peri-urban or rural land reform settlements, the environments lack infrastructural support conducive to access to gainful employment or agricultural production. In fact, urban housing schemes provide plots far too small for even household food production.</p> <p>Land tenure insecurity stifles introduction of new technologies and/or investment in high value crops and constrains the land rental market crucial for expansion of production activities.</p> <p>Insecure tenure also constrains development and investment in the non-farm sector which is crucial to fuelling wide-spread agricultural development.</p>	<p>Land reform has not had a visible positive influence on poverty. Without securing land tenure, there is little possibility of improving rural livelihoods.</p>
<p>Agricultural credit</p>	<p>Although government has made some advances in broadening the access to credit, most small and emerging farmers do not have access to affordable credit for investment in the technology imperative for expanding and intensifying agricultural production or diversification of production into high value crops.</p>	

Extension services and support	<p>Decreased public support for services and research has a negative impact on agricultural households. Integration of former homeland and provincial extension services and the segregated training of extension officers along racial lines to serve farmers in various sectors of the population prior to 1994, has lead to changes in the extension service, but most extension staff are ill equipped to cope with mixed cropping, low input production among small and emerging farmers and very few field staff are able to assist with marketing. Provincial funded programmes have tended to focus on group projects with little success such as community gardens, poultry projects and agricultural co-operatives.</p> <p>Extension services need to offer services beyond only agricultural production, including training and support in enterprise development, management, and marketing of farm and non-farm products and services.</p>	Little positive impact.
HIV/AIDS	Lack of government recognition of AIDS will have a severe impact on food security as households carry, cope with and shoulder the burdens of inadequate healthcare, meagre incomes and little support. The impact of HIV will affect food production as the agricultural labour forces and rural subsistence agriculture households will carry a large share of the consequences of the epidemic.	Poverty will deepen.

4.3 The impact of agriculture on selected social dimensions

4.3.1 Migration

In South Africa, rural people generally migrate to urban areas in search of income and jobs, even when the chances of landing a permanent job and receiving a predictable income are minimal. Under these conditions, households often migrate as a second-best option in search of superior infrastructure – land and improved housing, water and sanitation, electricity, better transport, and better school and health facilities.

Since 1994 migration flows have become more complicated. The African ethnic group, although significantly urbanised, still comprises a majority of rural residents. Although people are moving on a massive scale from rural to urban places, shifts from rural to rural appear to be even more massive, resulting in intense competition for land. The historical and demographic results of apartheid have led to high levels of artificial rather than spontaneous densification for the poor African rural population, and to acute demand for living sites in areas with economic access to the developed economy. In effect, South Africa’s rural population is becoming more concentrated in dense rural informal settlements in which cultivation and stock farming is rapidly disappearing. Institutionally, these settlements increasingly fall under a category of ‘other rural’ rather than ‘traditional rural’. Poor rural people are moving away from a *collapsing land economy* toward the nearest location of the *developed cash economy*.

There are three additional reasons for these flows. First, unemployment rates are high, thus urban residents with urban networks have the best chance of finding employment. Second, the deterioration of living conditions in the former homeland rural areas is so severe that established households are been forced to migrate, and return migration is diminishing. Third, the state has been

providing infrastructure on scale for the poor in metropolitan areas as well as in other urban and rural places, which acts as a 'second-best option' for poor households in the migration stream.

These population shifts affect the commercial, the traditional and the 'other' rural sectors differently. Levels of living as well as security on a commercial farm are generally higher than their equivalents in the traditional and 'other' rural sectors or, for that matter, in dense urban informal settlements where unemployment is particularly high. Though this sector has been shedding on-farm labour and farm worker dependants over the past thirty years, off-farm employment offers farm workers (and their households) equivalent advantages, especially if these are compared to individuals and households without fixed employment and residing in dense rural informal settlements. Not all farm worker households however retain job ties with a commercial farm after a move and, in these cases, find themselves within a changed institutional framework, within the 'other' rural sector more often than within the traditional sector.

