

# RESEARCH Report 41

Strategies to support  
South African smallholders  
as a contribution to  
government's second  
economy strategy

Volume 1: Situation analysis, fieldwork  
findings and main conclusions

*Michael Aliber, Mompoti Baiphethi, Rick de Satge, Jonathan Denison, Tim Hart, Peter Jacobs and Wim van Averbek, with Rauri Alcock, Mike Antwi, Abenet Belete, Ben Cousins, Larry Field, Irvine Mariga, Patrick Masika, Simeon Materechera, David Mayson, Nomakhaya Monde and Barbara Tapela*



UNIVERSITY of the  
WESTERN CAPE

**PLAAS** 

Institute for Poverty, Land and Agrarian Studies  
School of Government • EMS Faculty

# RESEARCH Report 41

Strategies to support  
South African  
smallholders as  
a contribution to  
government's second  
economy strategy

Volume 1: Situation analysis, fieldwork  
findings and main conclusions

*Michael Aliber, Mompoti Baiphethi, Rick de Satge,  
Jonathan Denison, Tim Hart, Peter Jacobs and  
Wim van Averbeke, with Rauri Alcock, Mike Antwi,  
Abenet Belete, Ben Cousins, Larry Field, Irvine  
Mariga, Patrick Masika, Simeon Materechera,  
David Mayson, Nomakhaya Monde and  
Barbara Tapela*

*June 2009*

*Report commissioned by the second economy strategy project*



UNIVERSITY of the  
WESTERN CAPE

PLAAS 

Institute for Poverty, Land and Agrarian Studies

School of Government • EMS Faculty

*Strategies to support South African smallholders as a contribution to government's second economy strategy*  
*Volume 1: Situation analysis, fieldwork findings and main conclusions*

Published by the Institute for Poverty, Land and Agrarian Studies, School of Government, Faculty of Economic Management Sciences,  
University of the Western Cape, Private Bag X17, Bellville 7535, Cape Town, South Africa.

Tel: +27 21 959 3733. Fax: +27 21 959 3732. E-mail: [plaas@uwc.ac.za](mailto:plaas@uwc.ac.za)

Website: [www.plaas.org.za](http://www.plaas.org.za)

Institute for Poverty, Land and Agrarian Studies Research Report no. 41

ISBN: 978-1-86808-718-1

March 2010

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means without prior permission from the publisher or the authors.

Copy editor: Lee Smith

Series editor: Rebecca Pointer

Cover photograph: PLAAS

Layout: Designs4development, [www.d4d.co.za](http://www.d4d.co.za)

Typeset in Frutiger

Printing: RNK Graphics

Thanks to Trade & Industrial Policy Strategies (TIPS), and the source of the funds, the UK's Department for International Development (DfID).

# Contents

Executive summary	vii
1 Introduction	1
2 Perspectives on the 'smallholder sector' and the policy environment	4
3 Literature review	12
4 The 'scan'	45
5 Findings from in-depth case studies	49
6 Conclusions and recommendations	65
References	72
Appendix 1 – Case study methodology	79
Appendix 2 – Overview of secondary statistical sources and their advantages and disadvantages	86

## **Project team**

Rauri Alcock, Church Agricultural Projects  
Michael Aliber, University of the Western Cape (Project Manager)  
Mike Antwi, North-West University  
Mompoti Baiphethi, Human Sciences Research Council  
Abenet Belete, University of Limpopo  
Ben Cousins, University of the Western Cape  
Rick de Satge, Phuhlisani Solutions  
Jonathan Denison, Umhlaba Consulting Group  
Larry Field, Umhlaba Consulting Group  
Tim Hart, Human Sciences Research Council  
Peter Jacobs, Human Sciences Research Council  
Irvine Mariga, University of Limpopo  
Patrick Masika, University of Fort Hare  
Simeon Materechera, North-West University  
David Mayson, Phuhlisani Solutions  
Nomakhaya Monde, University of Fort Hare  
Barbara Tapela, University of the Western Cape  
Wim van Averbek, Tshwane University of Technology

## **Research assistants**

TB Khosa, Tshwane University of Technology  
Simon Letsoalo, Tshwane University of Technology  
Maite Mafa, University of Limpopo  
Themba Maluleke, University of the Western Cape  
Tshililo Manenzhe, University of the Western Cape  
Nape Mothapo, University of Limpopo  
Gugu Mbatha, Church Agricultural Projects  
Eric K Ralivhesa, Tshwane University of Technology  
Mpfariseni Thagwana, University of the Western Cape

## **Acknowledgements**

The project team would first like to thank TIPS for the opportunity to do this work, with particular thanks to Dr Kate Philip. In addition, we would like to thank: Mike de Klerk of ComMark for participating in our team workshops and sharing his insights; Madime Mokoena, Dan Kekana and Buhle Dzulane of the Department of Agriculture, Forestry and Fisheries for taking time to speak with us regarding the Department's initiatives; Dr Siphos Sibanda of the Department of Rural Development and Land Reform for sharing thoughts on tenure issues; and the many cooperative and helpful people and organisations we encountered and relied upon in the course of this project.

The project team would furthermore like to acknowledge the contribution of the late Tessa Cousins, for sharing her thoughts on small-scale agriculture and rainwater harvesting. Tessa will be sorely missed in the rural development community.

# Tables and figures

Table 2.1	Share of black households with access to land who use it for various agricultural activities
Table 3.1	Actual and targeted extension officers by province
Table 3.2	Summary of proposed conceptual shifts in respect of farming research and support
Table 3.3	Ratio of catchment and field size and flow type for rainwater harvesting and catchment systems
Table 5.1	Overview of in-depth case studies conducted for this study
Table A1.1	Perspectives to be used in the description and analysis of the case studies
Figure 2.1	Numbers of black smallholders according to the LFS, 2000 to 2007
Figure 2.2	Gender of black smallholders, 2006
Figure 2.3	Participation in agriculture by age, 2006
Figure 2.4	Share of black households in municipality involved in agriculture
Figure 2.5	Geographical distribution of black households involved in agriculture
Figure 2.6	Trends in subsistence maize production in former homelands
Figure 2.7	Comparison of price indices with aggregate maize production
Figure 2.8	Percentage of households per district municipality in which adults experience hunger
Figure 2.9	Land redistribution delivery during 2007/08
Figure 3.1	Categorisation of water harvesting methods
Figure 3.2	Impact of ploegvore on degraded Greater Karoo lands
Figure 3.3	Ribbon of saaidamme along the Fish River, Northern Cape
Figure 3.4	Infield rainwater harvesting run-off and planting areas
Figure 3.5	Trench-bed process
Figure A1.1	Analytical framework used in the study of a filière
Figure A2.1	Numbers of black people involved in agriculture for own account, 2000 to 2007, excluding data from September LFS surveys
Figure A2.2	Trends in household involvement in agriculture
Figure A2.3	Relationship between involvement in agriculture and formal labour force status
Figure A2.4	Land access and use among black people according to the GHS
Figure A2.5	Comparison of the GHS and LFS
Figure A2.6	Comparison of the CEC estimates and the LFS

# Acronyms and abbreviations

AET	Agriculture education and training
Agri BBBEE	Broad Based Black Economic Empowerment in Agriculture
ASGISA	Accelerated and Shared Growth Initiative of South Africa
BATAT	Broadening Access to Agriculture Thrust
Bt	<i>Bacillus thuringiensis</i>
CASP	Comprehensive Agricultural Support Programme
CEC	Crop Estimates Committee
CGIAR	Consultative Group for International Agricultural Research
DBSA	Development Bank of Southern Africa
DNA	Deoxyribonucleic acid
DWAF	Department of Water Affairs and Forestry
FAO	Food and Agricultural Organisation (of the United Nations)
FSP	Farmer Support Programme
GDP	Gross Domestic Product
GHS	General Household Survey
GMO	Genetically modified organism
HT	Herbicide tolerant
IES	Income and Expenditure Survey
IPR	Intellectual property rights
ISRDP	Integrated Sustainable Rural Development Programme
ISWC	Indigenous Soil and Water Conservation
JFPM	Johannesburg Fresh Produce Market
LARP	Land and Agrarian Reform Project
LFS	Labour Force Survey
LRAD	Land Reform for Agricultural Development
Mafisa	Micro-agricultural finance initiative of South Africa
NAMC	National Agricultural Marketing Council
NGO	Non-governmental organisation
OECD	Organisation for Economic Cooperation and Development
PLAS	Proactive Land Acquisition Strategy
R&D	Research and development
SLAG	Settlement/Land Acquisition Grant
SRI	System of rice intensification
WDR	World Development Report
WFP	World Food Programme
WRC	Water Research Commission

# Executive summary

## Introduction

Within the ambit of the Accelerated and Shared Growth Initiative of South Africa, government is leading a process to define a Second Economy Strategy. One of the opportunities that has been identified is the agricultural sector, in particular fostering a larger number of smallholder agriculturalists. The study seeks to identify the key elements of an implementable programme to support the smallholder sector. The core of the exercise entailed identifying successful South African smallholders active in different settings, and examining the factors that contribute to their success, whether these are personal, contextual, institutional, etc. Although the study was not designed as an evaluation of interventions as such, in the process of conducting the smallholder case studies (and in combination with an extensive literature review), the efficacy and relevance of different intervention and support strategies also came into focus.

For purposes of the study, we assumed a broad definition of agricultural smallholders, including those who operate independently, those who farm in groups, those for whom farming is mainly for subsistence purposes and those whose orientation is mainly or purely commercial. (We therefore employ the flawed but useful distinction between 'subsistence' and 'commercial' smallholders.)

Ultimately, we conceptualise 'supporting the smallholder sector' as consisting of four distinct strands, namely the prospects and measures for:

- improving the performance of subsistence-oriented smallholders;
- encouraging/enabling smallholders who are currently subsistence-oriented to benefit from a more commercial orientation;
- improving the performance of commercially oriented smallholders; and
- increasing the participation in smallholder agriculture among those (especially rural dwellers) who do not practise agriculture.

## Approach

The study was designed to address a number of research questions, in respect of which the main findings are summarised below. The study involved three main research activities. The first was a literature review seeking to distil international lessons and current practice in South Africa, with particular attention to extension, market access for smallholders, and technology development and transfer.

The second research activity was the 'scan', meaning a compilation of brief descriptions of smallholder instances selected to provide some sort of insight into what works and what does not in respect of smallholder development. The scan comprised two parts, namely inputs from various team members themselves, drawing on their own work and experience, and a telephonic survey of provincial agriculture departments in which they were asked to describe instances of 'successful smallholders' in their respective provinces. The first part of the scan yielded 32 inputs and the second part a further 29, for a total of 61.

The third research activity was the 16 in-depth case studies – mainly drawn from the scan and selected to cover a range of different geographical settings and production systems, but also to ensure a balance between smallholder situations which help us focus on the efficacy or otherwise of deliberate interventions, and those which offer insights into what sorts of circumstances (whether individual or contextual) favour smallholder 'success', even in the absence of such interventions.

Although in essence this was designed as a study of 'best practice', in selecting case studies we did not adhere to fixed criteria as to what constituted 'success'. This was deliberate in the sense that we did not want to impose success criteria that might limit our appreciation of what smallholders can achieve in reality. On the downside, a number of smallholder scenarios selected as case studies proved, on closer inspection, to not be particularly successful by any criterion. By and large, however, they were equally illuminating.

## Overview of the smallholder sector and the policy environment

Establishing basic facts and figures regarding smallholders is difficult. According to the Labour Force Survey (LFS) of Statistics South Africa, there are about 4 million black individuals who practise agriculture (understood broadly), belonging to about 2 million households. Excluding a small share who report farming for recreational purposes, the LFS indicates that, of 4 million people/2 million households, about 92% engage in agriculture mainly for food production (either as a main source or an extra source of food, but mainly the latter), and the rest mainly for income purposes (either as a main source or an extra source of income, mainly the latter). This LFS distinction between those who produce mainly for food versus those who produce mainly for income, is as close as we can get to providing statistical meaning to the distinction we draw between 'subsistence smallholders' and 'commercial smallholders'.

From the LFS, we also know that 61% of black smallholders are women. Commercial smallholders are equally divided between women and men; however, women dominate among subsistence smallholders. While there is a common belief that the youth are not interested in farming, the data reveal that younger people involved in farming outnumber older people. However, the number of youth who farm is smaller relative to the size of their age cohort than is the case for older people. This probably accounts for the perception that the youth are not interested in farming (as does the absence of youth from most agricultural projects) – indeed, most are not. However, quite a large share of smallholders, whether out of 'interest' or necessity, are in fact young.

The geographical spread of smallholders is highly uneven. Three district municipalities – Vhembe, OR Tambo, and Amatole – together account for a quarter of all black smallholders.

Given the overwhelming majority of smallholders who are subsistence-oriented, it is clear that farming in the black community is largely a food security issue. However, some of the hungriest municipalities are those with the largest density of households engaged in agriculture (e.g. OR Tambo, U姆khanyakude). On the one hand, this could be taken to imply that subsistence

production is only a moderately successful tool to ward off food insecurity; this is almost certainly true. On the other hand, it could be taken to mean that in the absence of subsistence production in these areas, the experience of hunger would be that much worse, and efforts should be made to enhance subsistence production, as well as spread it to areas (including urban) where it occurs less frequently than it could.

Land reform policy has been evolving rapidly over in the last several years. While the overall aims of land reform remain as broad as when the White Paper on South African Land Policy was issued in 1997 – i.e. to promote equity, justice, poverty reduction, economic upliftment, and tenure security – for land redistribution in particular there has been a noticeable shift in favour of commercially oriented ventures. This is evidenced, for example, in the introduction of the Land and Agrarian Reform Project (LARP), which is meant to be a sort of parallel redistribution vehicle with the expressed aim of transferring 5 million hectares to 10 000 beneficiaries (i.e. at an average of 500 hectares per beneficiary) (Ministry for Agriculture and Land Affairs 2008), but it was also evident in 2001 when the Land Reform for Agricultural Development (LRAD) Sub-Programme took over as the dominant mode of redistribution. The other main policy innovation in recent years is the Proactive Land Acquisition Strategy (PLAS). The essential idea of PLAS is to enable government to take the initiative to acquire land that they regard as suitable for land redistribution purposes, whether for an already identified group of beneficiaries, or in anticipation of identifying beneficiaries. For the most part, the beneficiaries are meant to occupy the land on a lease-to-buy arrangement; through this mechanism, the land will ultimately be transferred into the names of those beneficiaries who emerge as successful farmers, while those who do not succeed (i.e. are unable to pay their rents) will have to move off and make space for new entrants. While it is far too early to assess the success of PLAS as an incubator of black commercial farmers (whether smallholders or medium-large-scale farmers), its significance as a means of acquiring land for land reform is demonstrated by the fact that for the 2007/08 fiscal year PLAS accounted for the largest share of land transferred through land redistribution. The other reason PLAS is so significant, however, is that it represents an effective mechanism for acquiring land which, given the inherent flexibil-

ity of the policy, could in fact be used to address land hunger for those in densely populated rural areas where land for subsistence purposes is in short supply.

In respect of restitution, there have been less dramatic policy developments in recent years, not least because restitution is intrinsically less amenable to modification, in the sense that government is obliged to address all existing claims and cannot impose economic models that, say, involve particular ratios of beneficiaries to hectares. Having said that, there is evidence that, within these constraints, government has been trying to find ways to make rural restitution projects more economically viable, which in many if not most cases appears to mean commercially viable. The main tools being used to do this are additional grant money for farm improvements and initial operational costs, and use of mentors or strategic partners, the purpose of whom is to ensure adequate farm and business management. While it is not our purpose here to evaluate the success of these attempts, we note the government's own expressions of concern as to the number of failed projects. Perhaps more notable is the fact that the road to rural restitution is still a very long one. Although technically most claims have been settled, there remain approximately 5000 rural claims to address, covering an unknown but seemingly large amount of land. Whereas about 2.3 million hectares of land had been transferred via restitution as of 31 March 2008, our best 'guesstimate' is that there remain another 10 to 12 million still to follow of private (non-public) land, representing about 13% of all commercial farmland.

While there are a number of other rural-oriented initiatives that could be described – e.g. the Comprehensive Agricultural Support Programme (CASP), the Integrated Sustainable Rural Development Programme (ISRDP), – the main observation is that at present there does not appear to be an overarching rural development strategy that makes sense of the various initiatives. Certainly CASP is an important tool in support of land reform and agricultural development in former homeland areas, but it is not clear what the ultimate vision is of either land reform or homeland agriculture. Likewise, the ISRDP may be playing a valuable role in improving coordination among different departments and spheres of government, but it is not informed by a discernible economic logic or strategy.

## Key findings

Among the findings from the study, we note the following.

### Change and adaptability

*How have successful smallholders overcome common constraints and adapted to changes in the wider economic environment over the past 5, 10 or 20 years?*

The premise of this research question was that, where smallholders are concerned, the ability to adapt – whether in terms of withstanding shocks or seizing opportunities – is perhaps the single most important determinant of smallholder success. Of course, other obviously important 'performance indicators', such as profitability inform much of the analysis across the board, but are not signalled out as separate research questions. Two themes emerged in respect of this research question: the diversity of specific measures smallholders seem to use to address constraints or pursue opportunities, and the distinctive behaviour of individual smallholders versus groups (mainly 'projects').

Among the most common measures or means of adapting to change or opportunities, we noted:

- finding external assistance, whether technical, financial, and/or managerial/strategic;
- experimenting and investing;
- observing and adapting by example;
- reducing numbers of members;
- diversifying out of agriculture;

While on the face of it adaptability is inherently a laudable quality, the relative frequency with which external assistance was identified as the means of adapting is cause for concern. In some situations, the farmers' strategy involved not only recruiting external partners, but subordinating themselves to these partners. In other cases, moreover, the external assistance sought is not necessarily logical, and thus not truly adaptive at all. From the case study of poultry farming in Limpopo, a curious observation is that, among generally poorly performing poultry projects (compared to far more successful broiler enterprises run by individuals), there is an uncannily common tendency to identify the same (misguided) solution to their problem, that is, to secure funding for an abattoir.

On the other hand, in a number of instances the strategy to adapt was more unambiguously positive, in particular in the case of independent farmers in a range of different settings who tend to keep alert to advantageous market opportunities as a matter of routine, or who opt to switch to more profitable cultivars or crops. Among these, in a manner that is consistent with the large literature on technological diffusion in agriculture, one can distinguish the leaders from the followers. The leaders tend to be those with more resources who are able to seek new opportunities relatively far afield, and/or bear the risk of experimenting with new crops or methods. Where they are successful, other farmers in the area are likely to follow, which is its own form of adaptation.

Implicit in the above is that group-based projects tend to show less evidence of adaptability than individual entrepreneurs. On the face of it, the reason seems to be that group projects, even if they are ostensibly enterprises, tend to not behave entrepreneurially: they are slow to take decisions, fail to explore new opportunities, and have a limited capacity for and tolerance of risk. Exceptions are noted when a group designates a particular individual to assume responsibility for networking and seeking market intelligence.

### **Access to key means of production**

*How have successful smallholders obtained access to essential means of production such as land, labour, capital, inputs, technology and management advice, which were in short supply under past government policies and have not been available for many producers in recent years either?*

The case studies churned up few clear patterns. Certainly some smallholders examined benefited from government's past investments in irrigation infrastructure, or more recent investments in redistributive land reform. Group projects based in former homelands tend to access land via the traditional authority; they may have to confront initial resistance from other community members who complain about the loss of grazing land. Of course, forming groups is in itself a means of attracting support, whether from government, donors, or via corporate social investment. Some projects become quite skilled at attracting soft money through donors, etc, to the extent that it is unclear if they have any intrinsic viability.

Among the successful individual entrepreneur farmers, there is little evidence that loan capital has played a significant role in their success. It is not entirely clear if this is because in the absence of access to such capital they found other ways to marshal resources or, as the evidence suggests, because borrowing money is not an attractive prospect for many such entrepreneurs. Few of our case study entrepreneurs describe gaining access to loans as a priority for the future. This is not to suggest that lending schemes are unimportant, but perhaps they are secondary to addressing other constraints.

Smallholders access inputs such as fertilisers, seed and feed in the conventional manner, for example through farmer supply outlets. However, small producers in particular may also rely on local general dealers, for example for fertiliser. Opportunities to secure better terms through coordinated purchases are not seized as often as they might be, but it is not clear why not.

Access to technology and management advice comes through various channels. For group projects, the agency supporting the project is usually the key source, and management advice can even be in the form of on-site hired management, sometimes constituting a large share of total costs. Among individual smallholder entrepreneurs, personal observation and contact with input suppliers are important sources of technological and technical information, but that does not necessarily mean that successful commercial smallholders are quick to adopt 'modern' technologies; indeed, some successful commercial smallholders were using donkey traction.

Arguably the most significant – and yet intangible – need among smallholders in terms of ensuring fair and predictable access to the key means of production is order or authority, particularly in respect of land and water. On irrigation schemes, the systems formerly in place for governing water distribution have often collapsed, in particular due to the withdrawal of water bailiffs. While water-user associations or block committees are meant to take up this responsibility, they do not necessarily function properly or have sufficient authority to call wayward farmers to order. Similarly, in former homeland areas, there has been a long-term deterioration in the traditional means of ensuring that livestock do not invade people's land. This is a key reason why a large share of arable land in former homelands remains fallow, leaving

households to tend their much smaller (and relatively easily fenced) homestead gardens. While fencing subsidies may assist (for example by allowing those who own contiguous fields to erect a common perimeter fence), they are unlikely to prove sufficient, since the underlying ambiguity as to who is responsible for damage from livestock remains unresolved. Another dimension of the land problem in former homeland areas is the general absence of mechanisms allowing households to rent land from one another with greater security. This dual tenure problem obtains across many, if not most, communities in South Africa's former homelands. Practical experiments to see what can be done have been tried in different parts of the country and are shown to have positive results. Some have parallels with the participatory systematic demarcation processes being used elsewhere in Africa. Interestingly, this is proceeding in advance of the implementation of the Communal Land Rights Act.

### Marketing and transactions costs

*What are the predominant marketing strategies of successful smallholders, and to what extent have these benefited from formal institutions, private sector innovations, etc.?*

It is commonly suggested that commercially oriented smallholders are prone to struggling because they 'cannot compete' with established, sophisticated large-scale commercial farmers. The objective of 'levelling the playing field' is premised on this notion. However, what this means for practice is unclear.

Smallholders examined in this study illustrate the three main marketing strategies common to smallholders elsewhere: i) local direct marketing in one's own community; ii) via formal established marketing chains; and iii) high value niche markets. Apart from these, outgrower smallholders in a sense don't market at all, although the relationship of the outgrower to the principal can be thought of as a solution to the challenge of marketing, among other things.

Of the three main marketing strategies, each offers real opportunities for smallholders and has its place. Direct local marketing can serve as a useful 'nursery' for smallholders attempting for the first time to turn agriculture into a main income source, but it has its obvious limitations. Can local (or almost-local) markets be reconfig-

ured to make this limitation less severe, in particular so that local producers capture a larger share of the local demand in the nearest town centre?

Moving out of strictly local markets requires a big step, as smallholders must come to grips with transport costs and/or seeking the most advantageous market opportunity. Some smallholders benefit from arrangements where the buyer assumes responsibility for transport, but this does not usually make things any better for the smallholder (except in terms of cash flow), since the agreement reached affects rather the price received. Indeed, a general rule of thumb suggests that the more passive the producer, the less they earn, including when the smallholder depends on other people to arrange their transport and/or make their marketing arrangements. This is not to diminish the sometimes positive role of market intermediaries, but for smallholders in particular evidence suggests that such intermediaries can and do exploit their superior information to the disadvantage of small-scale farmers.

By and large, the findings reported here support recent policy initiatives gaining momentum in the Department of Agriculture. These initiatives to strengthen smallholder-oriented commodity-based associations, which can potentially improve information flows to smallholders, include an appreciation of the ins and outs of seeking the best deal for one's products. These initiatives also provide for interventions to reduce transport and other transaction costs that frustrate smallholders, among other things by investing in strategically located physical infrastructure. While these initiatives are generally well conceived, much depends on how carefully and skilfully they are designed and implemented.

As for means of assisting smallholders to access niche markets, our evidence is modest. Generally we support proposals flowing from the parallel study (conducted as part of the Second Economy Strategy on value chains) that government should devise mechanisms to 'incentivise' the private sector to seek out and support smallholder producers. Whether such mechanisms assume the form of outgrower schemes or something simpler is immaterial; such schemes have clear potential, but always remain modest in scale compared to less glamorous (and less remunerative) subsectors such as common vegetables, field crops, and cattle and sheep.

## Participation in other segments of agricultural commodity chains

*Do successful smallholders participate in or benefit from economic activities either 'upstream' or 'downstream' of farm production (e.g. in agro-processing)?*

The received wisdom is that diversifying into agro-processing raises a farming enterprise's chances of becoming profitable and sustainable. Among our case studies, however, this was not observed but we did observe a distinction between individual entrepreneurs (who usually produced diverse commodities, but who did not venture into value-adding activities so it is difficult to say if they would benefit from agro-processing ventures), and group projects (where agro-processing was either practised or being sought, but where perhaps more importance is attached to agro-processing than is justified).

From a broader perspective, there is reason to suppose that local agro-processing capacity can in principle serve to stimulate local demand, and/or reduce transactions costs. Thus, for example, in the locale of one case study in the Eastern Cape, the absence of village-level maize mills means villagers seek to convert their maize into meal through laborious hand methods (done mainly by women, who often experience a time deficit already), or transport their maize to a nearby town where a mill exists. Although we cannot prove it, this absence of local milling capacity probably serves as a disincentive to grow maize. By contrast, in communities around one Limpopo case study, local maize milling capacity is widely available and, probably not coincidentally, is affordable.

## Gender

*How widely are the benefits of successful smallholder production accruing to female and male producers, either as producers in their own right or within farm households?*

Although, according to the LFS data, commercially oriented smallholders are equally likely to be women as men, in our case studies men predominate among commercially successful independent smallholders, and women among subsistence producers and group-based projects. While this could well reflect a bias in the manner in which we chose our case studies, it is noteworthy that even in case studies involving numbers of independent smallholders operat-

ing as neighbours, the common pattern is that most commercially successful farmers are men (or, more accurately, male-headed households), whereas among the subsistence-oriented farmers women predominate. While this long-standing stereotype has many exceptions, it still seems to largely reflect reality.

A number of reasons for this emerge from our case studies and the literature. Distinctions have to be drawn between women who are household heads versus those who are not and, among household heads, between widows and married women. The disadvantages faced by women farmers relate to household size and organisation, gender-differentiated household livelihood strategies, patriarchal tenure systems, and the emerging clashes between traditions and contemporary realities. In some cases, mode of support reveals a male bias, but there are many examples to the contrary, and it is the social and cultural factors that predominate.

For group-based projects, particular dynamics are at work in respect of gender. Our casual observation is that, outside of land reform, group-based projects tend to be initiated and dominated by women, but women-dominated projects tend to have one or two male members, often with the 'official' designation of chairman. While it is tempting to suppose these men were able to assume positions of leadership out of chauvinism, close observation suggests that these men are typically passive and accommodating, and were relegated to these positions because women considered, it advantageous to be 'represented' by a man when interacting with the rest of the community. While strategies such as these appear to serve women well, they are nonetheless signals of the challenges that women face in a male-dominated environment. In cases where mixed-gender group-based projects do end up being genuinely dominated by men, but equally in non-project situations where a level of coordination among farmers is needed, it is difficult for women to assert their interests and sometimes even to make their voices heard.

## Class

*Do successful smallholders have any specific class characteristics. For example do they generally have access to capital from other business enterprises to invest in their agricultural enterprises or not?*

In our case studies smallholders who can be described as commercially successful tend to have income and/or wealth from other sources, or come from families where someone is able to provide capital. However, examples to the contrary include, a case study in the Eastern Cape, where a commercially successful smallholder began farming with modest means, stuck to farming full-time, and with diligence and perseverance managed to build their agricultural enterprise over time.

Class differences among smallholders are replicated in how policy is conceptualised. On the one hand, a common assumption that agriculture is a ready means of reducing abject poverty is reflected in the proliferation of government-led poverty reduction projects, such as community gardens, poultry projects, etc. In this perspective, 'agriculture is for the poor'. On the other hand, a prevalent perspective is that available scarce resources are best used either to assist subsistence producers to commercialise, or to support already successful ventures to become more so which is especially appealing as those who have their own resources are logically the best poised to realise further success.

Although this dual approach is not wrong, imagining that farmers are really so easily categorised is dangerous. The question is, is it possible to achieve more synergy between the efforts to support these distinct groups? As explained earlier, farmers who initiate and those who follow are distinct groups and recognising this dynamic implies opportunities to use the success of progressive farmers to support poorer farmers, if only because progressive farmers often offer the best insights into what works. The agricultural development policy could and should adopt a more strategic framework based on the idea of the 'agricultural ladder' or development pathways, as explored below.

## Tenure

*To what extent is tenure insecurity proving to be a hindrance to productive investment among smallholders, and/or inhibiting rental arrangements that might otherwise result in more economic land use?*

The case studies found little or no evidence of smallholders being constrained by operating in former homeland areas where statutory freehold tenure is absent. Farmers in communal

areas who use inherited land generally do not fear losing that land, and by implication are not hesitant to invest in the agricultural potential of that land on grounds of perceived tenure insecurity.

However, significant tenure constraints did emerge in respect of renting land, and determining responsibility for damages to crops caused by livestock. This dual tenure problem obtains across many if not most communities in South Africa's former homelands. Lyne and Thomson 1998 undertook a practical experiment in selected communities in KwaZulu-Natal in the mid-1990s, and showed a significant increase in the number of rental transactions and a reduction in the extent of idle land; the initiative involved a consultative process of reinstating some neglected traditional practices (e.g. sanctions for those who allowed livestock to wander into arable areas after the commonly agreed 'planting date') while new practices were encouraged – most significantly, drawing up pro forma lease contracts, and buy-in from tribal courts to recognise and uphold such contracts. More recently, under the auspices of a project funded by the Water Research Commission (WRC) in the Eastern Cape and Free State, Umhlaba developed and implemented a 'local rural planning process' that involves a consultative process for developing rules and procedures for local land administration, together with a land register. In terms of developing the land register, the methodology has parallels with the participatory systematic demarcation processes being applied elsewhere in Africa. Interestingly, the initiative is proceeding in advance of the implementation of the Communal Land Rights Act of 2004. A survey conducted among rights holders at the WRC sites indicates that many are interested in either renting in or renting out, but it is too early to say what the effect of the process has actually been.

An intervention along the lines described here is possibly among the most efficacious that can be contemplated as a means of promoting smallholders within former homeland areas, but it will not happen spontaneously. Neither will the eventual implementation of the Communal Land Rights Act, in whatever form, as the Act merely lays broad procedural parameters for land administration but does not seek to encourage particular economic transactions, nor address itself to the all-important question of livestock.

The absence or presence of rental markets is not only an issue in former homeland areas, but can also apply on freehold land acquired through land reform. In one case study, redistributed land was formally subdivided so that each beneficiary household had its own plot. After a few seasons, some beneficiaries stopped producing and leased their land to other, more agriculturally successful beneficiaries. Increasingly, government wishes to promote this model, based largely on the belief that group ownership is a central reason many other (non-subdivided) land reform projects fail to work. In this case the freehold nature of ownership was such that land owners felt sufficiently secure leasing out their land to others, whether or not a formal contract was signed. On the one hand, this reinforces the importance of the kinds of interventions discussed for areas where rental transactions are not backed up by the same kind of statutory property rights. On the other hand, it suggests a more nuanced understanding of the options available when designing land reform projects, since the issue is not necessarily individual beneficiary ownership, but a system whereby individual beneficiaries can freely and securely choose to rent (or sell?) their plots to one another, whether or not the expense of formal subdivision has been incurred.

## Conclusions and recommendations

We conclude by attempting to tie up some of the main debates and questions running through the study, and thereafter identify what we regard as the priority interventions for government and partners in terms of supporting smallholders.

### Where to focus: subsistence versus commercial?

Promoting of subsistence-oriented smallholders and commercially oriented smallholders should not be an 'either/or' proposition; rather, an appropriate balance must be achieved. The overall impression of the study team is that current policy has placed excessive emphasis on commercially oriented smallholders, seemingly based on the belief that subsistence production is neither a route out of poverty nor developmental. The extent of this bias is perhaps most visible in how land reform policy has evolved in recent years (especially land redistribution policy), but is also discernible in the way some irrigation schemes are being renovated.

While we do not necessarily dispute the idea that subsistence production will not move households above a particular poverty line, subsistence producers' benefits should be enhanced and the advantages spread to those who do not currently enjoy access. Subsistence producers exist in great numbers, and there is reason to believe that some interventions could allow them to benefit even more as subsistence producers. If not addressed, could aggravate poverty and insecurity for hundreds of thousands of households. Also, subsistence production is a naturally good complement to households' multiple livelihood strategies, in a way that commercially oriented production often is not. Subsistence production is low-input in terms of time and purchased inputs, so for relatively little investment subsistence production can make a meaningful, low-risk difference to the lives of many.

However, the measures that deserve the most emphasis in future, particularly in former homeland areas, are not specific to either subsistence or commercial producers, thus the 'balance' would be determined not by policy-makers, but by the way things evolve on the ground in different communities. This is desirable in and of itself, since policy-makers and the research community cannot be sure what to prescribe in different situations.

### Is there a role for 'projects'?

Over the last several years government and civil society have gradually recognised the inefficacy of 'projects' in promoting poverty reduction and employment creation. The cited shortcomings of projects are numerous, including that their robustness is doubtful, especially to the extent that they seek to function as economic enterprises. Also they tend to need large amounts of time from implementers so there is little possibility of rendering them in large numbers, that is, they are not 'scalable'.

However, it is difficult to say that the door on agricultural projects is entirely closed as projects are not always created by external project implementers, but are often the initiative of people themselves. Based on our case studies, we would characterise these as attempts to pool scarce resources in pursuit of otherwise unattainable investments. Moreover, despite the free-rider problem<sup>1</sup> in agricultural and other projects, under certain circumstances people like to work together, as in the widespread tradition of rotat-

ing labour pooling arrangements, in evidence in more than one of our case studies.

Spontaneous attempts are not always thought through or well directed, but there is a limit to what a single low-income household can accomplish on its own. From our case studies and by common acknowledgement, many such group projects are undone when they try to become economic enterprises based on group solidarity, absorbing vast amounts of implementer time (if any implementers are involved, as indeed they might be after the group has already established itself). Therefore, perhaps there is still a role for projects, provided that role is properly understood and circumscribed. In particular, where investments in infrastructure are more efficient for a group than for separate individuals, and yet where this does not oblige a group-based enterprise, there may indeed still be a rationale for a project. Apart from boreholes, a good example is collective fencing around contiguous fields (as is done in some cases through CASP).

### Creating pathways and targeting

The idea of the 'agricultural ladder' – through which producers at, say, subsistence level, can graduate to commercial smallholder level, and from there to medium-scale commercial farmer level, etc. – has long been a staple of rural development discussions. The logic of the ladder metaphor is that farming at one level serves as a means of developing skills upon which one can prepare to move to the next level. Despite the widespread subscription to the idea in principle, there is little in current policy that makes it tangible.

Other research has shown that land redistribution (and LRAD in particular) operates on a first-come-first-served basis. While there is an element of fairness to this approach, LRAD could specifically target black farmers who have already achieved success, and thus who are ripe to be given an opportunity to expand. Thus we find, for example, that on irrigation schemes, a handful of very successful farmers have managed to expand to the extent that they are renting numerous plots from other plot holders. Notwithstanding our generally positive view of rental markets as a means of mediating between those who need land and those who have it but are less in a position to use it, at a certain point it would be better if such individuals could be helped to move off and possibly make space for

new entrants onto the scheme. Successful farmers on the irrigation scheme wish for this, but there is no specific mechanism to target them to become, say, LRAD beneficiaries, and whether or not they hear of LRAD in the first place and apply of their own initiative is left to chance.

Supposing interventions were in place to stimulate agriculture in the former homelands more generally, then indeed there might be a much larger need and opportunity to provide pathways for the more successful and ambitious farmers to graduate out onto their own private land acquired through land reform. In a sense, the importance of municipal commonages is to provide such opportunities for growth from a small scale, in parts of the country where former homelands cannot serve this function.

### Priority interventions

Mindful of evidence of what accounts for 'smallholder success', but also bearing in mind what government is good at and what it can feasibly provide at scale, we offer a small list of priority interventions for the smallholder sector. This eclectic mix of measures includes interventions to create an enabling environment, but also includes direct and sometimes expensive interventions that seek to engage with the target population at a large scale.

**Addressing land administration in communal areas:** While not dismissing the potential importance of redistributive land reform, the most auspicious opportunity for reaching large numbers of smallholders and potential smallholders quickly is to embark on land administration initiatives in former homeland areas akin to those already successfully piloted elsewhere in the country. Although the relationship between a land administration initiative such as this and the question of tenure reform is unclear, methodologies like those already applied at a small scale could be pursued on a larger, more deliberate pilot basis in selected communities in all the former homelands, before proceeding to a larger scale.

**Investing in water availability:** Despite their problems, irrigation schemes lend themselves to developing black smallholders. However, at present these schemes accommodate only about 31 000 black smallholders, and account for only about 3.6% of all the land under irrigation in the country. While another 2% to 3%

<sup>1</sup> A 'free rider' is a person who joins a group activity or project but enjoys the benefits without putting in a fair share of own effort. The presence of free riders tends to dilute the motivation of other group members and can contribute to the erosion of group morale – thus the 'free-rider problem'.

of irrigated land is held by smallholders outside these schemes, smallholders account for a very small share (5% to 6%) of the country's irrigated farmland. Furthermore, while in the commercial farm sector irrigated production is more labour-intensive than dryland arable production, by a factor of about 4 to 1, we estimate that the labour-intensity of smallholder irrigation schemes relative to irrigated production in the large-scale commercial sector is about 7 to 1. The key point is that if creating conditions for reasonably large numbers of successful commercial smallholders is a priority, then expanding access to irrigation is vital. Rather than going out and creating new schemes, it is probably most practical for redistributive land reform to specifically target a certain amount of irrigated farmland. This does not necessarily imply creating more 'schemes', but instead acquiring properties that lend themselves to subdivision so that individual irrigated plots can be allocated to smallholders. PLAS would be the ideal vehicle for such a targeted land acquisition strategy, provided that attention is given to maintaining and, where necessary, restoring the irrigation infrastructure.

The benefits of subsistence production are constrained by the variability of rainfall, which diminishes the risk-mitigating effect of agriculture as part of a multiple livelihoods strategy. While sinking boreholes in some instances now covered by CASP, as a scalable strategy it has its limitations, and therefore household-based rain-water harvesting techniques are explored in this report. While some such approaches probably remain too expensive for mass roll-out, there is scope for refining the techniques to make them more affordable and less labour-intensive

at start up, even if it is at the expense of water storage capacity.

**Investing in physical and social market infrastructure to support smallholders:** We generally support the thinking of the Department of Agriculture on intervening to improve the physical and institutional marketing environment for smallholders. What form these interventions will ultimately take is still unclear; it is even more impossible to forecast the extent to which this infrastructure will succeed in linking smallholders to formal value chains, or how many smallholders will be able to avail themselves of these new opportunities. Nonetheless, even though some smallholders manage to get their products to the market despite the absence of infrastructure, even they would benefit from a more conducive environment, as would many others who have some potential as commercial smallholders but are unable to overcome present challenges. Any such measures should include efforts to address transactions costs that impact on smallholders who wish to benefit from commercial opportunities, including marketing cooperatives that assist smallholders to benefit from bulk discounts on purchased inputs and have more bargaining power when trying to dispose of outputs.

**Integrating redistributive land reform within a broader agricultural development strategy:** An important ingredient in creating appropriate opportunities for smallholders is to conceptualise pathways or trajectories that some can follow as they move from success to success. Presently, this concept has not really been captured in policy (even though the idea of a 'ladder' is broadly accepted), and the design of redistributive land reform is probably the weakest link.

# Chapter 1: Introduction

## Overview

Within the ambit of ASGISA, the government is leading a process to define a Second Economy Strategy. One of the opportunities that has been identified is the agricultural sector, in particular fostering a larger number smallholder agriculturalists. Land reform provides opportunities to address one of the constraints on smallholder production – access to productive land – but to date has not done so, in part because of inappropriate planning, cumbersome delivery processes and inadequate post-settlement support. Meanwhile, there is much underutilised land in communal areas, owing generally to the perception that small-scale agriculture is not remunerative.

This study is a response to a request from those developing the Second Economy Strategy to help identify the key elements of an implementable programme to support the smallholder sector. At the core of the exercise was a set of case studies of ‘best practice’ – that is, of smallholders of various types in different places – the better to understand the factors that account for ‘smallholder success’, whether this be personal, contextual, institutional, etc.

Although the study was not designed as an evaluation of interventions as such, in the process of conducting the smallholder case studies (and in combination with an extensive literature review), the efficacy and relevance of different intervention and support strategies also came into focus.

For purposes of the study, we assumed a broad definition of agricultural smallholders, inclusive of those who operate independently as well as those who farm in groups, and inclusive also of those for whom farming is mainly for subsistence purposes as well as those whose orientation is mainly or purely commercial. (We therefore employ the flawed but useful distinction between ‘subsistence’ and ‘commercial’ smallholders.)

Ultimately, we conceptualised ‘supporting the smallholder sector’ as consisting of four distinct strands, namely the prospects and measures for:

- encouraging/enabling smallholders who are currently subsistence oriented to benefit from a more commercial orientation;
- improving the performance of commercially oriented smallholders; and
- increasing the participation in smallholder agriculture among those (especially rural dwellers) who do not practise agriculture.

This report includes a brief overview of the smallholder sector and rural development policy (Chapter 2), an extensive literature review of different aspects of agricultural and smallholder policy (Chapter 3), a summary of the main empirical findings from the study (Chapters 4 and 5), and a presentation of main conclusions and recommendations (Chapter 6). In the remainder of this introductory chapter, we sketch some of the conceptual issues regarding what is meant by ‘smallholders’ and measures to support them, and then spell out the research questions that guided the study and the research methodology used to answer them. Finally, the companion volume consists of write-ups of the in-depth case studies.

## Conceptual issues regarding smallholders and strategies to support them

Who qualifies as a ‘smallholder’ is not straightforward, and still more contested is who qualifies as a ‘successful smallholder’. The contestation over these concepts is not a mere academic distraction, but arguably a factor that has contributed to South Africa’s failure to develop a coherent and effective agricultural development strategy. One reflection of this failure is the fact that the *Strategic Plan for South African Agriculture* – which represents the founding document of the Presidential Working Committee on Agriculture and is effectively the government’s primary statement regarding agrarian reform – says virtually nothing about specific measures to support smallholders. Rather, the document speaks broadly of allowing/promoting “the entire spectrum of enterprises and farm sizes” (Department of Agriculture 2001: 8), and even more broadly of ensuring more “equitable access”

- improving the performance of subsistence-oriented smallholders;

within the agricultural sector. The underlying assumption is that the necessary resources and institutions exist; we must simply modify them to become more accommodating, in particular to "new entrants".

The study assumes a broad understanding of who is a 'smallholder': a small-scale farmer who derives benefits from primary agriculture (those who earn wages from farm work are not included).<sup>2</sup> We include within this category those who produce mainly to generate an income as well as those who produce primarily for their own consumption, generally designating these 'commercial smallholders' and 'subsistence smallholders' respectively. However, we remain mindful of the fact that using these categories risks encouraging one to imagine that these types of smallholders are static, wholly distinct groups. We do not subscribe to the notion that smallholders are all necessarily progressing towards becoming fully-fledged large-scale commercial farmers, nor that agriculture necessarily represents their primary economic activity. Our working hypothesis is that within the continuum of those who would thus qualify as smallholders, they may have different needs and potentials, and a smallholder support programme would have to bear these in mind. The focus of this report is on 'black smallholders', meaning those smallholders who belong to the African or coloured population groups.

Efforts to support smallholders are sometimes informed by strategic assumptions as to what is necessary and what works. One typical trap is to seek to identify the single constraint that must be addressed in order for smallholders to flourish and thrive, for example land or credit, and thus look for 'silver bullet' policy interventions. A second, more common trap is to suppose that any programme aiming to support smallholders must be 'holistic', by which is usually meant that it must provide all types of support simultaneously on the premise that the absence of any one of them will lead to the programme's failure. The essence of the first trap is that it usually results in interventions that are inadequate, whereas the second tends to be unaffordable and/or reach a miniscule number of people, as was the case with the farmer support programmes of the past. However, other perspectives are also prevalent, such as 'market development' and various institution-building approaches, which tend to seek to improve the environment within which smallholders operate, largely by reducing transactions costs, improving access to informa-

tion, and/or shifting bargaining power in favour of farmers.

## Research questions

The original research proposal identified 11 research questions (listed below). The findings related to most of these questions are summarised in Chapter 5, though the second-to-last is treated more as a cross-cutting issue and thus touched on in various places, while the last research question is considered mainly in Chapter 6.

- **Change and adaptability:** How have successful smallholders overcome common constraints (such as lack of access to capital) and adapted to changes in the wider economic environment over the past 5, 10 or 20 years? What does this tell us about what it takes to 'succeed' or survive as a smallholder?
- **Access to key means of production:** How have successful smallholders obtained access to essential means of production such as land, labour, capital, inputs, technology and management advice, which were in short supply under past government policies and have not been available for many producers in recent years either? Within this, to what extent are successful smallholders those who have had access to supportive family or other non-formal networks, and to what extent have these networks thrived or foundered through the vagaries of recent economic change?
- **Marketing and transaction costs:** What are the predominant marketing strategies of successful smallholders, and to what extent have these benefited from formal institutions, private sector innovations, etc.?
- **Economic cooperation and coordination:** What are the main transactions and coordination costs that impede higher levels of production and/or profits? More specifically, to what extent are marketing, information or input procurement challenges dealt with through formal or informal cooperative arrangements among farmers?
- **Participation in other sections of agricultural commodity chains:** Do successful smallholders participate in or benefit from economic activities either 'upstream' or 'downstream' of farm production (e.g. in agro-processing)? Is there the potential for

<sup>2</sup> As for how small is 'small', our rule of thumb is to exclude farmers who meet Statistics South Africa's definition of a commercial farmer as per the 2002 census of commercial agriculture, that is, they achieve a turnover large enough to oblige them to be registered for Value Added Tax.

them to participate more actively or to benefit more from such activities?

- **Institutions and access:** To what extent are successful smallholders benefiting from the institutions that have been designed to assist them, for example government extension, Micro-Agricultural Finance Initiative of South Africa (Mafisa) funding programmes, commodity organisation schemes, etc.?
- **Gender:** How widely are the benefits of successful smallholder production accruing to female as well as male producers, either as producers in their own right or within farm households?
- **Class:** Do successful smallholders have any specific class characteristics? (For example, do they generally have access to capital from other business enterprises to invest in their agricultural enterprises? Are some of them retrenched workers from the formal sector who have invested savings in agriculture?)
- **Tenure:** To what extent is tenure insecurity proving to be a hindrance to productive investment among smallholders, and/or inhibiting rental arrangements that might otherwise result in more economic land use? Perhaps more to the point, what local innovations enable people to cope with the absence of effective tenure reform?
- **Policy environment:** Are there policies, implemented over the past 20 or so years, either specific to the agricultural sector or more general in character, which have benefited smallholder producers and contributed to their success?
- **Implementation strategies:** What are the relative advantages and disadvantages of different implementation strategies, for example those that are project-based versus those that are more oriented towards changing the environment or strengthening institutions?

## Research approach and fieldwork methodology

The study involved three main research activities. The first was a literature review seeking to distil international lessons and current practice in South Africa, with particular attention to extension, market access for smallholders, and technology development and transfer.

The second research activity was the 'scan', meaning a compilation of brief descriptions of smallholder instances selected to provide some sort of insight as to what works and what does not in respect of smallholder development. The scan comprised two parts, namely inputs from various team members themselves, drawing on their own work and experience, and a telephonic survey of provincial agriculture departments in which they were requested to describe instances of 'successful smallholders' in their respective provinces. The first part of the scan yielded 32 inputs, and the second part a further 29, giving a total of 61.

The third activity was the 16 in-depth case studies. These case studies – mainly drawn from the scan – were selected to cover a range of different geographical settings and production systems, but also to ensure a balance between smallholder situations which help us focus on the efficacy or otherwise of deliberate interventions, and those which offer insights into what sorts of circumstances (whether individual or contextual) favour smallholder 'success', even in the absence of such interventions. The fieldwork methodology for the case studies is included as Appendix 1.

Although in essence this was designed as a study of 'best practice', in selecting case studies we did not adhere to fixed criteria as to what constituted 'success'. This was deliberate as we did not want to impose success criteria that might limit our appreciation of what smallholders can achieve in reality. On the downside, a number of smallholder scenarios selected as case studies proved on closer inspection not to be particularly successful by any criterion. By and large, however, they were also illuminating.

# Chapter 2: Perspectives on the 'smallholder sector' and the policy environment

## Basic facts and figures

According to the LFS, there are about 4 million black individuals (15 years and older) who practise agriculture, understood broadly. These 4 million individuals belong to about 2.5 million different households. Figure 2.1 shows trends in terms of individuals from September 2000 to September 2007, distinguishing between the main reason individual respondents give for practising agriculture. (See Appendix 2 for more detail regarding data sources.)