The traditional sector relies on institutions that emerge from and rely on generations of face-to-face relations, on interactions based on micro-level governance. In a local rural area, as population instability increases, interaction and governance become harsher and more impersonal, with potential for disorder and exploitation. In short, rising migration streams undermine the efficacy of traditional institutions in this sector. Recent research indicates that such migration streams have reached extraordinarily high levels in traditional rural areas on the Eastern seaboard. Simultaneously, the rural economy in this sector is not predominantly agrarian. Nation-wide, only a minority of residents still cultivate, and the rate has been falling.

The *other sector* may be viewed as comprising settlements that fall under neither the commercial nor the traditional institutional sectors. Free-standing rural densification accounts for the largest share of dense rural settlement, and is not linked closely to any level of urban centre. Some of this dense settlement relates to local-level locational advantage, but much of it seems to have no spatial rationale other than apartheid's historical preference for displacing black settlement to remote areas away from the urban core. However, in aggregate, this category represents the extreme outer rim of the mobilized cash economy. In terms of access to infrastructure and particularly to transport, schools, shops, and other services, these areas usually offer a weak form of urban connectivity. In addition to better chances of obtaining water and electricity, moving closer to transport access gives some cost advantage over living in outlying areas where long and expensive trips are required to reach schools and services, buy food, collect pensions or perform other urban-related tasks. These areas seem to develop when rural households reach the stage of needing their own housing site, and take the opportunity to move a short distance to a locally advantaged area. People who remain in these rural densifying areas are often the old and the poor, those whose rural assets are important to them, or those who do not have the urban experience and contacts or the resources needed to mobilize a move to a more advantaged area. A recent study estimates that this sector comprises at least 7 to 8 million residents, some 40% of rural South African society.

The social contribution of agriculture can be identified along three dimensions: in terms of the proportion of residents affected, in terms of urban-based costs that would be incurred were rural residents to opt to migrate and in terms of the efficacy of services delivered. It is apparent that the contributions made by agriculture will differ substantially in the two institutional sectors in which agriculture plays an important role: the commercial and the traditional rural sectors.

Workers and their families in the commercial agricultural sector comprise some 5 million persons, while those living in the traditional rural sector comprise some 7 million residents, together more than a quarter of the total South African population. In so far as agriculture plays an important role in the retention of these people within these sectors, in keeping these households from entering the urbanization migration stream, the social benefit is substantial. In this regard, the commercial

farming sector plays a large role in providing employment opportunities and institutional capacity to facilitate state delivery of social services or to provide such services directly. This economic benefit ensures a far greater sense of household security and thereby an environment of household stability than is the case in the traditional sector. In the latter sector institutional authority is crumbling as the agrarian land economy continues to deteriorate. This leads to substantial population instability and step-wise migration streams toward dense settlements in both urban and rural destinations. Accordingly, both state and private social services are delivered more comprehensively and efficiently in the better-managed and more stable commercial sector than in the crumbling traditional sector.

4.3.2 Social services

Policy and implementation regarding social welfare involve the security, sustainability and 'decency' of rural people's lives. They focus upon securing basic assistance, services and infrastructure, but also include interventions that lay the basis of a rising standard of living over time through access to new forms of income generation. The emphasis is on state delivery though private interventions (particularly in the commercial agricultural sector) will also be identified. The 1996 Constitution of South Africa provides progressive social rights that are deemed to be universal for both rural and urban residents.

The *implementation* of social security policy in rural South Africa is influenced by (i) the state institution directly responsible for finances and for delivery 'on the ground', (ii) the nature of interdepartmental state cooperation; and (iii) the rural institutional sector within which state intervention takes place.

The first of these factors is of particular importance. The 1996 Constitution inaugurated the idea of cooperative government in which local, provincial and national governments are defined as spheres between which coordination and cooperation are encouraged. The Constitution also defined the developmental role that municipalities are required to play. As a result, local government has become the primary agent responsible for the implementation of social security policy.