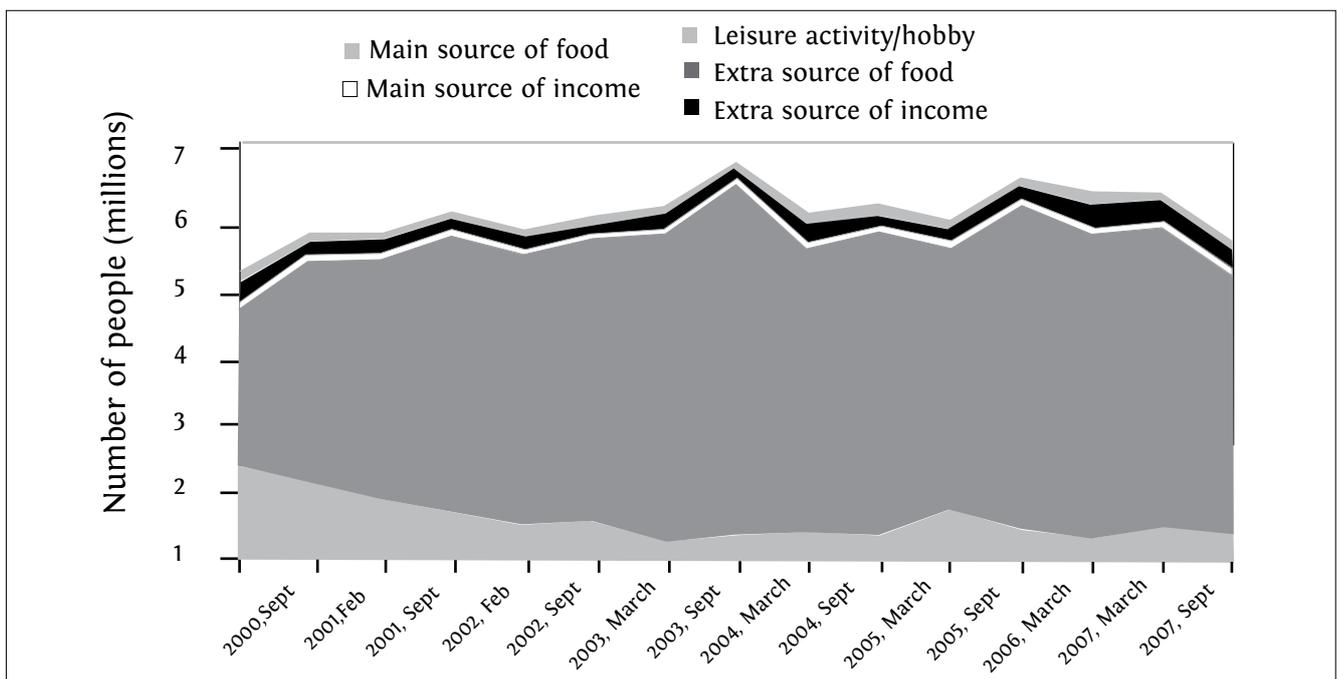
For reasons that are explained in Appendix 2, the apparent fluctuations are difficult to understand, and in our judgement do not necessarily represent actual trends or changes.<sup>3</sup> What we do regard as significant about Figure 2.1 is: i) the overall magnitude of 4 million; ii) the relative magnitudes of the different reasons for being involved in agriculture, especially the consistently large gap between farming for income

and farming for food; and iii) the steady decline in the number of people involved in agriculture for a main source of food over the period 2000 to 2003, coinciding with an increase in those involved in agriculture for an extra source of food. In respect of this last observation, the speculation is that improved access to social grants over this period meant that fewer people were as dependent for their survival on agriculture than was previously the case. If true, this would almost certainly signify an improvement in welfare.

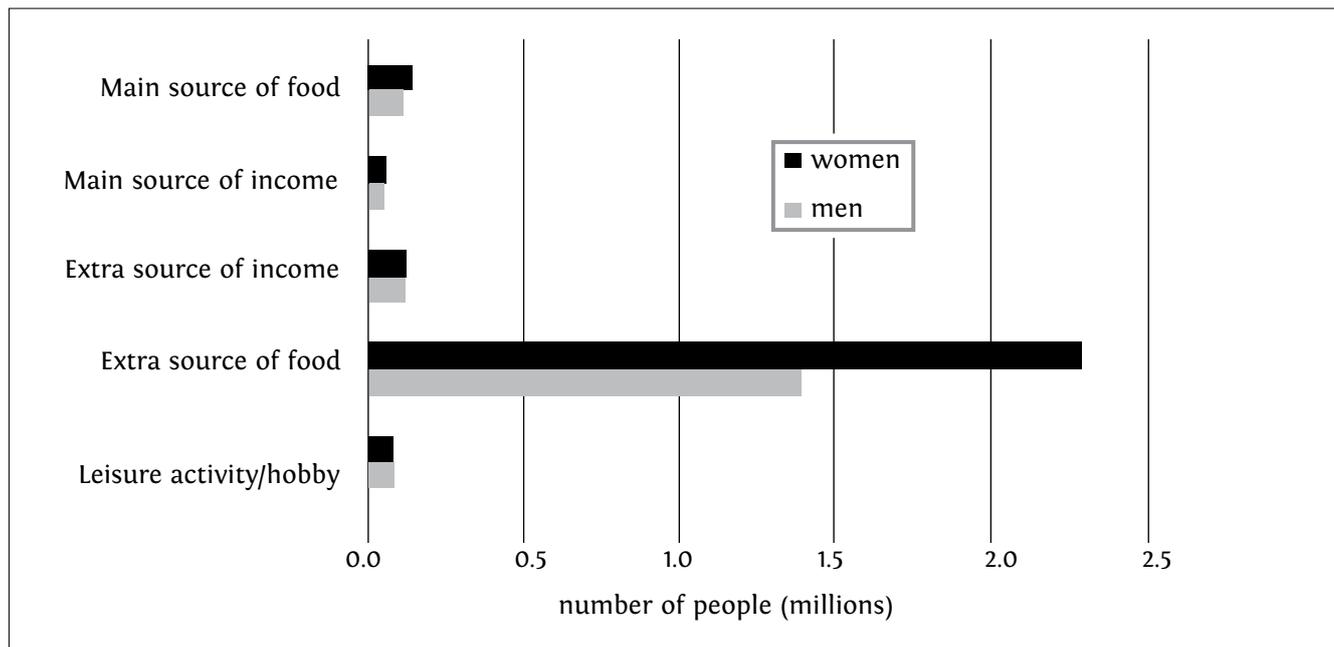
Broadly, we regard the 4 million black people involved in agriculture at some level as 'black smallholders', and distinguish between 'subsistence-oriented smallholders' (those who farm for a main or extra source of food), and 'commercially oriented smallholders' (those who farm for a main or extra source of income). Excluding those who practise agriculture mainly for leisure

<sup>3</sup> Especially odd is the decline between the March 2007 and September 2007 waves, given that this was a period of rapidly increasing food prices.

**Figure 2.1: Numbers of black smallholders according to the LFS, 2000 to 2007**



Source: Stats SA, Labour Force Survey, 2000-07

**Figure 2.2: Gender of black smallholders, 2006**

Source: Stats SA, Labour Force Survey FS, September 2006

purposes, subsistence-oriented smallholders comprise 92% of black smallholders and commercially oriented smallholders represent the other 8%.

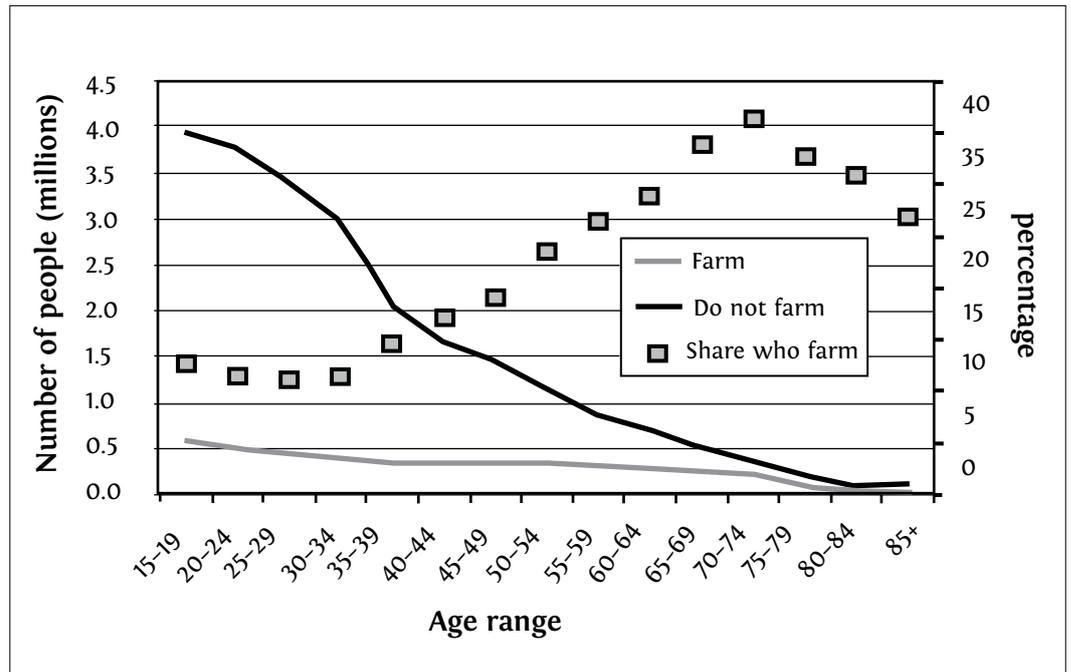
Using the September 2006 LFS, we distinguish between black women and men involved in farming, using the same categories of 'main reason'. Women make up 61% of all those involved in farming, and are on a par with or slightly more numerous than men in respect of each of the main reasons, except for the 'extra source of food' reason, in which case they exceed men by more than 60% (Figure 2.2).

Similarly, we disaggregate by age. Figure 2.3 shows for each age range the number of people who farm for whatever reason, the number of people who do not farm, and the share of the cohort who farm. The graph helps place some perspective on a recurrent theme among those concerned with rural development, namely the apparent disdain of the youth for agriculture. What the graph shows is that in absolute terms, younger people involved in farming outnumber older people, that is, the number of people involved in agriculture declines with age. However, the number of youth who farm is smaller relative to the size of their age cohort than is the case for older people, at least until in their seventies, at which stage the ability to farm is presumably increasingly constrained by infirmity and/or other demands on their time.

Finally, we present two figures showing the geographical spread of black smallholders, this time in terms of households rather than individuals. Figure 2.4 shows, for each district municipality, the share of all black households in that municipality who are involved in farming as determined by the average of figures from the March and September LFSs of 2006. What it shows is that in four district municipalities, 57% to 72% of black households are engaged in farming at some level: Vhembe in Limpopo, Umkhanyakude in KwaZulu-Natal, and both Alfred Nzo and OR Tambo in Eastern Cape. However, there are a further eight district municipalities in which the share is between 43% and 56%. In other words, although the 2 million black households that practise at least some agriculture represent only a fifth of the 11 million black households in the country, in a number of predominantly rural municipalities – especially those incorporating former homeland areas – the share is much higher.

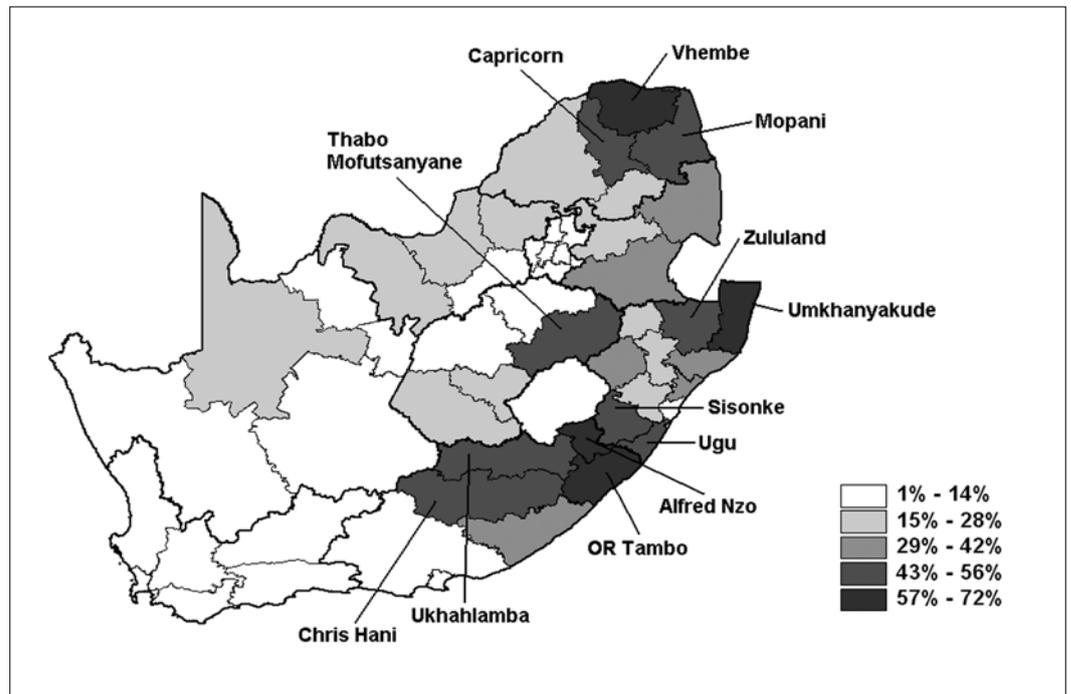
Figure 2.5, by contrast, shows what percentage of all black smallholder households in the country are located in different district municipalities. Obviously, there is some correlation between Figures 2.4 and 2.5, in the sense that a municipality in which a very high proportion of the households are engaged in farming is likely to account for an appreciable share of all farming households in the country, especially if the municipality has a large population (which is generally the case for those municipalities that

**Figure 2.3: Participation in agriculture by age, 2006**



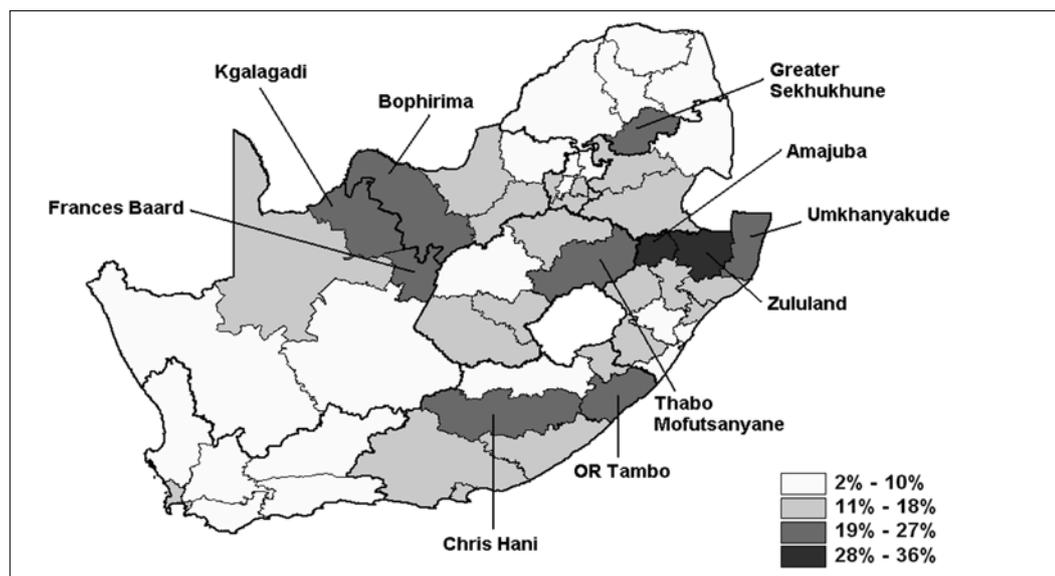
Source: Stats SA, Labour Force Survey, March 2006

**Figure 2.4: Share of black households in municipality involved in agriculture**



Source: Stats SA, Labour Force Survey, March 2007

**Figure 2.5: Geographical distribution of black households involved in agriculture**



Source: Stats SA, Labour Force Survey, March 2007

cover large swathes of former homeland areas). However, the extent of concentration of black smallholders revealed by Figure 2.5 is perhaps surprising. Vhembe, OR Tambo and Amatole municipalities together account for a quarter of all black smallholders.

One obvious limitation of the LFS for our purposes is that it asks very few questions about agriculture, and none specifically about particular agricultural activities. The General Household Survey (GHS) is a bit better in this respect although, as indicated in Appendix 2, there is even more reason to worry about its accuracy than is the case for the LFS. Notwithstanding these misgivings, we use the 2006 GHS to convey some sense of the relative importance of different activities, in the hopes that the proportions are more or less correct even though the extrapolated sums are very much in doubt. The results are shown in Table 2.1. Perhaps surprising is the fact that the overwhelming majority who access land use it for field crops, relative to the rather low share for livestock. Horticulture may well be underestimated, perhaps because of a problem in the clarity of the questionnaire, either in respect of the meaning of 'horticulture' or more basically because respondents may have understood the question to be about production apart from gardening.

The *Abstract of Agricultural Statistics*, which is published annually by the Department of Agriculture (e.g. Department of Agriculture 2008b),

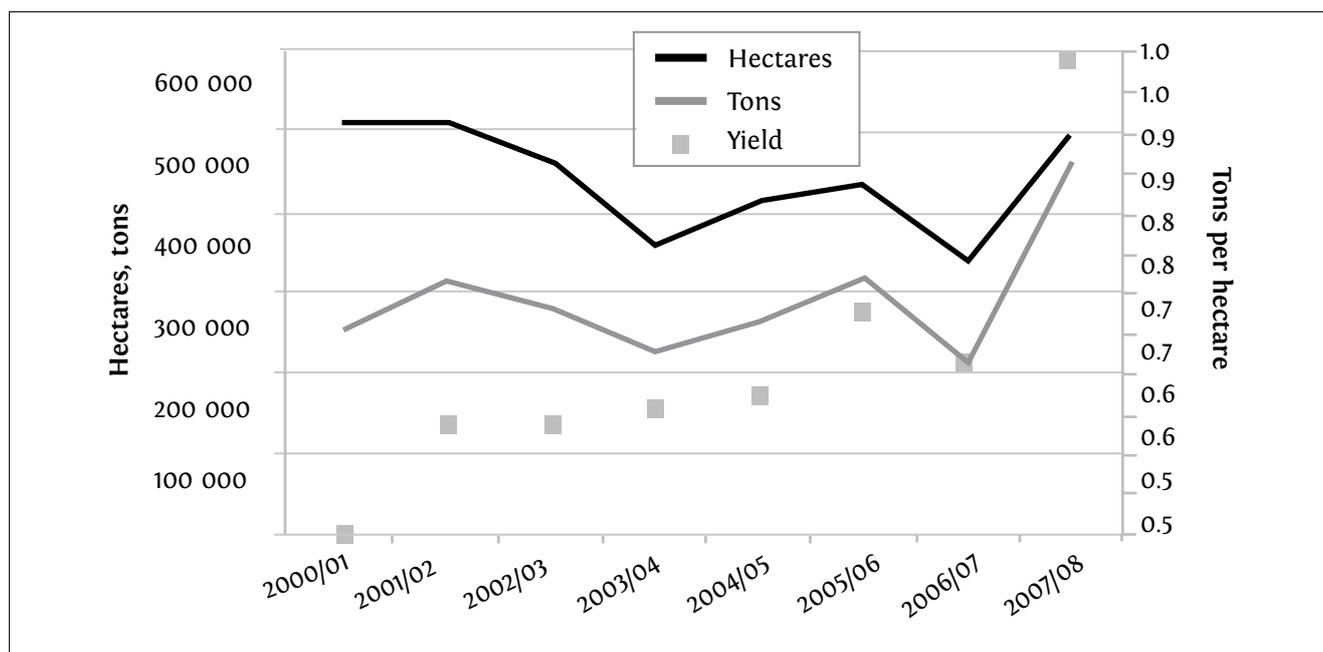
puts the amount of agricultural land in the former homelands – which the figures above suggest is where most smallholders are located – at 14.5 million hectares, of which 2.5 million hectares are “potentially arable land”, the precise meaning of which is unclear. Although these figures are from a Development Bank of Southern Africa (DBSA) study published in 1991, the accuracy and current relevance of which is difficult to judge, it is interesting to note that for the production season 2007/08, the Crop Estimates Committee (CEC) estimated that about 500 000 hectares of maize were planted in former homeland areas. This represents about one-fifth of the “potentially arable” area. Although the actual extent of land underutilisation is unknown (and bearing in mind that some arable land would be planted with crops other than maize), it seems clear that it is significant. Figure 2.6 presents the CEC’s estimates for subsistence maize production for 2000/01 through 2007/08, showing hectares planted, production and average yields. Interestingly, yields appear to have been increasing over the period, while until 2007/08 it appeared that hectareage was mostly in decline.

## Perspectives on rural development

### Food security

What is the role of smallholders in respect of food security? There are two main views to con-

**Figure 2.6: Trends in subsistence maize production in former homelands**



Source: CEC, various releases accessed from Department of Agriculture

**Table 2.1: Share of black households with access to land who use it for various agricultural activities**

Activity	Share
Field crops	94%
Horticulture	1%
Livestock	8%
Poultry	6%
Orchards	1%
Other	1%

Source: Stats SA, General Household Survey, 2006

Note: A given household can practise more than one activity, thus the figures do not add to 100%.

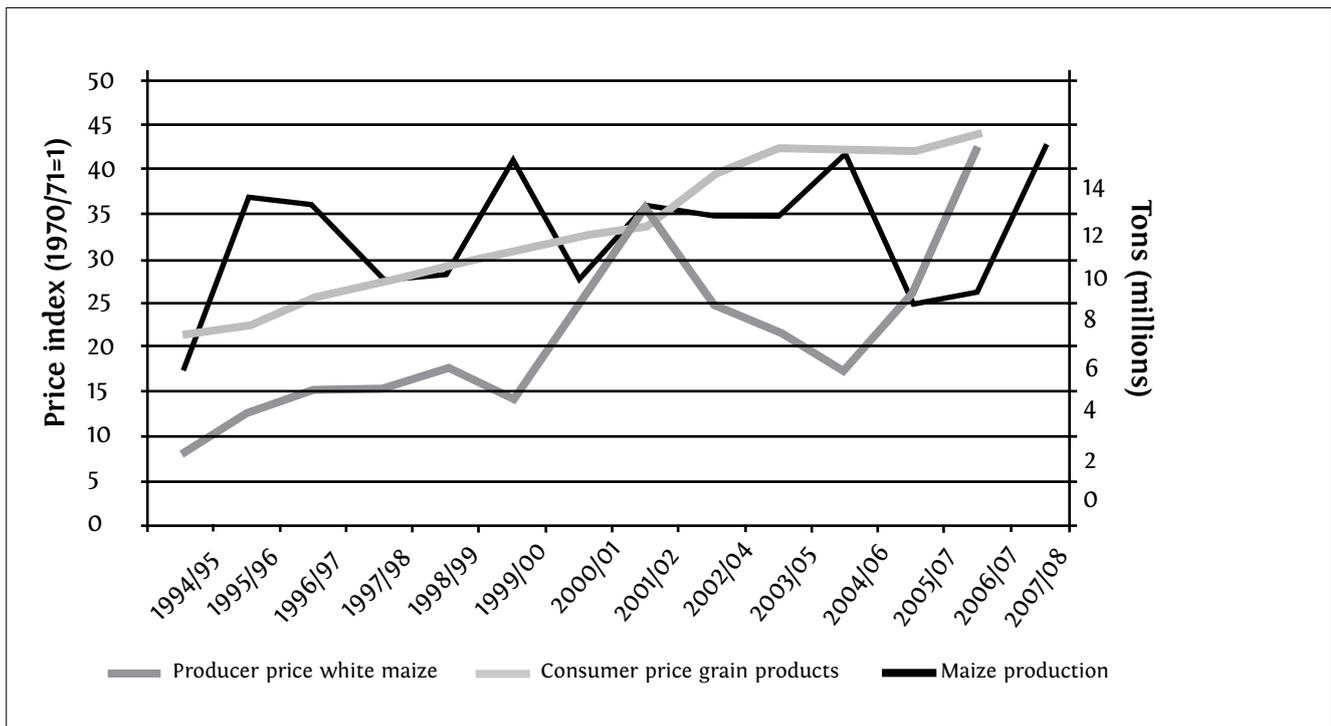
sider. The first is the idea that if smallholders could contribute more to the aggregate agricultural production, then that in turn would contribute to more affordable food. Suggestions along this line have been rife in the context of the dramatic food price inflation that has taken place over the past few years.

There is a difficulty with this line of thinking, namely that domestic food prices are only very weakly related to trends in domestic production. This is particularly true for tradable commodities – those that South Africa tends to import or export. These include grains, which comprise a large share of the consumption basket of poor households. Figure 2.7 compares trends since 1994/95 in the producer price for maize, the consumer price for grain products, and total pro-

duction in millions of tons. While there is some suggestion that the producer price responds contrariwise to domestic production (i.e. in years with good crops, the price drops, while in bad years it rises), this effect is not transferred in any clearly discernible way to consumer prices. Thus, by implication, a rush of smallholders to produce maize for the market would probably not have a significant impact on consumer prices.<sup>4</sup> It could in principle have an impact if the maize were marketed mainly locally in such a way as to depress local prices, but this would mean that smallholder producers would be forfeiting better prices they could receive elsewhere, and/or better processing and marketing infrastructure would be required within smallholder producing/consuming areas.

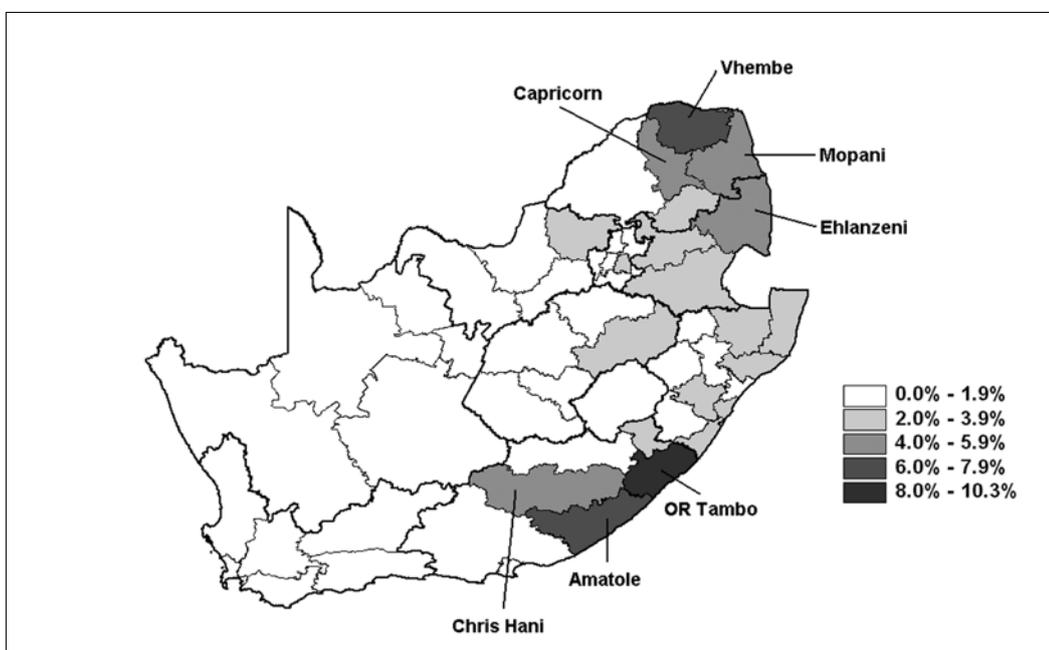
<sup>4</sup> According to the CEC's estimates, maize production in former homelands accounted for about 4% of the total national production in the 2007/08 season. Any large but feasible short-term increase in maize production in former homelands would in any event contribute very modestly to total production.

Figure 2.7: Comparison of price indices with aggregate maize production



Source: Department of Agriculture (2008b)

Figure 2.8: Percentage of households per district municipality in which adults experience hunger



Source: Stats SA, General Household Survey, 2007

The second main view on the question of the role of smallholders in respect of food security is subsistence production as a means by which households contribute to their own food security. The fact that so many households already produce for subsistence purposes is an indication of the logic of this perspective. However, as indicated by Figure 2.8, it is clear that at present this is not sufficient; the map draws on data from the 2006 GHS (published in 2007) to plot the share of black households per district municipality in which adults experienced hunger in the previous 12 months, either 'sometimes', 'often' or 'always'. As can be seen in comparison with Figures 2.4 and 2.5, some of the hungriest municipalities are those with the largest density of households engaged in agriculture (e.g. OR Tambo, Umkhanyakude). On the one hand, this could be taken to imply that subsistence production is only a moderately successful tool to ward off food insecurity; this is almost certainly true. On the other hand, it could be taken to mean that in the absence of subsistence production in these areas, the experience of hunger would be that much worse, and efforts should be made to enhance subsistence production, as well as spread it to areas (including urban) where it occurs less frequently than it could.<sup>5</sup>

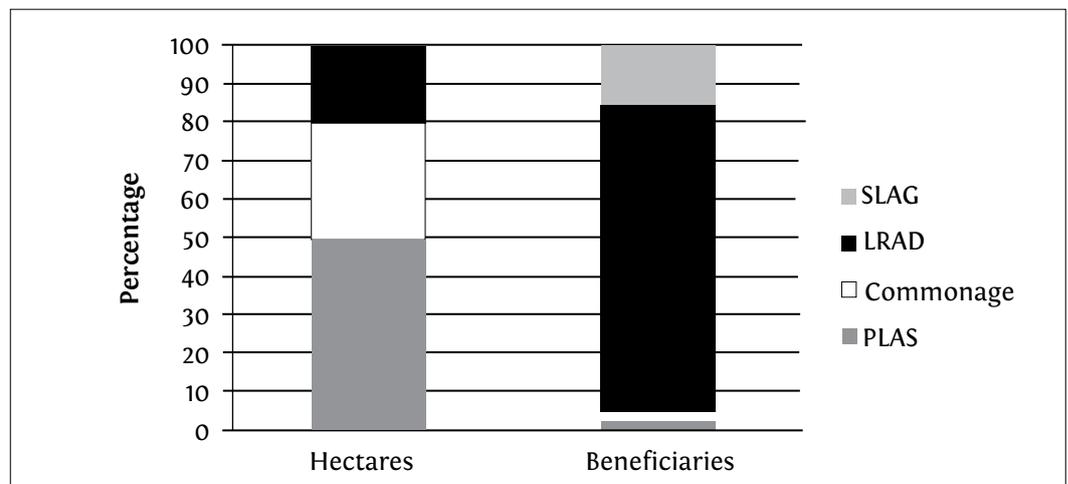
### Land reform

Land reform policy has been evolving rapidly in the last several years. While the overall aims of

land reform remain as broad as when the White Paper on South African Land Policy was issued in 1997 – to promote equity, justice, poverty reduction, economic upliftment, and tenure security – for land redistribution in particular there has been a noticeable shift in favour of commercially oriented ventures. This is evidenced, for example, in the introduction of LARP, which is meant to be a sort of parallel redistribution vehicle with the expressed aim of transferring 5 million hectares to 10 000 beneficiaries (i.e. at an average of 500 hectares per beneficiary), but it was also evident in 2001 when the LRAD Sub-Programme took over as the dominant mode of redistribution.

Apart from LARP, the current status of which is difficult to discern,<sup>6</sup> the other main policy innovation in recent years is PLAS. The essential idea of PLAS is to enable the government to take the initiative to acquire land that it regards as suitable for land redistribution purposes, whether for an already identified group of beneficiaries, or in anticipation of identifying beneficiaries. For the most part, the beneficiaries are meant to occupy the land on a lease-to-buy arrangement; through this mechanism, the land will ultimately be transferred into the names of those beneficiaries who emerge as successful farmers, while those who do not succeed (i.e. are unable to pay their rents) will have to move off and make space for new entrants.<sup>7</sup>

**Figure 2.9: Land redistribution delivery during 2007/08**



Sources: Department of Land Affairs (2008) and own calculations

Note: SLAG stands for Settlement/Land Acquisition Grant, which was the main vehicle for land redistribution between 1995 and 2000; 'Commonage' is an initiative whereby government acquires land on behalf of municipalities, which is then leased out at nominal rates to previously disadvantaged individuals, mainly for grazing livestock.

<sup>5</sup> There is in fact a wealth of research evidence to indicate the value of subsistence production for household-level food security (see for example Chapter 12 of Volume 2); what is not so clear is what the policy implications are for a smallholder support initiative.

<sup>6</sup> The 2007/08 Annual Report of the Department of Land Affairs (2008) mentions that LARP was 'finalised' during 2007/08, and reports no delivery of hectares under LARP for that year. What is unclear is whether anything has happened since, though there are also indications that LARP may not operate as a distinct programme, but rather by means of existing vehicles such as LRAD and PLAS.

<sup>7</sup> As such, PLAS has features common to the white farmer settlement schemes of the last century, in which poorly performing settlers were removed by either the heavy hand of the schemes' managers, or through natural attrition.

While it is far too early to assess the success of PLAS as an incubator of black commercial farmers (whether smallholders or medium-/large-scale farmers), its significance as a means of acquiring land for land reform is already clear. Although PLAS was only formally launched in 2006, for the 2007/08 fiscal year it accounted for the largest share of land transferred through land redistribution. This is indicated in Figure 2.9, as is the fact that, given the relatively small numbers of beneficiaries associated with it thus far, it has to date been used to promote larger-scale beneficiary farmers.<sup>8</sup>

The other reason PLAS is so significant, however, is that it represents an effective mechanism for acquiring land which, given the inherent flexibility of the policy, could in fact be used to address land hunger for those in densely populated rural areas where land for subsistence purposes is in short supply.

In respect of restitution, there have been less dramatic policy developments in recent years, not least because restitution is intrinsically less amenable to modification, in the sense that the government is obliged to address all existing claims and cannot impose economic models that, say, involve particular ratios of beneficiaries to hectares. Having said that, there is evidence that, within these constraints, the government has been trying to find ways to make rural restitution projects more economically viable, which in many if not most cases appears to mean commercially viable. The main tools being used to do this are additional grant money for farm improvements and initial operational costs, and use of mentors or strategic partners, the purpose of whom is to ensure adequate farm and business management. While it is not our purpose here to evaluate the success of these attempts, we note the government's own expressions of concern as to the number of failed projects.<sup>9</sup> Perhaps more notable is the fact that the road to rural restitution is still a very long one. Although technically most claims have been settled, there remain approximately 5000 rural claims to address, covering an unknown but seemingly large amount of land. Although about 2.3 million hectares of land had been transferred via restitution as of 31 March 2008, our best guesstimate is that there

remain another 10 to 12 million still to follow of private (non-public) land (Sustainable Development Consortium 2007), representing about 13% of all commercial farmland.

### The overall state of rural development

While there are a number of other rural-oriented initiatives that could be described – for example, the CASP and the ISRDP – the main observation is that at present there does not appear to be an overarching rural development strategy that makes sense of the various initiatives. Certainly CASP is an important tool in support of land reform and agricultural development in former homeland areas, but it is not clear what the ultimate vision is of either land reform or homeland agriculture. Likewise, the ISRDP may be playing a valuable role in improving coordination among different departments and spheres of government, but it is not informed by a discernible economic logic or strategy.<sup>10</sup>

Meanwhile, there is some tentative evidence that, in rural areas, some parts of former homelands are growing more rapidly than parts of former rural white South Africa, especially in and around former homeland towns. The evidence is scattered and inconclusive, but the indication is that the relatively dense settlement in former homeland areas, together with increased liquidity through social grants – which, unlike wages earned by migrants who come from or used to come from these areas, are accessed directly by former homeland residents, who spend it locally – are contributing to the growth of what the National Spatial Development Perspective refers to as “public and other service economy areas” (Presidency 2007a: 77). Part of parcel of this poorly understood process is the penetration of retail chains into these areas, as well as an increase in local civil service jobs. What is notable about this process is that it is largely dissociated from local agriculture, in the sense that it is neither driven by it nor contributes meaningfully to it. The strategic question, therefore, is whether the apparent economic trajectory of some of the former homeland economies can be more effectively linked to agricultural opportunities in these areas.

8 The claim may be somewhat exaggerated, however, as there is reason to believe that the numbers of beneficiaries under PLAS are not adequately captured, not least because there is an actual lag between the acquisition of the land and the identification of beneficiaries.

9 The Director General of the Department of Rural Development and Land Reform, Mr Tozi Gwanya, was in early 2010 quoted as saying, “We’ve accepted that about 50% of the almost 6-million hectares we’ve handed over is unproductive. So we’re worried that the more we increase the number of hectares we’re transferring to the new farmers, the more hectares that may be affected by underproductivity” (Ncana, *Sunday Times* 7 March 2010: 10).

10 Although in its inception document, it was clear that promotion of agriculture and agricultural land reform were to be the underlying engines of growth in most rural areas.

# Chapter 3: Literature review

## Introduction

The purpose of this literature review is to convey the current thinking about smallholders and the smallholder environment in South Africa, with some selective attention to the international literature where appropriate. To some extent, this means indicating issues of active debate, whereas in other cases there is greater consensus.

The literature review is organised according to five themes or perspectives; these do not begin to exhaust the relevant issues related to smallholders, but hopefully address some of the most important. The first of these is simply the debate about the role and prospects for smallholders, about which much has been written recently, both internationally and at home. The second theme explored is agricultural extension and farmer support, which takes a historical perspective but also seeks to indicate the current status of extension in South Africa, in part relative to international trends. The third theme explored is the issue of output markets for smallholders, which examines recent developments in the market environment in South Africa and elsewhere, and then draws out the implications of this for smallholders. The fourth section addresses the question of technology for smallholders and attempts to understand both the current thinking about how (and whether) to develop and/or transfer technologies that will work to the advantage of smallholders, as well as the implications of different types of technologies for smallholders. The last theme covered is rainwater harvesting, which could have been treated as a sub-theme within the technology section, but has been accorded more emphasis owing to the view within the team that rainwater harvesting techniques represent one of the most promising opportunities to support various types of smallholders. It is, however, an area in which there is the most conspicuous under-investment.

## Debates on smallholders and development

### Introduction

Rural areas of the developing world commonly have a large proportion of poor people for

whom agriculture is the major source of livelihood (Prowse & Brauholtz-Speight 2007; World Bank 2007). Therefore, efforts aimed at reducing rural poverty and food insecurity are commonly concerned with agriculture (Magingxa 2006; Vinciani *et al.* 2001). According to the *World Development Report 2008* (World Bank 2007), successful rural livelihood strategies to overcome poverty can be led by smallholder farming and wage employment in the agricultural labour market, and/or self-employment in the rural non-farm economy. Making smallholder agriculture more effective for development requires enhancing smallholder competitiveness, smallholder market entry, and subsistence livelihoods. According to Hazell *et al.* (2007), agriculture has the potential to contribute to employment creation as well as reduce the price of staple commodities for rural and urban dwellers alike; indeed, Hazell *et al.* claim that there are few alternatives to large-scale sources of employment for most rural areas other than agriculture.

However, by some accounts, smallholder agriculture in sub-Saharan Africa has been "eroding over the last three decades, perpetuating rural poverty and marginalising remote rural areas" (Havnevik *et al.* 2007: 7). While it may have offered a route out of poverty in the past, it no longer holds out such great promise. From this perspective, claims as to the potential contribution of agriculture to addressing poverty and underdevelopment are ahistorical and/or decontextualised, and therefore risk encouraging policies that will either accomplish little or backfire. Thus Hart (1998) cautions against the "new agrarian optimism", on the basis of which seemingly exaggerated claims are being made as to how agriculture can contribute to poverty reduction and rural development.

The purpose of this section is not to determine which of these contrasting perspectives is 'correct', but to better understand what is at stake, in particular with a view to drawing out the implications for South Africa.<sup>11</sup>

### A case for the development of smallholder agriculture

According to the World Bank (2007), 75% of the world's poor live in rural areas and most of them

<sup>11</sup> It is worth noting that at the beginning of this project, the project team openly discussed how team members perceive the potential of the 'smallholder sector' in South Africa, in other words, whether and how it can grow and contribute to economic development. It turned out that members of the team hold rather diverse perspectives, but agreed to be open-minded and engage as thoughtfully as possible with the evidence.

depend on agriculture. Therefore, the reasoning goes that the promotion and enhancement of agriculture can serve as a powerful tool to reduce poverty and promote development. This requires that agriculture be put at the centre of the development agenda, taking into consideration the different contexts, challenges and opportunities currently facing the sector.

The Bank's *World Development Report 2008* (hereafter the WDR) is the most comprehensive recent statement as to the promise and potential of agriculture, in particular smallholder agriculture. Agriculture is seen to operate in three distinct rural contexts, each requiring different strategies to exploit agriculture for development. The three contexts are the agriculture-based economy, the transforming economy, and the urbanised economy.

For the majority of agriculture-based economies, including most of sub-Saharan Africa (with South Africa as a definite exception), agriculture and its associated industries are seen to be essential to broader economic growth and to the reduction of poverty and food insecurity. This requires above all else a significant increase in the productivity of smallholder farming, as well as a conducive economic and institutional environment (Prowse & Braunholtz-Speight 2007; World Bank 2007). In the case of transforming economies, the WDR recommends addressing income disparities through approaches that create multiple pathways out of poverty. Some of these include shifting towards high-value agriculture and/or beneficiation, decentralising non-farm economic activities to rural areas, and assisting people to move out of agriculture. For urbanised economies, agriculture typically represents a small share of gross product, and a declining share of employment and self-employment. Because most staples are tradable, increases in agricultural productivity benefit producers rather than consumers (i.e. consumer prices reflect international trends more than fluctuations in domestic supply conditions). Opportunities for smallholders are increasingly determined by their ability to supply modern food markets, which is all the more challenging given the concentration in agro-processing and food retailing. Agricultural dualism can therefore be accentuated in such economies rather than eased.

Where does South Africa fit in respect of this typology? The WDR categorises South Africa as an urbanised economy (World Bank 2007), presum-

ably on the basis of the low contribution of agriculture to gross product, and in some respects this seems appropriate. In the first place, agriculture as a sector is in relative decline in terms of its share of GDP, and also in absolute decline in terms of employment. Moreover, South Africa has a concentrated agro-processing and food retail sector within an open economy, in keeping with urbanised economies as defined by the WDR. On the other hand, South Africa is also arguably anomalous in that a relatively large share of the population is still rural, and a larger share of the country's poor is rural. For the urbanised countries as a group, the WDR indicates that rural areas account for about one-quarter of total population, and contain 45% of the poor (World Bank 2007: 37). By contrast, the South African population is roughly 40% rural, and the poor in rural areas account for around 70% of all poor in the country, which suggests that, at least in terms of its demographics, South Africa is perhaps more like what the WDR characterises as a transforming economy.

Having said that, what the WDR expresses as the scope for agriculture-based poverty reduction for urbanised economies is very much the topic of contemporary policy discussions in South Africa:

*In urbanized countries...agriculture can help reduce the remaining rural poverty if smallholders become direct suppliers in modern food markets, good jobs are created in agriculture and agroindustry, and markets for environmental services are introduced. (World Bank 2007: 2)*

The problem, however, is that for South Africa, "the remaining rural poverty" is in fact the bulk of all poverty; good jobs are not being created in agriculture or associated industries in any significant numbers, and the development of markets for environmental services is only now being explored. The real question for this study is: what are the prospects for large numbers of existing smallholders to "become direct suppliers" to the food retail sector, especially given the dominance of the large-scale commercial farming sector? What perhaps sets South Africa apart from other urbanised economies, therefore, is the extent to which it is still rural, but in a context of deeply entrenched agricultural dualism in which black smallholders start from a vantage of extreme marginalisation.

From a somewhat different perspective, a line of argument for the importance of smallholders to both agricultural and broader economic development is the so-called inverse farm size efficiency hypothesis (see e.g. Feder 1985; Hazell et al. 2007). According to this hypothesis (which many regard as an established, generalisable fact), larger farms tend to have lower gross and net returns per hectare of land per year than smaller farms, meaning that smaller farms are more efficient (Lipton 2005; Poulton et al. 2005). Coupled with the observation (or contention, depending on the perspective) that smaller farms are more labour-intensive, and have stronger forward and backward linkages to the local and indeed domestic economy, the implication is that supporting small-scale farms is a more efficacious means of using agriculture to promote poverty reduction and general economic development than, say, a neutral strategy or one that is biased in favour of large farms.

For most developing countries, there is evidence of declining farm sizes (Lipton 2005) whereas the reverse is true for OECD countries. The decline could be attributed to the subdivisions due to population growth. It is expected that if economies of scale existed, the unit of production would not fall as it would be sensible to rent out smaller farms to larger operators, but this is rare in most developing countries; rather, it is often the case that parts of larger farms tend to be rented out to smaller operators. An alternative explanation for reduced land transfers is imperfect land markets, since land is used as collateral against bank credit, for social prestige or for speculative purposes. In addition, people may retain their small plots for cultural reasons. Apart from the imperfect land markets, imperfect labour markets and unemployment make own cultivation of small plots more acceptable than renting out, even if the rental returns are higher (Hazell et al. 2007; Singh 2005). While the above may not necessarily reflect the economic efficiency of small farms, it does show that small plots are a valued component of rural livelihoods in the context of imperfect land, labour and capital markets.

While smallholder farmers have been driven out of the rural parts of most developed countries, but less so in developing countries, the sector still persists. In less developed and developing countries, smallholder farmers are important for the production of staple foods (Boyce 2004; Lele & Manmohan 1989; Prowse & Brauhnoltz-Speight 2007; Rosset 1999). As a result, Rosset (1999:

2) argues that the "prediction of the demise" of the sector is premature even though "their numbers have dropped substantially" and they are faced with new threats. In addition to their importance in the production of staples, smallholder farmers have been able to hold onto their land even though past policies have undercut their viability, which implies they are not as unproductive and inefficient as the proponents of large-scale and estate farming have pointed out. Finally, small farms have multiple functions that benefit both society and the biosphere, which goes beyond just a specific commodity. Therefore, the multiple and beneficial functions of small farms should be considered.

Again, where does South Africa fit in respect of this line of thinking? While there is little credible research that directly compares the relative efficiency of smallholders versus large-scale commercial farms, the anecdotal evidence is that, outside of government interventions, large-scale farmers are more likely to seek opportunities to rent or buy up land controlled by smallholders, than smallholders are to access land from large-scale commercial farms.<sup>12</sup> While this may well be suggestive of a smallholder sector that has been shackled or deformed by racial bias, it is nonetheless a current economic reality.<sup>13</sup> Moreover, within the large-scale commercial farming sector itself, the trend over the past 30 years has been decidedly in favour of larger farms, not all of which can be ascribed to a policy bias in that direction. Lastly, to the extent that there is presently a redistributive land reform programme, by and large it has not been designed with the inverse farm size relationship in mind, firstly insofar as subdivision is a relatively recent afterthought, and secondly because there is no technology policy or orientation that encourages or enables beneficiaries to adopt more labour-intensive styles of farming.

### The case against the emphasis on smallholder agriculture

Many arguments in the theoretical literature highlight the advantages of encouraging smallholders in developing countries. However, these arguments are commonly dependent on the neoclassical production function analysis (Byres 2004; Sender & Johnston 2004). Based on this argument, agricultural enterprises will economise on the use of scarce factors (land and capital) and take advantage of the most abundant factor (labour), and therefore "adopt highly labour-

<sup>12</sup> Two pieces of anecdotal evidence are noted. First, on a number of irrigation schemes meant for black smallholders in former Venda, white commercial farmers have in recent years been leasing contiguous plots belonging to significant numbers of black farmers (see Chapter 11 in Volume 2). Second, a growing pattern has emerged in recent years of land reform land being rented to white and black commercial farmers by land reform beneficiaries. However, this is not to say that there is not often land pressure at the borders between relatively densely settled former homeland areas and the commercial farms next to them.

<sup>13</sup> The traditional inverse farm size efficiency hypothesis was based particularly on the idea that large farms incur higher supervision costs than smaller farms, not least because the latter depend more on family labour. However, mechanisation has proven to be an effective means by which large farms have reduced their dependence on labour (in apartheid South Africa this was at times an explicit objective of the state's pro-mechanisation policies), and thus can be interpreted as a way of neutralising the logic of the inverse farm size production relationship.

intensive farming systems" (Sender & Johnston 2004: 145). While this argument is backed by empirical evidence in Asia, in Africa the empirical evidence is weak and thus policies based on the argument may well harm rather than help smallholders and the economies in which they operate.

The same sentiment is echoed in the WDR 2008 wherein "liberalized national markets will remain the primary force for achieving productivity increases and poverty alleviation" (Havnevik et al. 2007: 10). However, the green revolution driven by state investment and subsidised support for agricultural inputs is discouraged. According to Havnevik et al. (2007), this brings about a clash between the humanitarian concern for poverty alleviation and 'market fundamentalism'. Furthermore, the assertion fails to distinguish between the policy needs of small- and large-scale farmers. It is important to distinguish between the two since Africa's traditional export crops (mostly produced by smallholders) have steadily decreased to negligible levels, thus the comparative advantage that smallholders used to have has been undermined by more efficient producers elsewhere. There is the possibility that smallholder farmers may continue to have difficulties in meeting the demands of the highly regulated standards and time schedules of global commodity markets. Therefore, critics of the WDR of 2008 suggest that in reality the policy prescriptions of the World Bank are contradictory: on the one hand the role of the smallholder is lauded, while on the other there appears to be a tacit understanding that only large-scale farming enterprises will be able to meet the challenge of becoming internationally competitive. In general, the current environment is more suited to making large-scale agriculture more competitive than small-scale agriculture, and the African countryside will be "relegated to a large 'holding ground' to ensure the basic welfare of the rural population and provide labour for other sectors of the economy as and when needed" (Havnevik et al. 2007: 13).

Specifically for the case of South Africa, the 'promise' of smallholder development has been called into question largely on the basis that there is too little evidence that those presently engaged in small-scale agriculture enjoy significant benefits from doing so. Palmer and Sender (2006), for example, use Statistics South Africa's Income and Expenditure Survey (IES) of 2000 to demonstrate that rural black households that

farm spend almost the same amount of money on food purchases per capita as those that do not. Furthermore, to the extent that some rural households derive greater benefits, it is because they have sufficient income from other sources to enable more significant investment in farming. Even if one allows that there are potentially some dietary benefits from subsistence production, it does not represent a route out of poverty for the poorest of the poor, and it is dangerous to allow the "continued neo-liberal advocacy of the benefits of entrepreneurial efforts in small-scale agriculture" (Palmer & Sender 2006: 356) to distract policy-makers from more efficacious measures, not least social grants and labour market interventions. Notwithstanding some doubts about the quality of their empirical work,<sup>14</sup> Palmer and Sender's argument serves as an important reminder that one should not romanticise or oversell the potential of smallholder agriculture. Given the main methodological approach of this study, it serves moreover as a caution against disingenuously extrapolating from a purposively selected handful of 'best-practice' case studies.

Indeed, it raises the critical question of the purpose of smallholder development. If we allow that smallholder development is not a particularly promising strategy for assisting significant numbers of the 'poorest of the poor' out of poverty, this does not mean smallholder agriculture does not or cannot perform a meaningful role in mitigating poverty. Put another way, surely it is significant that 2.5 million black South African households regard subsistence agriculture as worth their trouble?