However, fewer than half of local authorities are administratively up to standard and many require immediate help in terms of financial controls and management. The weakest municipalities are generally found in the poorest areas of the poorest provinces, with the result that social security is delivered better by the state in better-off urban and rural areas, while within the rural areas, service delivery is better in the commercial farming areas.

Although delivery of social security is largely via the state, farmers in the commercial sector play an important role in service delivery to employees and their households. There is significant evidence pointing to the relatively superior access for farm workers in the commercial sector to both facilities and other social benefits in comparison with residents in the other two rural sectors. Though sometimes with a measure of state support, these facilities and benefits in kind are generally delivered by commercial farmers themselves.

4.3.3 Livelihoods

Globally, the focus of development thinking on employment in the 1970s has given way to the realization that while job creation in the formal sector continues to be one important strategy for poverty reduction, the reality for poor people is that survival and prosperity depend on the pursuit of diverse and multiple activities simultaneously, by different family members, taking advantage of different opportunities and resources at different times. Poor households accordingly are imagined as developing multiple livelihood strategies.

Individuals in such households are not regarded as only 'farmers,' 'labourers,' or 'business operators'. Livelihood activities may be composed of, for example, year-round or seasonal formal-sector employment, informal trading or sale of labour, home gardens and food processing, livestock production, cultivation or use of natural or common property resources, labour exchange among family or neighbours, borrowing, scavenging, stealing, and begging. They may be on or off farm, include local or international migration, involve other household members, and be legal or illegal. Policies, institutions, and related processes that form the environment in which livelihood strategies are pursued are considered central to the analysis. Finally, the outcomes include much more than just income levels or food security.

The situation in the South African rural areas appears to be similar. The relatively strong labour absorption capacity of the South African urban economy has entrenched the perception that the rural economy is wage-based and not agrarian. In practice, this translates into a powerful demand for residential land, which undercuts the option of production once density begins to rise in the areas people are moving into. In tightly packed areas, the emergent social consensus starts to exclude the traditional rural right to production land and grazing rights, and exerts pressure for residential use only, and a wage-based household support structure. In effect, traditional cultivation and stock farming are on the decrease and the search within the household for various cash-earning opportunities is on the increase. Accordingly, over the past two decades at least, the traditional institutional sector has been shrinking as the 'other' rural institutional sector expands.

The livelihoods profile in the commercial agricultural sector is somewhat different. Although total employment has been declining, the nature of jobs favours more skilled workers, managers in particular. Consequently, male workers are favoured over females, and coloured workers over Africans. In effect, most households in this institutional sector include at least one member who holds down a permanent job. These trends reflect the overall pattern of formal sector employment in South Africa over the past several years in which fewer people have employment but those that do, have enjoyed real increases in remuneration. Simultaneously, there is also a broadening grey area involving more employment through the so-called secondary labour market, whereby tasks that had previously been performed by permanent, regular workers, are increasingly being performed by temporary, casual, and part-time workers, or what are sometimes euphemistically called 'independent contractors'.

Policy-induced structural changes in agriculture have at least two divergent influences on rural household livelihood strategies. The first, a beneficial one for members of poor households, is the entrenchment of permanent employment for the better skilled, either on-farm or as contractors or managers, the promotion in 'traditional' rural areas of small grower schemes (with concomitant market access), and the creation of up-stream employment opportunities associated with the value chains of these agricultural sectors. The second, a detrimental one for established livelihood strategies of poor households, is the casualisation and externalisation of employment, the increase in competition for part-time and seasonal work and the shift from rural to urban areas of up-stream employment opportunities associated with the value chains of these agricultural sectors. It is highly probable that the more highly skilled (together with the lucky) profit from beneficial influences whilst the less skilled (and poorer) suffer from detrimental influences. Accordingly, rural communities involved in such export-oriented agricultural initiatives are probably dividing: a privileged minority of households succeed in developing multiple livelihood strategies based on skills and predictable income whilst a poorer majority of households increasingly find their established strategies undermined and often move on in search of better locations from which they will attempt to develop a new strategy.