But whereas Palmer and Sender represent a perspective that says there is too little prospect of people working their way out of poverty via agriculture, there is another cautionary strain in the literature arguing that unless one farms at a commercial scale, it is not worth it – that is, the purported food security benefits of subsistence farming are insignificant. Hendriks asserts this quite strongly for the case of South Africa:

*Improved nutrition is clearly a positive externality for increased agricultural production in South Africa's rural areas. However, the scale of agricultural production strongly determines the magnitude of these nutritional benefits. To have significant impact on nutritional status of rural populations, agricultural production must develop beyond subsistence level...[N]*

<sup>14</sup> Despite noting a number of the deficiencies of income and expenditure surveys for the type of analysis they pursue, they fail to mention that the 2000 IES picked up only about one in ten rural black households that are involved in agriculture; given that we do not know whether the few black agriculturalists who were picked up are similar to those who were not, we can have no confidence in the comparisons they draw between 'farmers' and 'non-farmers'. A different concern with the argument is that it fails to acknowledge the dramatic decline in farm jobs over the past decade and more, in the face of which their mention of "policy initiatives to increase the bargaining power of the poor in wage-labour markets" (Palmer & Sender 2006:364) sounds rather hollow, given that their participation in such markets has become much rarer and their bargaining power correspondingly weaker. As for the evidence of South Africa's income and expenditure data, using the 2005/06 IES, Aliber (2009) demonstrates a gap in per capita food expenditure between rural black and urban black households that obtains across expenditure deciles; for the lowest five deciles, this gap is around 15%, suggesting that the extent of black farmers' self-provisioning is far greater than Palmer and Sender's analysis would suggest, particularly taking into account the fact that it is only about half of rural black households that account for this. Even more so than with the IES of 2000, the IES of 2005/06 fails to capture directly the contribution of black farming, thus Aliber uses the rural/urban distinction as a proxy for the comparison between farming and non-farming households.

*utritional benefits from agriculture are most likely to accrue only if households are engaged in agriculture at a level beyond subsistence. (Hendriks 2003: 39–40)<sup>15</sup>*

Indeed, whether for this or other reasons, commercialisation is often understood to be the *sine qua non* of supporting small-scale agriculture. For example, a recent collaborative study by the International Centre for Development Oriented Research in Agriculture, the Limpopo Department of Agriculture, and the Agricultural Research Council resulted in a working paper which begins: "Commercializing crop production is an important development option for the 'second economy' (resource poor farmers) in the agrarian land reform programme in South African agriculture" (Botha et al. 2005: 1), and yet no other 'options' are explored in the paper, presumably because the study was conceived for the declared purpose of "identify[ing] opportunities and possibilities for commercializing crop production" (Botha et al. 2005: 3).<sup>16</sup>

## Extension and farmer support

### Introduction

This section provides a brief history of extension and farmer support in order to understand the changing role of extension in supporting smallholder agriculturalists. It then examines the changing approaches to extension and the development of new extension frameworks in South Africa and internationally.

### A short history of extension and farmer support in South Africa

South Africa has long been characterised as having two agricultures.<sup>17</sup> The roots of the 'two agricultures' thesis originate in the instruments and measures used by the South African state to support white commercial farmers on the one hand and, on the other, to regulate agricultural production and land use in the former reserves and homeland areas.

A range of measures benefited white commercial farmers until they started to be phased out in the late 1980s ahead of the deregulation of the agricultural sector. These included:

- monopoly powers, direct controls over imports and exports, and guaranteed prices and markets via the Marketing Acts (No. 26 of 1937 and No. 59 of 1968);

- the 1939 Co-operative Societies Act (No. 29);
- a comprehensive system of support, which was implemented largely by the Department of Agriculture and comprised research and extension, subsidies for a wide range of functions such as soil conservation works, boreholes, housing for farm workers, farm schools, fencing, disaster assistance, etc.;
- the provision of infrastructure such as electricity, roads, railways, telecommunications, and irrigation water through other state departments and agencies (Eskom, Roads Authorities, Spoornet, Telkom, Department of Water Affairs, and irrigation and conservation boards);
- financial assistance through the Agricultural Credit Board and the Land Bank, with credit provided at subsidised interest rates and on preferential terms to farmers who could not access credit from the commercial banks (Sustainable Development Consortium 2007).

Given this favourable environment, agricultural production in South Africa exceeded both population increase and consumption requirements (although large numbers of black South Africans remained too poor to buy adequate food for their families). Between 1980 and 1989, South Africa became self-sufficient in all major agricultural commodities (Singini & van Rooyen 1995).

By contrast, a variety of measures were promulgated in respect of black agriculture, most of which served to undermine rural production and land-based livelihoods. In 1929 the Union government established a Native Agricultural and Lands Branch within the Department of Native Affairs. This had a tiny budget and focused on soil conservation and the regulation of livestock numbers. Other historical developments were:

- In 1936, the Development Trust and Land ('Notice Trust and Land') Act (No. 18) created the South African Native Trust (SANT), which had responsibility for administering African reserve areas. The SANT imposed systems of control over livestock, introduced the division of arable and grazing land and enforced residential planning and soil conservation measures. However, most of the state agricultural branch's "attention was directed to the newly acquired white

<sup>15</sup> Without wishing to get into a detailed debate on the matter, Hendriks' evidence and analysis are ambiguous. Curiously, one of the main pieces of evidence she cites to support her conclusion comes from Kirsten et al. (1998), who conducted a survey of rural households in KwaZulu-Natal in order to discern the relationship between the incidence of stunting among children and the children's households' agricultural practices. Hendriks quotes Kirsten et al. as follows, "households which participate seriously in agricultural activities have better nutritional status" (Hendriks 2003: 31), and takes this to imply that participating "seriously" means farming beyond subsistence, which in truth is not their argument (although their results do imply that farming at a larger scale is associated with even better nutritional outcomes than farming at a more modest scale). Kirsten et al. do not posit any such discontinuity between subsistence-level versus market-oriented production, but rather conclude broadly that "...agricultural activities make a positive contribution to household nutrition, which suggests that designing effective programmes for improving agricultural productivity in the less-developed areas of South Africa could have a potentially positive impact on household and child nutritional status" (Kirsten et al, 1998: 586).

<sup>16</sup> Tellingly, the first part of the title of the working paper is, 'Can We Get Them There?'

<sup>17</sup> Although this is a useful conceptualisation for providing a historical perspective on the highly differentiated treatment of black and white farmers, we would suggest that this rendering has lost much of its explanatory power as it presents the extremes at either end of a production continuum, but overlooks the diversity of the agricultural systems, subsectors and scales of production which lie between.

farmlands, with the hope that these tracts could be preserved until resources for development became available" (Butler et al. 1978: 181).

- In 1939, Proclamation 31 enabled officials to declare a 'betterment area' and empowered them to count and cull livestock where they saw fit.
- In 1945, the Department of Native Affairs published *A New Era for Reclamation*, which set out the vision for betterment land-use planning and villagisation.
- In 1950, the Tomlinson Commission set out to "conduct an exhaustive enquiry into and report on a comprehensive scheme for the rehabilitation of Native areas" (in Wolpe 1972: 449). It recommended the abolition of communal tenure and the allocation of land together with a comprehensive agricultural support programme to enable the creation of a class of "contented Bantu farmers" able to earn an income of £120 a year. At the same time, the Commission recorded that the reserves could only support 51% of the population recorded in the 1951 census. It proposed culling 55% of the livestock. The Commission calculated that a family would require 52.5 morgen of land to make a gross annual income of £70.
- The nationalist government rejected the Tomlinson Commission recommendations for depopulating the reserves and investing in agricultural development. It opted instead for increased control measures, such as betterment planning, while rapidly swelling the already overcrowded homelands with people displaced through forced removals (de Satge 1988).

An assessment of extension services in the run-up to the homeland era noted that "while 90,000 rich, educated white farmers have 3,000 extension officers (plus enormous injections of easy credit, marketing facilities, and guaranteed prices) 600,000 black farmers have less than 1,000 extension officers and these hopelessly overstretched men (and their small budgets) have been concentrated on the irrigation schemes" (Lipton 1972: 197).

The parastatal homeland development approach during the 1970s and early 1980s revolved around

centrally managed showcase capital-intensive projects. Smallholders or waged employees were settled on these schemes, which provided management, inputs, tillage and marketing services. However, the schemes largely failed to create independent farmers and many became hugely expensive and inefficient.<sup>18</sup>

In the mid-1980s, the DBSA introduced the Farmer Support Programme (FSP) as an alternative to the large capital-intensive schemes. The FSP focused on small farmers in the homeland areas. The DBSA defined a farmer as anyone who used resources part-time or full-time to produce agricultural goods. The FSP set out to integrate the promotion of agriculture with other non-farm-related rural development activities. However, the overall FSP development objective was the "promotion of structural change away from subsistent agricultural production to commercial production by providing comprehensive agricultural support services and incentives to existing farmers" (van Rooyen 1995: 3). After a mid-term evaluation, this objective was redefined in 1989 to focus on providing farmer access to support services over a wide base. The FSP ran between 1987 and 1993, and focused on the supply of inputs and capital to farmers, mechanisation services, marketing services, training and extension, and research. The programme estimated that it reached 25 000 smallholders through 35 FSPs before it was overtaken by the demise of the homelands and their reintegration into the nine provinces that emerged from the new democratic dispensation in 1994.

A review of extension, training and research services provided as part of the FSP (Hayward & Botha 1995) identified a wide range of problems:<sup>19</sup>

- provision of poor-quality extension support in most instances. The low effectiveness of services was not due to lack of field officers but rather to the low quality of their formal education and the lack of appropriate in-service training to meet on the job support needs;
- no meaningful contact between extension and research given that most research capability remained targeted at the commercial sector;
- extension methods were outdated and had not adapted to changing international extension approaches;

<sup>18</sup> What to do with the development corporations and the parastatal-run agricultural projects has been a thorny issue over the past 14 years. While the corporations have been closed down and some of the projects have been effectively restructured, there are two negative legacies still evident. First, many residents of former homeland areas recall the free or subsidised tractor services the corporations used to provide, and cite the withdrawal of such services as a reason for no longer cultivating their arable land, with the implication that only the restoration of such services will enable them to cultivate their land again. Second, some of the parastatal-run projects effectively blurred over existing household land rights and reallocated land use to other individuals; upon the collapse of these projects, conflicts have arisen between the original rights holders and those who used the land under the auspices of the projects. (See for example the case study of Mr Booi, many of whose fellow farmers on the Zanyokwe scheme are struggling with tenure insecurity due to this practice.)

<sup>19</sup> A critique from a different perspective was offered by Sender, who argued "that even if the programme was extended to a level which is almost certainly not fiscally sustainable, you would only be reaching a tiny proportion of either the rural population or those who see their future in farming" (Sender, 1995: 254). Partly on the basis of his critique, the FSP earned the reputation of being extravagantly expensive. However, based on figures presented by van Rooyen (1995), the cost per farmer over a six - year period was about R25 000, adjusted for inflation.

- farmers were encouraged to use inputs at too high a level against their actual achievement, pushing many into debt;
- some 40 farmer training centres had been constructed in the former homelands while occupancy rates were 15% to 20%;
- lack of coordination between departments of agriculture and agricultural corporations.

In the evaluation of the FSP in 1993, it was noted that the FSP strategy in the future might be determined by the demands of a land reform programme. However, in the subsequent reorientation of the DBSA's priorities, it appears to have largely abandoned farmer support.

### New agricultural policy

The 1995 White Paper on Agriculture defined a farmer, irrespective of his/her race, gender or scale of production, as a land user who engages productively in agriculture, on either a full-time or a part-time basis and regardless of whether agriculture forms the principal source of income.<sup>20</sup>

The White Paper critiqued the conventional transfer-of-technology approach to extension and argued for a holistic system. In the transfer-of-technology system, the extension worker passes on scientific information to the farmer. This approach has the limitation that the imparted information may not be relevant to farmers' conditions, or may only partially address their needs. In a holistic system, researchers, extension workers and farmers are partners seeking solutions to problems facing farmers. This approach envisages that "researchers would spend more time in the farmers' field, and liaise with farmers far more often than in the conventional model" and acknowledges that "farmers already have useful knowledge, especially of their own conditions and constraints". It also calls for recognition of the "greater vulnerability of resource-poor farmers to risk". The White Paper furthermore called for a significant, rapid reorientation of research from commercial agriculture to a new focus on "basic research in the context of resource-poor farmers" (Department of Agriculture 1995: paragraph 8.3).

Lastly, the White Paper noted the need to integrate the effectively racially divided extension services, while upgrading the extension service that had traditionally served black farmers,

which in any event had "not really been effective...for a number of reasons, including an attempt to model extension services on the system used in commercial farming, and inadequate training and support for extension officers" (Department of Agriculture 1995: paragraph 8.6). It called for a new model of participatory extension, in which the extension worker is trained to act as a facilitator to replace the present transfer-of-technology model. It furthermore argued that "a well-integrated retraining and reorientation programme needs to be formulated if the capacity of small-scale farming is to be enhanced through appropriate support services" (Department of Agriculture 1995: paragraph 8.8).

### Training extension staff

One of the components of the Reconstruction and Development Programme was the Broadening Access to Agriculture Thrust (BATAT), which called for strengthening both the curriculum and the standard of the available training in agriculture, and opening up agricultural training and opportunities for all. Although BATAT concluded its work in around 1996, the actual process of developing the agriculture education and training (AET) strategy started in 2002. The *National Education and Training Strategy for Agriculture and Rural Development* (Department of Agriculture 2005) highlights the multiple and serious challenges which must be overcome before there is a well-trained cadre of extension staff in South Africa.

In 2005, the national corps of public extension staff was approximately 2800. The ratio of extension staff to commercial and subsistence farmers was estimated as follows:<sup>21</sup>

- commercial farmers: 1 : 21;
- subsistence farmers: 1 : 857;
- combined: 1 : 878.

The *National Education and Training Strategy* observed that these ratios are not particularly high by global standards and that the critical factor is not the numbers of extension staff but rather their capacity to deliver. The report also highlighted other factors impacting on the effectiveness of extension services, including:

- distance between farms;
- geographic areas covered by extension workers;

<sup>20</sup> It is worth noting that this definition of 'farmer' is therefore consistent with the estimates generated from the LBS presented earlier.

<sup>21</sup> It is unclear what source was used for the numbers of farmers upon which these ratios were calculated. Based on the LFS and the agricultural census of 2002, we estimate that there are roughly 300 000 to 400 000 commercially oriented farmers of all races, in relation to which 2800 extension staff would mean a ratio of about 1 : 125. If instead one were to consider all farmers irrespective of market orientation or scale, then the ratio would be in the order of 1 : 1400.

- client literacy;
- level of practical functioning of local farmer groups and associations.

With respect to the recruitment of young people for careers in agriculture, the report noted that agriculture has a negative image as a career choice in the eyes of the youth. It is seen as the 'work' of the poor and the elderly and not as something that could be profitable. The report further noted that agriculture has been removed from the curriculum at primary school level and that where the subject is offered at secondary school level (National Qualifications Framework levels 2–4), it delivers poorly.

High schools offering agriculture are often poorly equipped and lack qualified teachers. "Failure rates are high, and there is often a punitive association with studying agriculture in the previously disadvantaged areas of the country" (Department of Agriculture 2005: 2). Formal agricultural training and education is very poorly controlled, both in terms of curriculum content and the qualifications of educators, while informal training and education is to a large extent untested in terms of quality. Unsurprisingly, a large number of learners who have diplomas and degrees in agriculture are, for a variety of reasons, unable to find jobs.

Due to low student numbers and other factors, some colleges of agriculture are shifting their focus from educating extension practitioners to training farmers. In 2005, there were 11 colleges of agriculture, six universities of technology, and nine universities offering various tertiary AET programmes that were nationally accredited. Secondary AET is provided by approximately 1500 secondary schools.

Overall, much agricultural education and training focuses largely on primary production rather than on farming as a business. *The National Education and Training Strategy* highlights the crucial need for general agricultural economic skills, as well as those related to agricultural business, farm planning, farm management, enterprise management, marketing, finance, credit and risk management, and human resources management. It argues for the concept of agricultural extension to be expanded to provide agricultural extension workers with capacity and the skills to assist communities to deal with the effects of rural change, the impact of HIV/AIDS on the rural economic base, and the growing vulnerability of household livelihood systems.

The report proposed the creation of a National Agricultural Education and Training Forum as the initial implementation agent. This was launched on 20 November 2006 by the Minister of Agriculture. In 2007, provincial forums were launched in certain provinces, including the Western Cape and the Eastern Cape. However, there is likely to be a long lead time before this initiative gets results.

However, a number of initiatives are under way in different provinces, often with foreign donor support. In the Eastern Cape farmer support centres are planned which will utilise farmer-to-farmer extension methods, while the Dutch government has funded the Cape Agricultural Programme on Rural Innovations, which has trained extension officers in social facilitation skills.

### Assessing extension effectiveness

In the period since 1994, the Department of Agriculture was restructured and new provincial departments of agriculture were established. Some commentators have argued that "these provincial departments display many of the weaknesses of the former homeland Departments in their inability to maintain support services to farmers", with the result that most commercial farmers have switched to privately provided services (Vink & Kirsten 2003).

It seems that there remain fundamental questions about the appropriate role of extension support. For example, whereas the National Education and Training Strategy of 2005 argued that extension officers must be equipped to go beyond expertise in primary agricultural, experts are divided as to whether that is in fact a good idea; Last for example bemoans the fact that many extension officers appear to have become project managers who "are spending almost 90% of the time planning, developing business plans, collecting quotations, receiving equipment, writing status reports, and expenditure reports just to name a few. The question that must be asked, 'is this extension's role?'" (Last 2006). Last also sounds a warning about the inflexibility of project designs and the fact that project budgets and enterprise sophistication are often mismatched to participants' management and technical capacities.

At the same time, while provincial agriculture departments lack adequate extension and support services to assist new farmers, there remains

controversy as to how inadequate. In contrast to the National Education and Training Strategy discussed earlier, a slightly more recent study (about which more is said below) noted that South Africa has only one-third of the required number of extension officers to meet its development targets, and that 80% of the current extension staff are not adequately trained (Department of Agriculture 2008a).

### Developing an appropriate extension approach

According to the University of Pretoria, which was commissioned by the Department of Agriculture to develop an appropriate approach to extension, 63% of farmers judged that their extension worker had no advice of value to offer while 37% conceded that they sometimes had information of some value (Duvel 2003).

The report recommended that dedicated support needed to be provided to extension staff, including the establishment of an Extension Knowledge Information and Research Centre which should be outsourced to, or created in partnership with, existing institutes. It highlighted that "a major problem in the Department of Agriculture is the frequent restructuring, usually with every change in leadership or senior management. This is invariably associated with high costs, delay and interruption of delivery programmes and usually represents mere ad hoc reforms rather than the pursuit of measured, comprehensive and long-term restructuring" (Duvel 2003: 11).

The report noted that given the low qualification and competence of extension workers, an extensive and structured support programme should be developed and implemented (Duvel 2003). The report recommended a Participatory Programmed Extension Approach for South Africa consisting of five linked programmes:

- extension planning and projects;
- extension linkage and coordination;
- knowledge and support;
- education and training;
- monitoring and evaluation.

In terms of monitoring and evaluation, the report indicated that it should be "non-negotiable and receive the highest priority" (Duvel 2003: 21).

However, little change took place in extension services in the five years since Duvel's report. In 2008, another report was released entitled *The State of Extension and Advisory Service within the Agricultural Public Service: A Need for Recovery*. This report, which flows from the extension indaba held earlier in that year, provides a sober assessment of the state of the nation's extension services, noting that the "capacity of provinces to deliver quality extension services to farmers varies and to some it is already suffocating" (Department of Agriculture 2008a). Extension and advisory services personnel are expected to work with a wide variety of clients, ranging from subsistence to large-scale commercial. Table 3.1 provides a breakdown of employed extension personnel as provided by provinces as at January 2007.

The largest numbers of extension officials are from Limpopo, which constitutes 30% of the total, followed by the Eastern Cape at 28% and KwaZulu-Natal at 16% respectively. Gauteng and the Northern Cape have the smallest numbers of appointed extension personnel, standing at less than 2% of the total pool. While the overall distribution makes sense in that the provinces with the largest rural populations account for the largest numbers of extension officers, the overall numbers are regarded as insufficient across the board. Moreover, related to the targeted numbers of extension officers (whether one is talking about the 1-to-500 or the even more ambitious 1-to-250 extension officer-to-farmer ratio), currently the Eastern Cape, KwaZulu-Natal, Limpopo and Mpumalanga have the highest shortfalls of extension personnel.

Apart from the question of numbers, as noted in other assessments of the state of extension, the quality of officers is called into question. One indication of this is that only 427 out of 2155 (20%) have a degree or qualification other than a diploma, and thus most are deemed insufficiently qualified to operate as agricultural advisors or subject matter experts. Only Gauteng and Free State provinces have a good percentage of officials with degree qualifications and higher. The Eastern Cape and KwaZulu-Natal have the lowest percentages of extension officials with degree qualifications and higher. Interestingly, while 73% of all extension officers are men, in six out of nine provinces female extension officials are more educated than their male counterparts. This can be attributed to the trends in recruitment, whereby women join the service

fairly late compared to their male counterparts.

Similarly, the report notes that very few extension officials have been exposed to formal skills programmes that are crucial to the delivery of products and services to farmers. Only 9% had completed training in communication, 11% in project management, 6% had completed computer training, and 7% had completed training related to people management and empowerment. Altogether, less than 25% of extension staff had been exposed to technical training programmes since joining the public service.

The content of the extension recovery plan as contained in the above-mentioned report is sketchy. What we do know is that it involves an additional R500 million from Treasury for a period of three years, in order to hire approximately 500 more extension officers nationally, but also to launch a professional development programme that will see to the wide-scale skills upgrading of existing extension officers.<sup>22</sup>

### Extension support to land reform

The failure to provide adequate settlement and implementation support which includes extension services has long been recognised as an issue. The evidence from the National Settlement and Implementation Support Strategy for Land and Agrarian Reform in South Africa (Sustainable Development Consortium 2007) confirmed the low level of support provided on the majority of projects – which, given the state of the extension service discussed above, should not come as a surprise.

In a review of projects in North West, Kirsten and Machethe (2005: 38) found that projects received limited advice and support from the provincial agriculture department: the department provided ‘advice’ to 47% of projects and ‘support’ to 5%, whilst 49% indicated that they had not received any help from the department. [comes to 101%]

A study of 43 projects revealed a significant decline in land under dryland cultivation year on year. Many projects with irrigation potential had problems with infrastructure that made this asset impossible to utilise. Forty-nine per cent of projects were producing no marketable produce. Only 7% indicated that they had standing contracts for the marketing of their produce. The vast majority of project members (72% of projects) had not received any training in marketing matters, while 87% felt that there was a need for skills development in this area (Kirsten & Machethe 2005: 70).

In a review of rural restitution projects, the Community Agency for Social Enquiry found that technical assistance on the 179 projects reviewed was grossly inadequate and that very often the government officials did not have appropriate skills to provide the assistance (CASE 2005).

The recently announced LARP has the stated intention of providing comprehensive support to land reform beneficiaries to address this deficit. However, it remains to be seen how the settlement and implementation support needs can be met given the narrow skills base and over-

**Table 3.1: Actual and targeted extension officers by province**

Province	Figures as of January 2007		Targeted numbers under different officer-to-farmer ratios	
	Number	Share (%)	1 : 500	1 : 250
Eastern Cape	623	28	1344	2688
Free State	40	3	52	103
Gauteng	29	1	19	38
KwaZulu-Natal	360	16	710	1419
Limpopo	666	30	1181	2361
Mpumalanga	189	9	337	675
Northern Cape	23	1	26	52
North West	137	6	129	257
Western Cape	25	5	61	123
Total	2155	100	3559	7706

Source: Department of Agriculture (2008a)

stretched nature of the current farmer support and development services.

There is a growing, even exponential mismatch between land acquisition targets and available capacity to support people once they have acquired land. Currently, support is often equated with the provision of infrastructure through CASP as opposed to the day-to-day technical, institutional, economic and natural resource management support that is required. This highlights the warning contained in the SIS strategy that "it can be reasonably forecast that without urgent and significant investment in SIS services existing capacity will be overwhelmed, which could place the entire land reform programme at risk" (Sustainable Development Consortium 2007: xv).

### International extension approaches

International development and extension discourse has distinguished between the training and visit and the transfer-of-technology models on the one hand, and the 'farmer first' participatory and farmer-led extension approaches on the other.

Farmer first approaches became formalised in the late 1980s. In a review of the approach 20 years later, it was observed that:

*The farmer first approach argued that much of the problem with conventional agricultural research and extension lies with the processes of generating and transferring technologies, and that much of the solution lies with farmers' own capacities and participation in the research process. Over the past two decades, this perspective has provided a very powerful critique of the conventional organisation and application of agricultural R&D [research and development], with its emphasis on transfer of technology models. This critique pointed out that if research develops and transfers technology in a linear fashion to farmers very often these technologies are found to be inappropriate to the social, physical and economic setting in which those farmers have to operate. At the very least such technologies needed complementary organisational, policy and other changes to enable them to be put into productive use. (Scoones et al. 2007: 2)*

Over time, methods and approaches became more synthesised and learning process ap-

proaches developed which combined participatory methods and traditional research tools. This marked the shift from "participation in technology transfer to collaborative science and innovations systems" and resulted in a "creative proliferation of hybrid methods, mixing quantitative and qualitative analysis, and social and biological approaches" (Scoones et al. 2007: 3).

In many respects, South Africa seems to have remained somewhat detached from international learning processes and innovation. However, certain groups in South Africa, like the Farmer Support Group, have been firmly aligned with farmer-led approaches critiquing key weaknesses with conventional extension approaches, and noting how high farmer-to-extension worker ratios, limited budgets, and scattered farmers result in poor client servicing. Because extension staff try to cover large areas, they often lack local knowledge and are forced to apply generic top-down approaches (Mudhara & Salomon n.d.).

The international research and extension discourse highlights the dynamic nature of the field from methodological, technical, economic, hazard and risk perspectives. The first wave of farmer first approaches was subsequently criticised for being naïve about relationships of power and scientific and local knowledge. These approaches were reappraised at the Beyond Farmer First workshop in 1992. The farmer first approach spawned a mass of participatory methods, including participatory research and gender analysis, farmer field schools, integrated pest management, and institutional learning and change.

However, the traditional transfer-of-technology and training and visit systems continued to survive and were transplanted from Asia to Africa. Often a high degree of institutional inertia has enabled old ideas to continue as the dominant paradigm, in contestation with new approaches to collaborative learning and research.

Table 3.2 expresses the broad shifts from older ways of thinking to newer ways of conceptualising research, learning and providing support.

What seems clear is that these new ways of thinking, new attitudes, and new forms of collaboration between organisations cannot be achieved by conventional training and professional development systems. They require learn-

<sup>22</sup> Personal communication, Department of Agriculture, September 2008.

ing process approaches where different institutions and skills are combined into a genuine reflexive practice.

### Key issues and conclusions

The evolving paradigms, the changing research and extension agendas, the diverse needs of smallholders in different agricultural subsectors and at relative scales of production contrast sharply with the current capacity available to address these opportunities and meet urgent needs and demands.

The review of South African extension highlights a system which appears to be in a deep – but only partially acknowledged – crisis. In sketching an implementable plan to boost the smallholder sector, one must therefore make a strategic decision: should the plan depend critically on a vastly improved extension service, which would mean addressing the many systemic weaknesses highlighted above? Or should one rather accept that such a vastly improved extension service is not in the offing, and therefore focus on measures to support smallholders who do not depend critically on extension? Or, perhaps somewhere in between, does the consideration of priority measures for supporting smallholders offer

guidance as to specific ways in which to face the challenge of improving extension?

## Smallholder farmers and output markets

### Introduction

Modern smallholders are rarely if ever the a-tarkic agents that we encounter in much of the literature on this subject. On the contrary, smallholders engage with ‘the market’ in multiple ways and capacities. This section concentrates on farm (or agro-food) output markets. This means tracing the flow of marketable surpluses of smallholders beyond the farm gate into local, national and global markets. The scope of the discussion is defined in terms of the following key questions:

- How do smallholder farmers interact with agro-food output markets?
- What are the opportunities and constraints of integrating smallholders into farm output markets?
- Flowing from the above findings, what are the lessons and implications for agricultural marketing policies?

**Table 3.2: Summary of proposed conceptual shifts in respect of farming research and support**

A shift from	A shift towards
Seeing knowledge generation as a final objective	Seeing it as a means to achieve change; from ‘research’ to ‘innovation’
Research	Innovation
A focus on technology	A focus on people
Mainly reductionist understanding of the parts	A systemic understanding of the relationships between the parts
Mainly hard systems analysis (improving the ‘mechanics’ of the system)	Soft systems analysis (negotiating the meaning of the ‘system’ and desirable transformations)
Seeing participation as a matter of ‘consulting beneficiaries’	Facilitating interactive learning between stakeholders, resulting in joint analysis, planning, and hence collective action
Working individually	Working with others in flexible ad hoc teams and partnerships
Teaching	Learning
Being taught	Learning how to learn
Individual learning	Social learning
An exclusive focus on individual merit and competition in R&D organisations	Collaboration and teamwork within and between organisations
National agricultural research systems	National agricultural innovation systems

Source: Daane (2007)

Raising the general level of well-being of society is positively correlated with the rise and growth of markets. One implication of this hypothesis or 'stylised fact' for smallholder farmers is that in order for them to raise the efficiency of their productive activities, they need to integrate into a system of market relations. What drives this result is the competitive pricing mechanism which automatically regulates how markets work. In other words, prices naturally and instantaneously adjust to efficiently allocate resources to the most productive activities and market actors (Barret & Matumbatsere 2005). A spin-off of incorporating resource-poor small producers into 'the market' is a higher standard of living. Pro-poor farmer development policies, as this narrative suggests, must therefore be grounded in this logic of the market. A concrete task for policy-makers that flows from this perspective is to foster 'market development' or, more precisely, to facilitate the most suitable conditions for markets to emerge, flourish and operate without any impediments.

The potential or real benefits of developing markets for smallholders are directly relevant to South Africa's Second Economy Strategy because its primary goal is to craft a mix of strategies to uplift targeted underdeveloped regions (Presidency 2006, 2007b).<sup>23</sup> Households in remote rural villages in the former homelands, home to almost all of the 3 to 4 million smallholder farmers, form a key target group in this development strategy. Poorer farmers who have gained land and other farming assistance through the land reform process since 1994 form a relatively smaller percentage of this category of rural small producers. What both established and emerging black smallholders have in common, though, is that they farm mainly to add to household food security. Surplus production has remained rare in this rural context. Moreover, the accidental but limited excess farming output is usually sold in local markets, that is, within the village or at a nearby roadside market.

Reasons for the limited scale of production fall into two categories: first, historical barriers constructed through apartheid's socio-economic engineering reinforced the spatial isolation of the countryside. Within that segregated development model, the meagre village-level purchasing power became a structural blockage to expanding income from the sale of agricultural output (Makhura et al. 1998). Second, the deliv-

ery of agricultural support to small farmers after 1994 has remained at woefully inadequate levels.<sup>24</sup> Taken together, these two sets of obstacles account for the persistence of the deep-seated or structural nature of deprivation and inequity that defines contemporary development debates.

Breaking these structural constraints and fast-tracking agricultural assistance that would enable smallholders to access larger markets are important goals, given the rural realities sketched above. In fact, there is a body of evidence which suggests that developing markets for resource-poor smallholders could have large-scale spill-over effects (bigger multipliers from stronger backwards and forwards linkages) on their productive capacity, income and local employment (Hendricks & Lyne 2003; Matungul et al. 2001; Vink 2004; Wynne & Lyne 2004).

### Smallholders and the globalisation of agro-food markets

The market-oriented focus which characterises today's agricultural marketing policies can be traced back to the late 1970s and early 1980s. Globally, policy thinking from that period onwards started moving away from the state-directed approach to agricultural marketing, which was common in most developing countries with a large agricultural base, including Africa. Almost every newly independent and post-colonial state after the Second World War subscribed to a heavy interventionist role for government in the economy. In the agricultural sector, however, this model had disappointing outcomes for many smallholders, lost its credibility and paved the way for rethinking agricultural development policy. Some of the most devastating results of this older model included several years of negative growth rates in agricultural output and resource transfers from agriculture through taxation. Kherallah et al. (2002) cite evidence to show that the growth in per capita value added for sub-Saharan Africa was -0.7% per annum for the period 1965-80, compared to -0.2% per annum for all low-income countries under this older model. Moreover, the marketing boards, operating under the weight of bloated bureaucracies, invested little in the agricultural inputs and market infrastructure. The pricing philosophy which guided these marketing boards was to deliver low-cost food to urban areas, with little attention to the negative consequences of low prices on smallholder farmers.

<sup>23</sup> The Second Economy Initiative forms part of the ASGISA (Presidency, 2007, 2008). As an element of ASGISA, it follows the same analytical approach. This is of course logical because the overarching initiative and its subsections need to be consistent and coherent as a precondition for its success. This systematic framework or orientation consists of three steps and starts with fixing a range of economic growth and development targets. The next step, derived from the starting point, involves identifying micro and macro constraints to reaching the stated targets. The final stage is to outline a series of interventions, both realistic and concretely measurable (quantifiable), to achieve its goals and bridge the constraints.

<sup>24</sup> The barriers that resource-poor farmers had to confront to enter input and output markets proved difficult to overcome in practice, such as: participation in rural land and labour markets, access to credit and other financial institutions, storage facilities, accessible roads and reliable transport networks, information and know-how on contracts and prices, technology and communications networks, etc. Zimmerman and Carter (1999) gave a fairly elaborate yet rigorous early warning of how costly it might be to bridge these formidable impediments would-be land reform beneficiaries.

Although deregulation of agricultural markets may have had the effect of removing some of the price distortions that penalised farmers (and which some claim penalised poor farmers most of all because, unlike well-off farmers, they did not have the political means to evade them), the deregulation also had the effect of exposing farmers to greater levels of 'price risk', that is, uncertainty and volatility regarding the prices at which they are able to sell their surplus. The general observation is that smaller farmers are less robust in the face of price risk than wealthier farmers, not least because the latter are either better able to self-insure or are more diversified.

According to Jayne et al. (2006), with the globalisation of agro-food markets in eastern and southern Africa, the trend is for virtually all staple foods to get priced in terms of their global prices. In this import parity pricing regime, the domestic prices of staples on average are kept on a par with the world market prices for a commodity. While in principle one might expect that international food commodity prices would be relatively stable owing to the pooling of different production experiences in different countries, the record over the past two decades has been that international prices are volatile. The instabilities of global prices get transmitted into domestic price fluctuations, which a country's large producers cope with relatively well. A relatively small number of farmers with higher levels of productive assets have profited more than resource-poor farmers. Jayne et al. (2006: 335) therefore emphasise that "linking African farmers to markets must take account of the inequality of productive assets, which contribute to highly concentrated patterns of the agricultural surplus generation within the smallholder sector". At the same time, a common consequence of the opening up of agro-food markets has been an escalation of food prices paid by consumers.

### South Africa's marketing policy space and smallholders

In his foreword to a study on market deregulation in South African agriculture, commissioned by the Free Market Foundation, Reekie had the following to say:

*In short, South Africa is a successful pioneer in agricultural deregulation. The market rules in almost every sector; from maize, to wheat to fruit. (There are still some sectors*

*where little has been achieved – most notably sugar.) Market control, not state control, unambiguously best serves farmers, consumers, and the economy at large. (cited in Vink & Kirsten 2003)*

This liberalisation and deregulation of agricultural markets in South Africa followed global trends which had gained an unstoppable momentum in the 1980s. Moreover, these market-oriented reforms coincided with macro-level political economy reforms during the decade leading up to the end of apartheid in 1994, and this dramatically altered the environment for South Africa's farming sector.

In the following paragraphs we review how the country's agro-food marketing policy context has evolved since the end of apartheid.

Before 1994 the political economy of apartheid essentially structured the linkages of resource-poor black farmers to agricultural markets. A decade before the end of apartheid, the old regime had embarked on reforming the agricultural sector, meaning phasing out state protection and control boards in agriculture. At that time, the chief instrument used to overhaul how agriculture would operate henceforth was the 1984 White Paper on Agriculture. However, this policy document, despite its far-reaching market-oriented reforms, still catered exclusively for a segregated and whites-only farming sector (consistent with the dominant thinking of that time, it was an ad hoc reform without getting rid of the fundamental pillars of apartheid). A separate set of policies applied to the former independent homelands or TBVC states (Transkei, Bophuthatswana, Venda, Ciskei), which hosted the majority of small-scale farmers. In these communal areas, the FSP crafted by the DBSA advocated a shift away from the centralised farming systems under the development corporations, which ostensibly promoted a large-scale farming model (Vink & Kirsten 2003).

In post-apartheid South Africa, the Marketing of Agricultural Products Act (No. 47 of 1996) outlines the parameters within which smallholder farmers interact with agricultural markets. It provides the basic template for all policies that focus on agro-food markets, such as the *Strategic Plan for South African Agriculture* of 2001, the Broad Based Black Economic Empowerment in Agriculture (Agri BBBEE), land reform programmes and the CASP. The Marketing Act is a

pivotal instrument which regulates the workings of the post-apartheid agricultural sector.

The new agricultural marketing policy framework introduced by the Act is clear in its stated goals and other legislative stipulations. Firstly, the Act extends the scope of deregulating and liberalising all spheres of agriculture – a move that started from the mid-1980s onwards under the pressures of local and global forces. In a sense, the Act was basically fast-tracking the reforms of agricultural markets inaugurated by the 1984 White Paper. Secondly, it repealed the separate legislative instruments which had governed agricultural marketing in the former homelands. Ignoring for the moment the actual pace of these reforms, what the Act accomplished was to bring black smallholder farmers under one national agricultural market policy regime.

Furthermore, the Act established the National Agricultural Marketing Council (NAMC), outlining its roles and composition. As a statutory body, the NAMC advises the Minister of Agriculture and Land Affairs on a range of agricultural marketing issues, including the links between agricultural marketing policies and other “national economic, social and development policies and international trends and developments” (section 9e(ii)). Section 4 of the Act stipulates criteria for NAMC membership. Members should include individuals with practical experience of “the production and marketing of agricultural products by small-scale and previously disadvantaged farmers” (section 4(2)(e)).

The four main objectives of the Act are briefly stated in section 2(2):

- increase the market access for all market participants;
- promote the efficiency of the marketing of agricultural products;
- optimise export earnings from agricultural products;
- enhance the viability of the agricultural sector.

From the viewpoint of the Act, small-scale farmers seem to be equivalent to other actors along the agricultural marketing chain. Whilst this notion of equal treatment is commendable, the ‘level playing field’ decreed in policy does not immediately mirror what actually exists in the

real world. There is no special mention of ‘smallholders’ as such, but they seem to be lumped with other competitors in the marketplace, including well-established large commercial farmers. In section 16 of the Act, which deals with agricultural exports, there is an occasional reference to small-scale farmers and the specific requirement that this category of farmers be included in agricultural export chains.

Two years after Parliament had passed the 1996 Marketing Act (it came into effect in January 1997), the Ministry released a discussion document on agricultural policy.<sup>25</sup> In his foreword to this document, the then minister, Derek Hanekom, sketched what had become, at least in policy circles, a popular vision of ‘a transformed farming sector’:

*We also foresee a much larger role in future for small- and medium-scale commercial farming, based on family-managed farms producing largely for the market, investing in their land, using improved inputs and hiring labour...*

*... For the poorer rural households, which derive only a small part of their income from farming, we expect to see increases in production of food for their own consumption, and occasionally entry into local markets to sell surplus produce... (Ministry for Agriculture and Land Affairs 1998)*

This discussion document confirmed the non-interference of government in agricultural markets through prices and subsidies due to the distortions these may exert on economic performance. In contrast to the outmoded apartheid-era farming model, the document reinforced the need for a shift away from a farming sector heavily dependent on state support and controls. It called for fostering of efficiency-enhancing competition throughout the agricultural sector. But in the radically deregulated environment, resource-poor farmers, especially smaller communal farmers and land reform beneficiaries, will find it hard to compete against ‘established historically advantaged farmers’. Markets often fail, the document emphatically noted on several occasions, and this is a compelling rationale for selective state support to smallholder farmers in domains such as access to market information and extension services. In this context of market failure, in both potential and real terms, state support ought to be selectively targeted

<sup>25</sup> Aside from underscoring the key goals of the Marketing Act, this document articulated a commitment to improving “access to markets for small and medium scale farmers” (Ministry for Agriculture and Land Affairs, 1998).

and indirect, with the emphasis on establishing a conducive regulatory environment. And where the need exists for public goods to ease the participation of smallholders in agricultural markets, service provision through public-private partnerships must be explored as an option.

This market-oriented approach to the sweeping agricultural reforms was endorsed in the 2001 *Strategic Plan for South African Agriculture*, both as a guiding conceptual approach to policy and in terms of the rolling out of support services to small farmers. The adoption of a deregulated and liberalised framework for agricultural output, according to the *Strategic Plan*, tops the list of fundamental and far-reaching policy shifts of the 1990s. Henceforth, the model would be for “market forces to direct business activity and resource allocation” (Department of Agriculture 2001: 4) in the sector. Smaller farmers, either those entering the sector through land reform or those in communal areas, would be assisted to gain greater access to markets. Greater market access would be facilitated, on the one hand, through the removal of ‘entry barriers’ – ranging from lower (subsidised) input costs to the opening of new local and export markets to this category of farmers (Department of Agriculture 2001). On the other hand, strategic partnerships between smallholders and large-scale commercial farmers and commodity producers associations should be forged (Department of Agriculture 2001).

Since then, the Department of Agriculture has begun to appreciate the need to intervene more directly and strategically to assist smallholders and emerging farmers. The general premise of this recent activity is that the relatively passive measures adopted so far do not go far enough, as evidenced by the fact that smallholders as a group are not making meaningful progress in terms of accessing markets. A second underpinning of the emerging approach is that the attempts of provincial agriculture departments in recent years to assist smallholders are not proving effective – they have been trying to ‘find markets for farmers’, but generally to little effect.<sup>26</sup>

Led by the Marketing Directorate, the department has drafted a new national marketing policy which has not yet received official approval and cannot thus be cited for this report. However, it is understood that the policy envisages interventions of various kinds. First, it would entail

state support for the creation of smallholder-oriented commodity associations, on the grounds that the established commodity associations are not capable of or willing to render adequate assistance to smallholders (though in future it would be hoped that, for each commodity, the ‘established association’ and the ‘emerging association’ would merge). Second, it contemplates investment in physical marketing infrastructure specifically geared to assist smallholders, meaning that much of it would be located within communal areas (to this end, a feasibility study is under way to identify the type, location and cost of infrastructure that would be necessary to support smallholder producers of horticultural products). Third, it anticipates interventions in respect of transport and logistics, and fourth, it seeks to improve smallholders’ access to market information.

### Some evidence on South African agricultural markets

Let us consider what we know about the three most typical marketing destinations of smallholder farmers, namely fresh produce markets, informal markets, and supermarket chains.

The Johannesburg Fresh Produce Market (JFPM) is the largest fresh produce market in southern Africa and an important outlet for smallholders in Limpopo and elsewhere. The JFPM board has been active in expanding access to its trading facility to smallholders as well as informal traders. Examples of how the JFPM board has been trying to improve market access to smallholders include the following: it is conducting targeted extension officer training programmes so that extension officers are better able to transmit market information (such as prices, packaging, quality, storage and delivery times, market agents, etc.) to farmers in localities as far as 300 kilometres away; it regularly runs small farmer and informal trader open days in which these market actors are brought on tours to the JFPM facilities to raise their understanding of the workings of a fresh produce market and how it can benefit them; and, more recently, the JFPM has worked with selected municipalities (e.g. Vhembe District Municipality) to build decentralised pack-houses and grading-point facilities so as to better integrate small and emerging farmers into fresh produce markets. These ‘satellite’ facilities aim to significantly reduce the transport costs for smallholders and, with modern cold storage facilities, will enable smallholders to deliver bet-

<sup>26</sup> Personal communication, Department of Agriculture, September 2008.

ter quality produce to the JFPM and so capture more benefits.

Informal markets in which large numbers of small traders participate are common across the agro-food value chain. In their study of the Tshakhuma and Khumbe informal markets in the Vhembe district, Nesamvuni et al. (2005) found that both markets trade mainly in subtropical fruits. Women comprise roughly two-thirds of the sellers, with another 30% being mainly children; 56% of women respondents reported income from trading as their only source of livelihood. Of greater relevance to this study is the extent to which these informal traders use smallholder farmers as their sources of supply. Smallholders supply a limited range of fruits with low-input intensity and indigenous varieties (such as mango and avocado). However, most of the fruits sold in the market have been bought in relatively larger volumes from large-scale commercial farmers in the Levubu Valley, transported and delivered to Tshakhuma and Khumbe by hawkers. To raise the supply of fruits from smallholders to these markets, Nesamvuni et al. (2005) recommended downstream contract arrangements between smallholders and informal traders. But complementary investments in storage facilities and transport may be needed to improve the absorption capacity of these informal traders, as well as to reduce the rapid deterioration of produce on display that forces traders to sell at huge discounts and often at a loss.

Downstream linkages of smallholder farmers with large retail chains (or supermarkets) have received increasing attention in recent research because supermarkets attract a mass consumer market. As a result of the growth of South African supermarkets and their movement into smaller rural towns, the farming market space has become radically altered. Alongside this development, rural poor households (including many smallholder farmers) are increasingly net consumers rather than net producers of foods and they tend to purchase their food from the expanding network of supermarkets in nearby rural towns and cities. These expanding trends in the sources of local food purchases in communal villages have been observed in Limpopo, the Eastern Cape and KwaZulu-Natal in the post-1994 era (D'Haese & van Huylbroeck 2005; Jacobs 2008; Louw et al. 2007). The 2005/06 IES of Statistics South Africa reveals just how extreme this development has now become: for grain

products, 92% of rural black households report that they purchase from chain stores or other formal sector retailers.<sup>27</sup> For meat, dairy and vegetables, the figures are 94%, 94% and 72% respectively. Supermarkets are making foods available at lower prices than informal vendors in local markets because of the economies of scale advantages this 'networked retailer' enjoys in procurement. Their competitors for the local demand, especially informal traders, have often been forced out of business because they are unable to withstand the competitive pricing of these large retailers. While the implications for consumers would appear to be positive, the consequences for smallholder farmers are mixed but on the whole appear to be negative.<sup>28</sup>

Supermarkets generally specialise in supplying a targeted group of customers with niche products of relatively high value. As such, they offer a potential market to smallholders that produce high-value agricultural foods, which are usually produced in smaller volumes. To explore ways in which smallholders can realise the advantages to be derived from access to this market, Louw et al. (2007) suggest a more nuanced understanding of the purchasing strategies and other goals of supermarkets. Large supermarkets that serve mainly high-income groups need to be split from decentralised chains that procure their fresh agro-foods from local suppliers. The first type of supermarket chain operates a centralised procurement and distribution system which is designed to reduce transaction costs. Within such a system, separate and once-off transactions with scattered smallholders increase transaction costs and lower efficiency (Louw et al. 2007). To qualify as a supplier to large high-value supermarkets, smallholders need to comply with a host of standards, such as organic farming certificates, food quality and safety regulations, and packaging criteria. As a consequence, most smallholders are not able to take advantage of opportunities offered by these agro-food chains.

But localised supermarket chains, in contrast to the above type, often rely on small-scale farmers in close proximity to supply the fresh produce needs of their customers. Louw et al. (2007) report case study evidence of the Thohoyandou SPAR, the largest supermarket in Limpopo, as an example of a success story of the linkages smallholders have managed to forge with a local supermarket in a specific area. Smallholders supply up to 30% of SPAR's fresh vegetable sales, such as cabbages, spinach, carrots and beetroot.

27 Unfortunately, the design of the 2005/06 IES does not enable one to estimate what share of expenditure is directed to particular types of establishments, merely the share of households who generally purchase particular types of items at particular types of establishments.

28 In fact, to suggest that the implications for consumers are mainly positive is more of an in-principle conclusion than an observation; over the period, South African consumers have experienced at least two bouts of rapid food price inflation, and a case could be made that the pervasiveness of supermarkets has aggravated food price inflation rather than attenuated it.

Prices and quality are verbally negotiated when farmers deliver the products to the store, following the inspection of a sample of the produce. Evidence from recent interviews with the SPAR manager revealed wide variations in the numbers of smallholders participating in this arrangement. In 2004, the number of participating smallholders had grown to approximately 23 but then declined to a more recent average of 15 farmers per year. Interest-free loans and training programmes to ensure the supply of a better quality product, provided by SPAR in the earlier period, seem to have dropped from this arrangement.

Smallholders' improved and sustained market access to the opportunities opened by supermarkets turns on the strategies to reduce transaction costs. To lower the transaction costs for both the smallholders and the supermarkets, Louw et al. (2007: 548) advocate strengthening forms of collective action among smallholders to promote equity and competitiveness. More specifically, this should facilitate coordinated efforts to train farmers in product quality and marketing, and to enable farmers to comply with delivery schedules, overcome transport problems, and access cheaper inputs.

## Conclusion

In summary, the global and South African evidence considered in this section shows that smallholders do participate in a variety of farm output markets and actively seek to access larger markets beyond their immediate localities. But the degree to which smallholders participate in and share the benefits of greater access to agro-food markets depends on a combination of factors, such as the policy space, market infrastructure and how agro-food markets work in practice. Concentrating on the South African case, this review has observed that the country's agricultural marketing policy has evolved since 1996 to the point where policy-makers now accept the need for direct interventions to improve access to agricultural output markets for smallholders. Marketing policies that cater for smallholders have an important role to play in reducing the costs to smallholders in selling their outputs through informal markets, supermarkets and regional fresh produce markets. In local informal markets, for instance, smallholders often find their prices undercut by produce that informal traders buy from large-scale commercial farmers. Even if a smallholder is able to

supply a higher-grade product to local informal traders, individual smallholders find it difficult to match the volumes of larger farmers. Supermarket chains, on the other hand, provide a lucrative niche market for smallholders, but these downstream linkages are limited to smallholders that meet product variety and quality standards.