4.3.4 Conclusion

Few rural households will have succeeded in escaping the pervasive changes that have swept over rural South Africa during the last decade. In the traditional rural sector, micro-level institutions of governance continue to crumble, agrarian activities continue to diminish and gaining access to new state security remains problematical. Households in this sector are forced radically to adapt their livelihood strategies, typically by abandoning the collapsing land economy in which they live and by moving on toward the developed cash economy. Many relocate by joining the migration stream toward dense rural settlements close to their ancestral homes whilst others join the urbanisation stream. In commercial agriculture, farm worker households continue to be discarded as enterprises seek out fewer and more skilled labour and adapt both to new deregulated agricultural markets and to new national legislation on rural labour and tenure arrangements. Such households too join these two migration streams. Households that remain in this sector typically build on their established livelihood strategies by developing skills appropriate to their work and by accessing new forms of state security. It is likely moreover – as different agricultural sectors situate themselves within new global markets - that households whose members leave on-farm permanent employment and join the secondary ‘grey’ labour market will divide: one group to consolidate their livelihood strategies by drawing benefit from skills and a predicable income, a second group who find themselves increasingly marginalized from commercial agricultural activities.

The social role of agriculture in South Africa accordingly needs to be examined in terms of this rapidly changing rural society. Commercial agriculture offers livelihoods and residence to farm worker households who would otherwise join these two migration streams. It also acts as partner in the state’s new role of delivering social security universally. In the third place, as various agricultural initiatives seek out global market niches, new opportunities for employment and income creation among poor households are being established. These initiatives create more jobs both at the first point of production as well as further up the value chain. They are also able to facilitate the establishment of small grower schemes, new sites of production in areas within the traditional rural sector. Elsewhere in rural South Africa, on the other hand, the role of agriculture is negligible. Very few cultivation and stock farming activities are commercial. Rural households view the rural economy as wage-based and not agrarian. In areas where state infrastructure is available, accordingly, rights to residence take precedence over rights to cultivation and grazing. Livelihood strategies that reflect these perceptions increasingly ignore such activities in favour of accessing residential land, state resources and cash income. Perversely, new state security measures fuel the migration streams since their delivery is, and is widely perceived to be, intermittent and ineffective in much of the isolated traditional rural sector.

In the light of the waning role played by agriculture in much of rural South Africa therefore, it may be more appropriate to analyse the social role of ‘ruralness’ rather than solely of agriculture so as to include all three institutional sectors in the analysis.

Three concluding observations on current state policy can be made:

- The first points to the role of *rural women*. Female agricultural labour figures prominently in new commercial agricultural initiatives, while female-headed households are equally prominent in rural migration streams. In both cases, women find themselves at substantially higher risk than their male counterparts – risk related to seasonal unemployment, for example, and to difficulties accessing state security. Agricultural and associated policies need to be more effective on the gender issue.
- The second observation points to *rural-urban linkages*. Traditional approaches to migration focus on push and pull factors to the detriment of culturally and socially specific issues. In

particular, in their search for new livelihood strategies, households in urban and periurban areas may well decide to spread their investments in rural home areas by including livestock and small-scale cultivation as valuable assets. Little is known about these linkages in South Africa and no policy accordingly is in place.

- The third observation points to *regional spatial planning*. Infrastructure provision for poorer households in South Africa is a state-led initiative. Such provision may be seen both as a cause and an effect of migration streams in which households seek improved and sustainable livelihoods in new areas. Since such provision influences migrants' choices of domicile, it is clear that state spatial planning ought to be regional in scope, synthesizing demographic and socio-economic data from the various urban and rural areas within a region. The importance of the regional space economy and of its agricultural component in particular, is evident.