## Technology and smallholders

### Introduction

National and international technology spillovers from public agricultural research and development (R&D) are important to understanding technology development in developing countries (Pardey et al. 2006). These countries have depended on the spillover of technologies from industrialised countries as well as from international agencies such as the Future Harvest Centres of the Consultative Group for International Agricultural Research (CGIAR). As Pardey et al. (2006) point out, it was only in the very last stage of the R&D process, selection and adaptation of technologies, such as new crop varieties, that innovative effort occurred in developing countries. In recent years, the changes in the research emphasis of industrialised countries, along with increased emphasis on intellectual property rights (IPRs) and use of modern biotechnology methods such as genetic modification, indicate a shrinking pool of public R&D technologies (Pardey & Beintema 2001). Simultaneously, the CGIAR is changing its focus and emphasis. Consequently, the reductions in spillovers from these traditional sources of technology underline the need for developing countries to find alternative ways to meet their demands for agricultural technology.

However, under-investment in agricultural research is pervasive and most evident in poorer developing countries. While worldwide public spending on agricultural R&D has increased by 51% since 1980, the industrialised countries spent 56% of the public research and a handful of relatively wealthy developing countries (South Africa, China, India and Brazil) spent almost 50% of the remaining 44% (Pardey & Beintema 2001; Pardey et al. 2006). By 2000, approximately one-third of all agricultural R&D investment worldwide was made by private organisations, especially those providing farm inputs and those involved in agro-processing. More than 90% of this private sector investment was conducted in industrialised countries.

In South Africa, since 1994 there has been a pattern of declining investment in public sector agricultural research, most notably for the Agricultural Research Council (Liebenberg & Kirsten 2003).

These shifts have policy implications for the international CGIAR, similar institutions and the national agricultural R&D systems in less developed countries. These can be centred on the type of research that needs to be done and how such activities are to be financed. Industrial countries are unlikely to continue with their previous research roles, and less developed countries that previously relied on technological spillovers from these countries may no longer be able to do this to the same extent. This change involves three elements (Pardey et al. 2006):

- *The technologies developed in the industrialised countries may no longer be applicable to less developed countries.*
- *The new IPR regime may well make any privately owned technologies that are applicable to developing countries inaccessible.*
- *Any technologies which are relevant and available are likely to require more substantial local R&D and adaptation. This means that local R&D is going to have to be more extensive than previously.*

Following from this, two things become very clear. Firstly, new methods will need to be developed whereby less developed countries can get equitable access and utilise the technologies generated in the industrialised countries. Secondly, many of the less developed countries will have to consider extending their agricultural R&D efforts to encompass more fundamental upstream research.

A review of the literature indicates that in developing countries diverse technologies are being developed and used to differing degrees of success to improve income generation and food security of the rural poor and smallholder farmers alike. While most of these are directly related to agricultural production, some – like alternative sources of energy, and information and communication technologies – are used in agri-processing, the provision of technology information (an alternative form of extension), and to

follow market trends. In this review, we confine ourselves to the production technologies.

### **Farmer-based agro-ecological technology**

Pretty (2001) argues, with support of project evidence, that agro-ecological technologies not only increase productivity but also contribute to more effective use of scarce natural resources such as water, soil reclamation, pest and weed control, and the integration of the entire farming system. Technologies include:

- better harvested and conserved water in drylands and rainfed areas;
- adoption of zero-tillage and the use of diverse crop rotations, green manuring and some herbicides have improved soil organic matter content;
- use of integrated pest management has reduced the use of pesticides and has allowed Bangladeshi farmers to diversify by including fish, shrimps and crabs into their rice farming system. In East Africa, 'push-pull' pest management systems have resulted in 60–70% increases in maize yield;
- in Madagascar, the system of rice intensification (SRI) is an agro-ecological technology that has spread to many African and Asian rice-producing countries, despite initial scientific scepticism. In a challenge to this scepticism, Uphoff et al. (2008) show that the misuse of research data from different sources has been used to illustrate that conventional 'best management practices' fare better than SRI.

Pretty concludes that such technologies lead to sustainable agriculture, reduction in rural poverty and an improvement in rural livelihoods. As a consequence of this evidence, he states that these technologies should receive a greater share of the research budget.

Surveys of smallholder farmers in Peru revealed that farmers preferred alternative agricultural practices, such as agro-ecology, because they optimised labour usage, capital and the use of scarce resources and were accessible even to the poorest farmers (Altieri et al. 1998). Unfortunately, most policy-makers normally overlook these factors regarding the nature of farmers' circumstances and associated decision-making.

They also tend to be ignored by agricultural researchers, although some exceptions occur.

The early ICRISAT (International Crops Research Institute for the Semi Arid Tropics) programme in Burkina Faso made considerable efforts through agronomic and anthropological studies to position the overall research activities in a local smallholder context (Stoop et al. 1982). These smallholder farmers in West Africa practise rain-fed farming. Based on combinations of on-station and on-farm studies, a number of crucial farmer strategies for crop management were identified:

- Early planting (with the first rains in late May/early June), in spite of subsequent early drought risks, was the only option to prolong the cropping season under rain-fed conditions.
- Close matching between crops and different land/soil types (with respect to soil moisture regimes and soil fertility) that occur in fairly regular patterns in the gently rolling landscapes as linked to common toposequences (for example, the most drought-tolerant crops, such as millet, fonio and cowpeas, on the dry uplands and upper slopes; sorghum and maize on moist to wet lower slopes and lowlands; rice on wet/inundated lowlands) (Stoop 1987; van Staveren & Stoop 1985).
- Frequent use of intercrop combinations, often on adjacent and transition land types. For example, maize with rice on lowlands and lower slopes; millet with cowpea on uplands; sorghum with millet on lower slopes; and maize with millet on uplands in higher-rainfall areas.
- Fine-tuning of the above systems through a large selection of local varieties with different growth/maturity cycles (and grain quality characteristics) and therefore adaptation to different planting periods (ranging from very early to late in case of the delayed onset of monsoon rains).

The above strategies are largely ecological and contribute to stabilising production and spreading the labour requirements and risks of both droughts and floods over a short (three to four months) and rather unpredictable rainy season. This illustrates that farmers are optimising their farming systems through their knowledge and

management of natural resources. The literature highlights a number of examples of farmers doing this throughout Africa as well as the various approaches used by researchers and extensionists to support natural resource management.

### **African natural resource management technologies and approaches**

Soil fertility is declining in Africa and failure to replenish it leads to declining output and incomes in agriculture. Old strategies – such as shifting cultivation and long-term fallows – are often impractical, as they become increasingly constrained by population pressure. According to Franzel et al. (2004), two promising responses have emerged. Firstly, planting basins emerged in recent decades in both Zambia and the Sahel. The system involves the following (Franzel et al. 2004):

- dry-season land preparation to avoid peak-season labour bottlenecks and to ensure timely planting with the first rains;
- minimum tillage of only 15% of surface area using grids of 10 000 to 15 000 small planting basins per hectare, which harvest water and focus nutrients in a small area near the plants;
- breaking of hard crusts and plough plans in soils to enable water and root penetration;
- application of organic material and sometimes also small doses of chemical nutrients in the basins immediately adjacent to the plants.

Secondly, improved fallows have been used during the past decade in eastern Zambia and western Kenya. Here farmers introduce rotations of leguminous trees. These are planted for between one and three seasons. They are then removed and crops are planted on the same plots for two to three seasons. Rotation with these nitrogen-fixing trees and the retention of organic material from branches and leaves helps to build up soil fertility. The planting of trees ensures that root channels penetrate the soils. These serve as biological ploughs, facilitating water and root infiltration by subsequent crops (Franzel et al. 2004).

*Both technologies are recent but have attracted widespread interest for a number of reasons:*

- they are environmentally sustainable;
- they reduce the use of purchased inputs, thereby reducing costs;
- they increase farmer yields and reclaim soil fertility.

Reij and Waters-Bayer (2001) report on a number of indigenous or local soil and water conservation technologies, similar to those described above, used in parts of West, Central and East Africa. These follow from the first and second phases of the Indigenous Soil and Water Conservation (ISWC) programme, initiated in the 1990s and largely funded by the Netherlands government. While the first phase concentrated on identifying indigenous or farmer-developed technologies in 15 African countries, the second phase (ISWC 2) was carried out in seven countries during which time researchers, extensionists and farmers collaborated in many instances to jointly develop appropriate new technologies or to improve and disseminate technologies which farmers had developed. The 27 case studies generated in the first phase indicated that many indigenous technologies and practices were being maintained and developed further by farmers. This was in contrast to the many modern SWC techniques that were promoted by development projects in these countries (Reij et al. 1996). This is relevant for technology development as it suggests that farmers are more likely to maintain and further develop those technologies that are in line with their access to resources, derived from their needs, cognisant of their circumstances, and based on their knowledge to a greater or lesser extent.

According to Reij and Waters-Bayer (2001: 6), ISWC 2 adopted a specific approach which "involves training scientists and extensionists in PRA [Participatory Rural Appraisal] and PTD [Participatory Technology Development], identifying farmer innovators and their innovations, networking between farmer innovators, participatory research to develop and validate improved techniques and systems of land husbandry, and disseminating ideas and methods through farmer-to-farmer exchange". The ultimate intention of this programme is to improve local and externally introduced technologies and practices of managing land and water resources. According to Reij and Waters-Bayer (2001), it is the participatory approach that enables this and which makes the programme successful.

Without access to sufficient water and fertile soils, very little can be produced by farmers of any scale. The South African WRC has been a strong supporter of research into water use and related technology development in South Africa from as early as 1994. A number of supported studies aimed at getting a clearer picture of the water use and irrigation requirements of small-scale farmers in South Africa, as well as in developing appropriate systems. De Lange (1994) describes an early assessment of small-scale farmer irrigation practices and specific needs of this sector. Following a participatory analysis of former homeland farmers' practices, recommendations regarding existing practices were formulated and alternative systems were proposed based on resources, terrain and irrigation requirements. At the time a whole range of irrigation technologies were being used by small-scale farmers, including flood irrigation, sprinkler irrigation, and drip/trickle irrigation.

While de Lange acknowledged various indigenous small-scale practices, such as improved flood irrigation, she roundly criticised the introduction of hi-tech (albeit small-scale) systems by extensionists and others. These systems could not be maintained by resource-constrained and remotely situated farmers. De Lange also noted that often small-scale systems involve a mix of conventional and indigenous practices and designs.

The Prolinnova South Africa country programme (Prolinnova-SA) is a network of NGOs, government departments of agriculture and parastatal research institutes that collaborate to promote local innovation in ecologically oriented agriculture and natural resources management by identifying farmers' innovations, including technology development, in order to improve and strengthen these where necessary and appropriate. Since its inception in 2004, Prolinnova-SA – in collaboration with farmers and farmers' organisations – has identified over 30 farmer-developed technologies which have the function of improving farmers' circumstances and/or that of the natural environment (see de Villiers et al. 2005; Letty et al. 2007). These technologies range from water and pasture management innovations through to reclaiming arid land by means of planting pits, and production and grafting innovations. Hart and Vorster (2006) also indicate that many small-scale farmers in South Africa develop their own technologies

based on indigenous knowledge and their access to resources. In a later study, they indicate that there is a need for farmers and researchers to collaborate on technology development based on what farmers know (Hart & Vorster 2007). They also point out that there is a strong local knowledge base to which scientific technology development can contribute and that there are good grounds for a collaborative strategy. An in-depth understanding of social and economic circumstances and relationships is a prerequisite to any technological intervention, be it based on local knowledge or conventional research.

### Conventional agricultural research and technology

Some social movements and lobby groups in the agricultural sector are opposed to the use of conventional agricultural research methods and technology, including plant breeding, such as was used in the Green Revolution. Supporters argue that the indigenous or local knowledge generated by farmers over centuries is most appropriate for poor farmers. These same people are also against poor farmers purchasing improved seed and plant material, inorganic fertilisers, and other agrochemicals. However, the success of the Green Revolution in certain areas and under certain conditions makes these dependency arguments questionable. According to Pinstrup-Andersen (2001), the poor will only escape food insecurity and poverty if they take the risk of integrating into the exchange economy. Modern science and technology is only one of many factors that will determine the extent of the losses and gains the poor experience. Therefore, in instances where the market, policies and practices, etc. are biased against the poor, it is possible that they may well suffer losses and the dependency argument becomes valid. Appropriate policies and institutions are required along with appropriate technologies. As Pinstrup-Andersen (2001:1) states, "Modern technology should be viewed as part of a broader effort to help the poor solve their problems and not as a silver bullet applied in isolation."

Pingali (2001) argues that while conventional research has led to ecological stress in some areas, when applied in other marginal areas it pays off in higher farm yields. He says that this is evidenced by the success of the Green Revolution in certain marginal areas in Asia. He concludes that conventional research will continue to play

a major role in agriculture and that biotechnology will play an important complementary role, rather than supersede conventional research and technology. Irrespective of the technology, it needs to fit the situation – in other words, the agro-ecological, social, economic and policy contexts are strong determinants of appropriateness and usefulness.

### Biotechnology and genetically modified organisms

According to Fransen et al. (2005: 1), the term 'modern biotechnology' can refer to a number of biotechnological techniques, including cloning, gene therapy, and the production of monoclonal antibodies. They understand modern biotechnology in terms of the Cartagena Protocol on Biosafety and therefore as the use of "in vitro nucleic acid techniques, including recombinant deoxyribonucleic acid (rDNA) and direct injection of nucleic acid into cells or organelles; or fusion of cells beyond the taxonomic family, that overcome natural physiological reproductive or recombination barriers and that are not techniques used in traditional breeding and selection" (Secretariat of the CBD 2000, cited in Fransen et al. 2005: 1).<sup>29</sup> The production of a genetically modified organism (GMO) involves the insertion of genetic material using recombinant techniques or by direct injection. Once the transfer of genes or foreign DNA from one plant/crop to another has taken place, the cells or tissues from the plants are cultured in vitro and reconstituted into whole plants. These plants become the source of plant material for future propagation. A transgenic organism is the same as a GMO (in Fransen et al. 2005). The genetic modification of organisms is only one form of biotechnology practised in the world today. Other forms include plant tissue culture, molecular breeding or marker assisted selection and embryo rescue (AfricaBio 2004).

The first GMO, a strawberry plant that used modified strains of bacteria to prevent frost damage, was field-tested in the United States in 1987. The Flavr Savr™ tomato was the first commercialised genetically modified plant and was released in the United States around 1992 (Drew 2002; Huttner 1997). Genetically modified animal feed was first made available on the United States market in 1995. These were glyphosate-tolerant (herbicide tolerant [HT]) soybeans and insect resistant maize (Drew 2002). The United

<sup>29</sup> We suggest that this sentence explains why such techniques are often considered unnatural.

States government has granted the GMO industry permission to commercialise over 50 genetically engineered plants, including those used primarily for human food, animal feed and fibre production (Drew 2002).

Globally, the area planted with genetically modified crops increased from four hectares in 1996 to 44 million hectares in 2001. As James (2000) has pointed out, this is unprecedented and the highest adoption rate of any new technology brought into agriculture. At present the United States and Canada grow 82% of the GM crops worldwide, with Argentina and China accounting for a further 17%, and South Africa and Australia account for most of the remaining 1% (Drew 2002; Ismael et al. 2000; Orton 2003). While a number of crops have been genetically modified for a variety of traits, the two most common traits remain herbicide tolerance and insect resistance, with maize and soybean being the two most widely cultivated of these GM crops (Drew 2002).

HT crops are those that are genetically modified to tolerate specific herbicides, most notably glyphosate and glufosinate ammonium. Predominantly soybean, maize, cotton and canola have been modified to exhibit this trait. The theory is that the farmers can apply specific herbicides to their fields, killing the weeds but not damaging the crop. In a similar vein, insect or pest resistant crops are engineered with a gene from the soil-borne bacterial organism *Bacillus thuringiensis* (*Bt*), giving rise to genetically modified crops such as *Bt* maize and *Bt* cotton – both of which are commercialised in South Africa. This gene gives the plant insecticidal properties, expressing an endotoxin that kills target insect pests such as the maize stalk borer and the cotton bollworm.

According to Orton (2003), these two traits (HT and *Bt*) account for 99% of the commercially grown GM crops. Eight per cent of these crops exhibit both these traits (Orton 2003: 9), that is, they are stacked gene varieties in which the two genes are combined into a single variety, ensuring that it is both HT and pest resistant. Freese has indicated that in the United States the commercial cultivation ratio for HT and *Bt* crops is approximately 5 : 1, with no GM crops reflecting the possible needs of resource-poor smallholders.<sup>30</sup> In other words, there are no commercialised varieties that have properties appropriate

for resource-poor smallholders in developing countries, such as saline or drought tolerance.

While some groups are opposed to the use of modern biotechnology to help poor farmers and consumers solve food and farming constraints, Pinstrup-Andersen (2001) argues that poor Chinese cotton growers are able to produce more cotton with fewer pesticides. This is due to their access to cotton seed containing the *Bt* gene and the fact that they obtained access to it before their competitors.

Juma (2001) argues that genetic modification can definitely help poor farmers and consumers. He argues that while most developments in biotechnology have generally only benefited richer farmers and developed countries, incentives are needed to get the private sector and public research institutes to focus on the requirements of poor farmers and to develop solutions using genetic engineering.

A concern with the current emphasis on herbicide- and pesticide-resistant traits is that the crops have been designed for large-scale, monocropping North American farmers, for use in temperate climates and under stable conditions in which the crop leads a virtually stress-free life. This situation is completely different to the circumstances encountered by resource-poor smallholders in Africa, who eke out an existence on marginal soils in diverse terrains using limited resources and usually not following conventional practices as a result (Stoop & Hart 2005). In essence, current genetic engineering development is largely focused on the needs and circumstances of wealthier farmers.

Orton (2003) draws attention to the fact that a small amount of research is now starting to focus on crops that may address the needs of smallholders in developing countries, including:

- crops that are drought, flood, heavy metal, high acidity or saline tolerant;
- staple foods such as rice and wheat which produce higher and quicker yields without extra water, nutrients or light;
- crops resistant to developing country pests, bacteria and viruses;
- crops that have slower ripening traits when harvested, stored or shipped;

<sup>30</sup> Personal communication, Freese Science Policy Analyst with the Center for Food Safety, US, 2005.

- crops with enhanced nutritional content ('functional foods') such as Golden Rice.<sup>31</sup>

But Orton notes that often the focus in developing countries is on export-oriented crops rather than on crops which are consumed daily by African households. She identifies tropical and subtropical export crops such as papaya, bananas and tomatoes.

However, genetic engineering is a new and extremely complex science and the chances of each gene/trait explored in the research phase reaching the market is about 1 in 250 (Orton 2003). The likelihood of these crops being used by the majority of smallholders in developing countries who are resource-poor is very low, as they are unlikely to be able to afford this technology, especially given the manner in which it is currently transferred (Thirtle et al. 2003) and the associated costs and intellectual property obligations. Similarly, GM crops for the specific needs of resource-poor smallholders are not a commercial priority for the transnational companies that develop and market GM technology. They are more interested in increasing the kinds of *Bt* and HT crops that can be used by the relatively better-off farmers in developing and developed countries (Orton 2003). According to Orton (2003: 16), the current private sector biotechnology strategy has some serious potential consequences:

*Because the private sector biotechnology favours the breeding of varieties that are simplified and uniform, and because the little research that it has done on developing country crops has so far focused on high-cash-yielding export crops, the adoption of the GM crops has the potential to exacerbate inequalities between large and small farms.*

## Biotechnology and GMOs in Africa

In July 2002, Zambia made world headlines when its government ordered the United Nations World Food Programme (WFP) to take back over 35 000 tons of food aid – at a time when 3 million Zambians faced hunger because of a severe drought in the southern African region. Part of the WFP food consignment contained GM maize from the United States. Malawi and Zimbabwe also took exception to this genetically modified food aid (ISIM 2004). The Zambian government argued that this consignment of GM maize might contaminate non-GM Zambian farms and threaten agricultural exports. In 2004,

Zambia was still upholding its ban on milled and unmilled GM products (Makanya 2004). While a Bill concerning the regulation of GMOs has gone before the Zambian Parliament, the outcome is uncertain.

Other countries in southern Africa have reacted differently to the presence of genetically modified food crops. The government of Malawi has banned all unmilled GM crops since 2002 (Makanya 2004). It is felt that this will prevent GM crops, which may have the potential to do so, from contaminating non-GM crops. Zimbabwe has a ban on the importation of unmilled GM crops and does not carry out any related research. In April 2004, Angola took up a similar stance, despite criticism from the WFP (Makanya 2004). South Africa, on the other hand, seems to have openly embraced GM crops. The public and private sectors are carrying out a number of trials on various transgenic crops (such as genetically modified eucalyptus, canola, potato, cotton, soybean, sugar cane and strawberries) and have already commercialised transgenic white and yellow maize, soybean and cotton (AfricaBio 2004). South African research institutions are field-testing potato with the view to commercialising. This country is considered a leader in genetic engineering on the African continent and has strong infrastructure for genetic engineering and research in comparison to the rest of Africa (AfricaBio 2004).

In Africa only two countries have actually 'commercialised' GM crops: South Africa and Egypt. Kenya, while not at the same level as these two countries, is further ahead of other African countries with regards to research on genetically modified crops. These three countries have their own research programmes based on the United States-developed technologies of HT and pest resistance. While Algeria introduced a ban in 2000 on the importation and utilisation of GM plant material, other African countries such as Nigeria, Senegal, Mali and Burkina Faso have received or are trying to get money for GM research and in some instances have field-tested *Bt* cotton.

The current United States government, multinational corporations such as Syngenta and Monsanto, and the various pro-GM lobby groups make a number of general claims about GM crops:

- they will conserve and sustain the environment due to lower applications of pesticides;

31 In order to enjoy the benefits of increased Vitamin A, induced into Golden Rice by genetic engineering, consumers must eat 7 kg of rice a day. Despite this, they will be unable to absorb beta carotene without additional inputs of oils derived from green leafy vegetables and a diverse diet (ISIS-TWN 2005; BIOTHA1 et al. 2001). As Orton (2003) emphasises, Vitamin A deficiency is not because rice does not contain sufficient Vitamin A, rather, it is a result of people being so poor that their diet is reduced to little more than rice. A diet rich in diverse foodstuffs would be a better solution. The Golden Rice Humanitarian Project is producing new lines with higher beta carotene content. It aims at providing the recommended daily allowance of Vitamin A in approximately 100–200 grams of rice, the daily consumption of rice by children in rice-based societies (GRHB 2005).

- they produce higher yields as a result of less pest damage;
- they reduce pre- and post-harvest fungal damage to such crops as there are fewer insects which can bring diseased organisms into the crop – a valuable characteristic of *Bt* maize and *Bt* cotton; and
- these crops will therefore be a means for resource-poor farmer to overcome poverty and hunger.

The results of a number of studies in both Kenya and South Africa, each of varied duration and often focusing on different issues, have far from supported these claims (de Grassi 2003; Pschorn-Strauss 2005; Witt et al. 2006). In South Africa, the Makhathini Flats cotton production has often been cited as a transgenic crop success, but numerous researchers have pointed out that its success is heavily qualified (Gouse et al. 2003; Gouse et al. 2005; Ismael et al. 2000; Ismael et al. 2002; Thirtle et al. 2003), with others indicating that it does not benefit the poorest farmers (Witt et al. 2006). In their study on the benefits of *Bt* cotton in this area, Gouse et al. (2003) argue that the technical efficiency of farmers is important for adoption and subsequent benefits. The more technically efficient the farmers, the greater their likelihood of adopting this technology and the greater their returns. It is clear from this study that large-scale producers enjoyed 40% better yields per hectare than their small-scale counterparts under dryland conditions. Other studies among smallholder farmers in developing countries have been carried out in Argentina, India, Mexico and China. Even here the results have often been far from supportive of the claims of the pro-GM lobby, whose research is largely in the hands of the transnational companies standing to benefit from the sales of GM crops and is seldom peer reviewed (Tripp 1999).

The current interest in GM crops (for both human food and animal feed) is largely related to directly feeding an increasing world population. Yan and Kerr (2002) forecast that on the basis of the current population growth rate (1.4% per annum), the world population will increase from the 2002 level of around 6 billion to between 9 and 12 billion in the next 50 years. This increase will predominantly occur in developing countries. They go on to say that providing food to a population this size will require an enormous increase in agricultural production. Endo and Boutrif (2002) suggest that the world is already

reaching critical thresholds of arable land, water supply and yield ceilings imposed by plant physiology. While some stress that biotechnology, and specifically genetic engineering, will achieve food security, others such as Endo and Boutrif caution that this is only possible if genetic engineering is realistically integrated with other agricultural technologies. Endo and Boutrif suggest that it is possible that the use of GM crops might enable countries that do not grow enough food to do so by achieving higher yields on marginal lands. Of course, this assumes that those living on marginal lands are able to afford this new and much more expensive technology (cf. Ismael et al. 2000). In a study of smallholder maize producers adopting *Bt* white maize in KwaZulu-Natal, Gouse et al. (2007) noted that yields were not increased per kilogram of seed and farmers were in fact made 12% less efficient. However, this study was only over one particularly dry season. The study also noted that the adoption of minimum tillage to reduce erosion increased the yields of non-adopters by 12% and efficiency by 11%. This suggests that transgenic biotechnology alone is not the magic cure or silver bullet for reducing poverty and eliminating world hunger. As Tripp (1999: 8–9) argues:

*It is true that any increase in food output may potentially lead to lowering global food prices. But it is disingenuous to argue that a technology aimed at US soybean farmers is part of a strategy to address poverty and hunger in the South. National policies need to ensure that the poor have the resources to acquire their food (imported or domestically produced), and that new technology is used to promote equitable agriculture.*

### **Ethical considerations in the use of genetic engineering biotechnology**

Genetic modification of foods, as well as other forms of biotechnology, affects food security through the impact it has on crop production potential, crop choices and food sovereignty, but it also has indirect impacts that rest on ethical and political issues. It is not possible to fully explore all the ethical dimensions related to GM foods in this report. However, a few issues that give some insight into the complexity of the issue and its impact on food security are profiled.

A cornerstone of the ethical debates rests on issues around property rights and control of genetic resources, which risk falling into the hands

of powerful international organisations. Related to this are the uncertain long-term impacts that GM foods have on both the characteristics of local gene pools and their 'ownership' (e.g. Cleveland 1991; Odame et al. 2002). The picture arising from the extensive debate about the environmental pros and cons of transgenic plants is generally blurred. The primary issue is that via cross-pollination the GM varieties will 'naturally' replace the local varieties and farmers will have no recourse to non-genetically modified or original/traditional varieties. But here the debate gets really heated, for by virtue of cross-pollination and replacement, and existing IPR legislation in the United States, the supply of seed/plant material would be in the hands of a few multinational seed and agrochemical companies.

The ownership of GM strains has implications for the cost of agricultural production. In terms of current plant breeders' rights, farmers are expected to pay royalties for their use of many non-genetically modified crops. However, this practice is not enforced as stringently as has happened with GM crops such as soybean and canola in the United States and Canada. Farmers do their own breeding of non-GM crops and most African, Asian and South American smallholders save/store some seed for planting in the next seasons, often only replacing with new seed every third or fourth season. In essence, the expectancy and demand to pay royalties is not new; what is new is the fact that for many staple food crops, such as maize, the initial purchase price will be higher, in order to overcome the cost of the private sector research. In addition, many non-GM varieties will soon no longer be produced (this happened with regard to the availability of cotton varieties in the Makhathini Flats in KwaZulu-Natal within three years following the introduction of *Bt* cotton).

Similarly, the initial higher cost of seed or planting material would be a problem for most African smallholder farmers, who do not have the money to regularly buy new seed and planting material of conventional crops. Despite the lack of financial and other resources typically required for conventional industrial farming systems among poor farmers, GMO proponents often cite the many advantages, listed above, that resource-poor farmers would have if they adopted GM crops.

The introduction of high-yielding varieties of maize in southern Africa is a further example of

biotechnology which has been viewed by some researchers as controversial. One issue is that indigenous agriculture and crop cultivars may be discounted, and with it locally adapted indigenous varieties which have a high degree of intraspecific variation (i.e. many different varieties occurring under the same species) and thus have the genetic pool to adapt to changing environmental conditions (Cleveland 1991). Indigenous cultivars have also been found in some cases to store better than more highly bred varieties, to require fewer agricultural inputs, and to encourage mixed and intercropping, and thus greater nutritional diversity (Cleveland 1991; Heisey & Edmeades 1999).

The assumption that Africa, and indeed South Africa, is the ideal environment for biotechnology in the form of transgenic crops is ill-founded. This is partly because the suitability of transgenic crops for smallholder, developing farmers is seldom considered in the light of locally available varieties, resource constraints, agro-ecological diversity, local needs and preferences, and other social and economic issues (de Grassi 2003; Scoones 2002, 2004; Witt et al. 2006).

These contentions and debates leave an unclear picture of the impacts of biotechnology on food security in South Africa into the future. The contentions themselves have had direct impacts; for example, during the 2002/03 food crisis, the GM controversy was enough to cause significant delays in supply, higher costs of transfer and an overall decrease in food aid deliveries in many southern African countries, although at the onset of the crisis only South Africa had a clear policy on importing GM commodities, and only Zambia had completely banned GM food aid (Mano et al. 2003).

Although far from comprising a comprehensive list, the following issues related to GM food are pertinent areas of concern needing investigation:

- The impacts of crop genes and crop varieties on health and the environment require more research.
- Farming with transgenic crops is expensive and savings are most likely to be felt only among large-scale industrialised producers but not by smallholders and agrarian households (FAO 2004). More research is needed to determine the direct benefits as well as possible drawbacks of transgenic crops.

- There is an absence (or weakness) of a social science focus in the development and implementation of crop varieties for both conventionally bred and transgenic varieties (FAO 2004).
- Some GM crops could reduce labour requirements. While this might be beneficial for some parts of the world, it may well be socially and economically detrimental in other parts. The impact of these crops may be to create inequity and reduce the need for certain types of labour usually performed by the poor, thereby reducing their livelihood opportunities (Fransen et al. 2005).

### **Agricultural technology development: the way forward in developing countries**

While agriculture is often considered to be the driver and primary contributor to rural development, Tripp (2001) suggests that this is strongly dependent on the generation and delivery of new agricultural technology. He argues that despite the increasing calls by the Gates Foundation and others for a new Green Revolution aimed at small farmers, future policy will need to differentiate very clearly between the requirements of emerging commercial farmers and semi-subsistence farmers, many of whom are part-time farmers or engage cyclically in agriculture. While the former group engages in global commodity chains and requires technology and support to do this, the latter group requires simple, cost-effective and often labour-saving technology. Primarily targeted at the first group, new technologies such as biotechnologies and transgenic crops will require new management skills. As a result, the education levels of farmers will need to be boosted, especially as farmers engage in more sophisticated input and output markets. Similarly, the existing extension services will need to improve – like the rural education systems, they are inadequate for the future. Tripp also argues that an examination of human capital in farming may well indicate that, given the diversity of rural households, development and delivery of technology is not a guaranteed answer to rural development. Some households may well need support to enable them to exit from agriculture. Others see agriculture as a safety net for their diverse livelihood portfolios. Their prevalence and their poverty require that attention must be paid to technologies that improve efficiency and protect the natural resources over which they

have stewardship. Awareness of the diversity within the smallholder sector is vital and technology needs to be developed and adjusted to the differences in the skills, resources and objectives of rural households that engage in some form of agriculture.

Meinzen-Dick et al. (2004) point out that until recently poverty reduction was a secondary goal of agricultural research, and not clearly understood. The historical approach was to increase food supplies and reduce food prices. While this benefited some of the poor, others did not share in these benefits and the indigent were actually negatively affected (Meinzen-Dick et al. 2004). In essence, their call is for a strengthened ability to identify and measure poverty if agricultural research is going to help in its reduction. As they suggest (Meinzen-Dick et al. 2004), this requires the following:

- Measures must go beyond those usually focused on income and nutrition.
- Assessments must include the different effects of agricultural research on welfare (including vulnerability, power, and access to institutions), which cannot be easily measured using standard indicators.
- Integrated qualitative and quantitative methods are required to generate good data, to be used in conjunction with social and economic analyses.

Furthermore, assessments are required which look very carefully at causation; include a full portfolio of impacts; adopt a livelihood framework that includes issues of culture, power and experience; and are multidisciplinary, involving practitioners from all scientific disciplines, including the social sciences.

## **Rainwater harvesting**

### **Introduction**

The aim of rainwater harvesting is to overcome the unpredictability and unreliability of rainfall by slowing down, catching, concentrating and storing as much as possible in soil reservoirs, water-holding tanks or dams for subsequent use. Studies of working cases of soil conservation, irrigation and rainwater harvesting show that they have different modes of intervention, with rainwater harvesting being characterised by themes of productive use of water, opportunis-

tic collection, low implementation cost, stepwise expansion and, importantly, reduction of risk. Differentiation between the different approaches of soil conservation, irrigation and rainwater harvesting from a developmental perspective is then important.

Simply stated, irrigation is the human intervention to apply water to crops from a stored or running body of water. Soil conservation has as its primary objective the limitation of all forms of erosion, of which a secondary benefit is additional capacity for soil-water storage. In the case where rainfall run-off is concentrated through channelling or some other method, and then encouraged to infiltrate into the soil-water reservoir, this is clearly rainwater harvesting and not irrigation or soil conservation, although soil conservation may be a secondary positive benefit of the infield earthworks involved. Where rainfall run-off is collected (from a roof, road, field trench, drainage gully) and stored in a holding reservoir for subsequent use, there is overlap with irrigation. This stored water is later applied to the crop as an irrigation activity, usually supplementary to rainfall and often in conjunction with other techniques such as water harvesting (direct infiltration), mulching or grey water re-use.

Pragmatism suggests that the defining element of water harvesting is more than that linked to run-off, storage and application technology considerations. Rainwater harvesting as a working concept has added characteristics, including low cost, localised scale, manual construction and risk reduction, and is often developed by

and attractive to resource-poor farmers. This is likely due to the relative ease of stepwise initiation and expansion of the water harvesting system. While the above is generally true, some water harvesting systems are large in scale, notably flood-spate water harvesting, but this is the exception rather than the rule. Arguably more useful than an undisputed definition is the practical application of a classification system which, when used with existing working definitions, adequately defines the systems under discussion.

### Classification of rainwater harvesting systems used in South Africa

A classification system for rainwater harvesting and catchment systems used (or usable) in South Africa has been proposed by Denison and Wotshela (2008), based on a review of international and South African descriptions and classifications. This compilation and modification of various documented categorisations was based on current South African field practice and terminology. In particular, it combines the work of Oweis et al. (2004), the Food and Agricultural Organisation (FAO 2003), and Botha et al. (2003), and is informed by original fieldwork and the review carried out by Denison and Wotshela.

Any system, including mixed systems (source, use), can be described using three simple descriptors: scale, reservoir type (if any) and soil-water storage type (if any). The scale definition is shown in Table 3.3 and the classification is shown in Figure 3.1.

The use or purpose of water can be added in the case where water is stored in tanks or reservoirs (i.e. domestic, mixed-use, supplementary irriga-

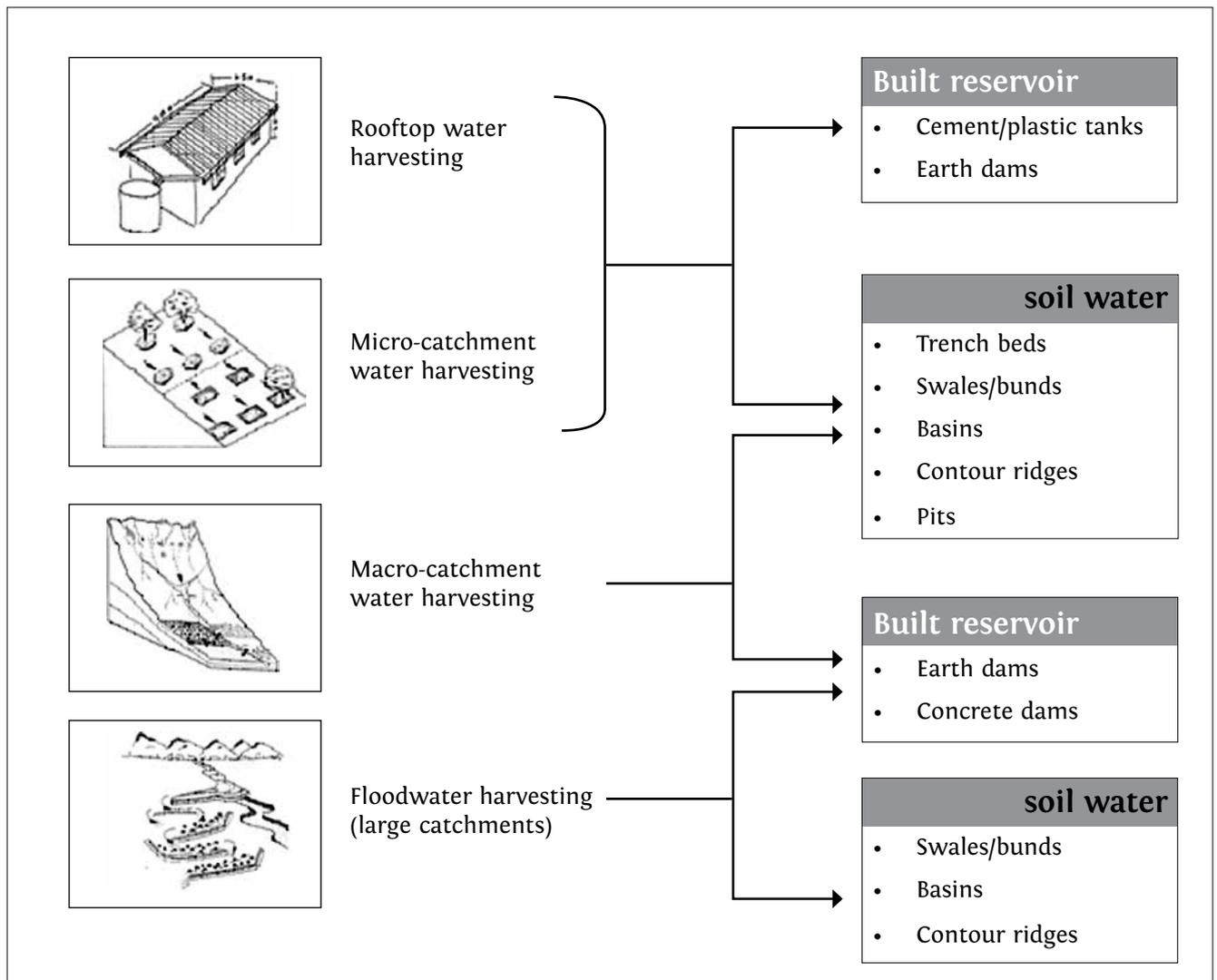
**Table 3.3: Ratio of catchment and field size and flow type for rainwater harvesting and catchment systems**

Type of WH	Kind of flow	Annual rainfall	Treatment of catchment	Size 	Ratio 
Micro catchment	sheet and rill flow	> 200 – < 700 mm	treated or untreated	– 1000 m	1:1–10:1
Macro catchment	turbulent run-off + channel flow	> 300 mm	treated or untreated	1000 m – 200 ha	10:1–100:1
Floodwater harvesting	floodwater	> 150 mm	untreated	200 ha and above	100:1–10,000:1

Source: modified from FAO (2003)

Note: WH = water harvesting

**Figure 3.1: Categorisation of water harvesting methods (read with Table 3.3)**



Source: Denison & Wotshela 2008, page 18

tion), but is implicit, when stored in the soil-water reservoir, as being for plant production.

### Relevance of rainwater harvesting to smallholder farming

The main benefits of rainwater harvesting in relation to smallholder farming are that the methods can be used to bring non-productive or marginal areas, which are limited by rainfall, into production and can reduce the risk of crop failure. Smallholders are characteristically resource-poor and risk-sensitive and are therefore more likely to adopt techniques that have lower initial costs and that reduce the risk of crop failure.

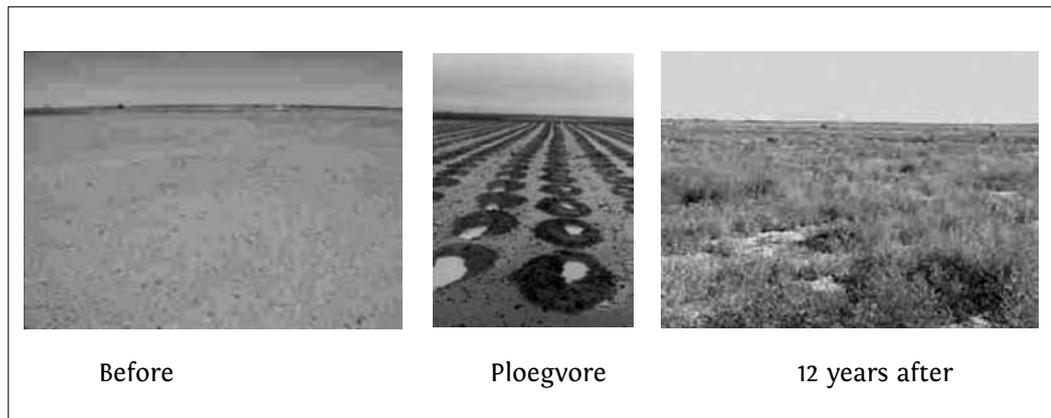
The intrinsic value of rainwater harvesting for smallholders is that in most of the techniques it can be started at a very small scale and then expanded and modified, based on experience

and experimentation, to increasingly larger scales. This is fundamentally different from irrigation development, for example, which also addresses the risk issue of unreliable rainfall, but where capital cost and unit size demand a big-bang approach to the whole enterprise. The potential application of rainwater harvesting for smallholder farmers in relation to pastures, field crops and home gardens is well illustrated by the summary examples presented below.

### Relevant technical methods in practice in South Africa

There are many sites where rainwater harvesting is practised across South Africa, but the technical nature of the practices can be reduced to six or eight, depending on where one draws the line of definition on the spectrum of techniques.

**Figure 3.2: Impact of ploegvore on degraded Greater Karoo lands**



Source: Denison and Wotshela 2008, page 35

Some of these techniques have historical and indigenous origins while others are the result of contemporary development initiatives. This summary is intended to provide an overview of four technical approaches which are currently practised in South Africa in relation to crop and pasture production, and which seem likely to have application to contemporary smallholder development initiatives. Examples of rooftop rainwater harvesting, which plays a key role in people's access to water for multiple uses, have not been covered as these are widespread and are considered common knowledge. The summary draws mainly on the review of Denison and Wotshela (2008) but, where appropriate, references additional authors.

#### ***Pitting or 'ploegvore': grazing improvement in arid lands***

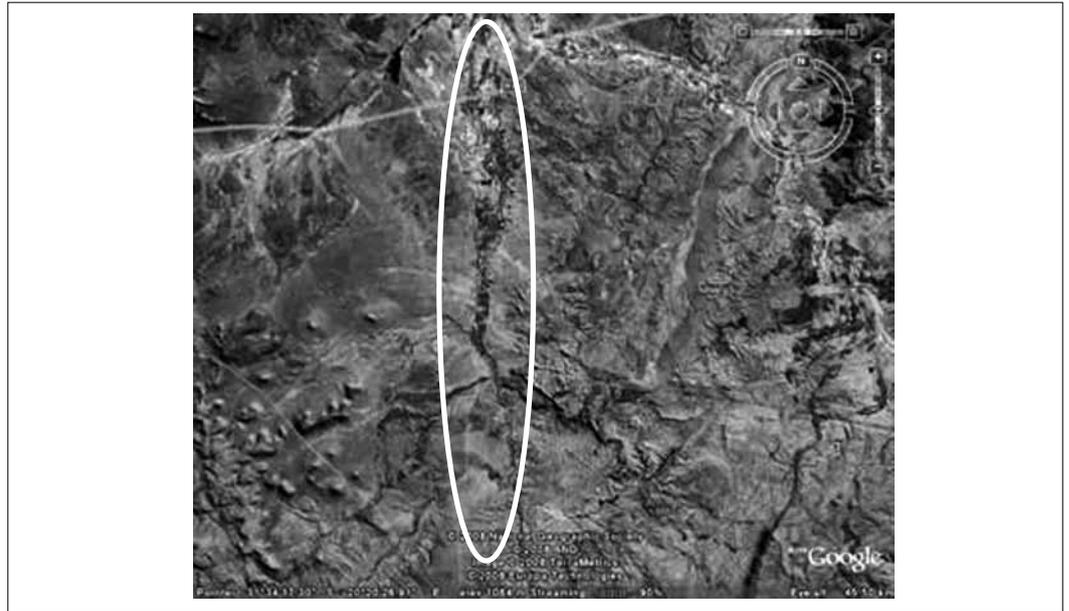
The arid areas of the Northern Cape have between 120 and 170 mm of rainfall per annum. It is unreliable to the extent that in some years no rain falls at all. The economy relies on extensive sheep farming on these arid lands which have low carrying capacities, typically some 50 hectares per small livestock unit. Interventions in these desert flatlands using 'pitting', locally known as 'ploegvore', initiated by the Department of Agriculture's Soil Conservation Programme in the 1970s, have been demonstrated to improve carrying capacities to 20 hectares per small livestock unit. This method is a micro-catchment approach but is successfully applied to thousands of hectares of grazing land. Photographs of the method and the outcomes are shown in Figure 3.2.

The success of the technique requires careful selection of the pitting tool, and selection of appropriate lands based on soil type.

#### ***Floodwater harvesting or 'saaidamme': pastures and crops***

In the Calvinia area on the border of the Northern and Western Cape, a different, rather more dramatic method of floodwater harvesting, locally called 'saaidamme', is found. Here, infrequent but major annual or biannual floods that result from downpours in the Roggeveld Mountains 120 kilometres distant are diverted in volumes of 1000 to 8000 litres per second into a series of large flat fields. The fields, or saaidamme, are typically 1 to 30 hectares in size, but larger cases of 100 hectares are also found. These are surrounded by a 1.5-metre-high earth wall, much like an earth-dam wall, and the encircled flat fields are typically planted with lucerne or, on occasion, are fallow and planted after the flood with vegetables. The water is impounded at a 0.5 to 1 metre depth for 12 to 72 hours, depending on temperature and crop type. The water infiltrates deep into the soil profile and is then released, either into other saaidamme or back into the river. Deep-rooted crops such as lucerne seem to benefit most, but successful vegetable production is routine based on a single inundation. An estimated 35 000 hectares of lucerne and vegetable production, both for stock feed and reportedly producing 95% of South Africa's lucerne seed, is totally reliant on this form of rainwater harvesting. Figure 3.3 shows a satellite image of the green strip of saaidamme in this arid landscape.

**Figure 3.3: Ribbon of saaidamme along the Fish River, Northern Cape**



Source: Denison and Wotshela 2008, page 31.

This technique, while used at a large scale by the large numbers of farmers in this area, can be used at a smaller scale, by harvesting water from koppies, hillsides, gullies or roads, and concentrating it onto contoured fields or fields with level basins. The technique of flood diversion and field inundation remains the same, but the 'engineering' and earthworks are on a smaller and therefore more manageable scale for an individual or group of smallholders.

***Infield rainwater harvesting or 'matamo'***

The third example illustrates the potential value of rainwater harvesting at a field or homestead scale. This method was introduced into the ThabaNchu area in the Free State by the Agricultural Research Council and is called 'matamo' by the local Sesotho-speaking farmers. The area is marginal for rain-fed maize production, with 550 to 650 mm of rainfall per annum. The intervention has focused on home food plots, typically 30 by 30 metres in size, but can equally be applied at a larger-field scale. The approach is to construct contour ridges spaced three metres apart. Crops are planted on either side of the contour ridge and water is harvested off a bare two metre strip upslope of the contour ridge. Particularly relevant to smallholder considerations is the socio-economic impact reported by Kundhlande et al. (2004), where the approach has resulted in substantially reduced input costs per unit area,

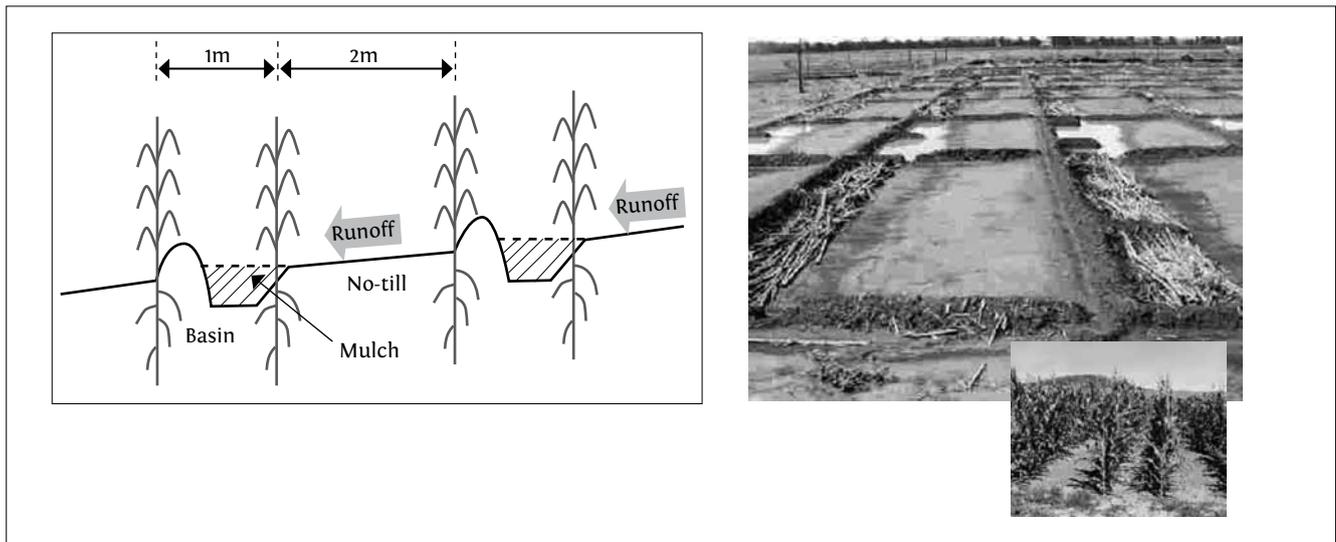
higher yields (as a result of more water availability, better plant health, and improved extension) and, perhaps most relevant, a reduction of risk of crop failure by an estimated eight times.

Figure 3.4 shows the two distinct areas that form the basis of the system, namely the collection basin (two metres wide) and the planting area on the contour ridge (one metre wide). Mulch in the basins, using maize stalks, plastic or stones, can be used to reduce evaporation.

***Trench-bed gardening (across South Africa)***

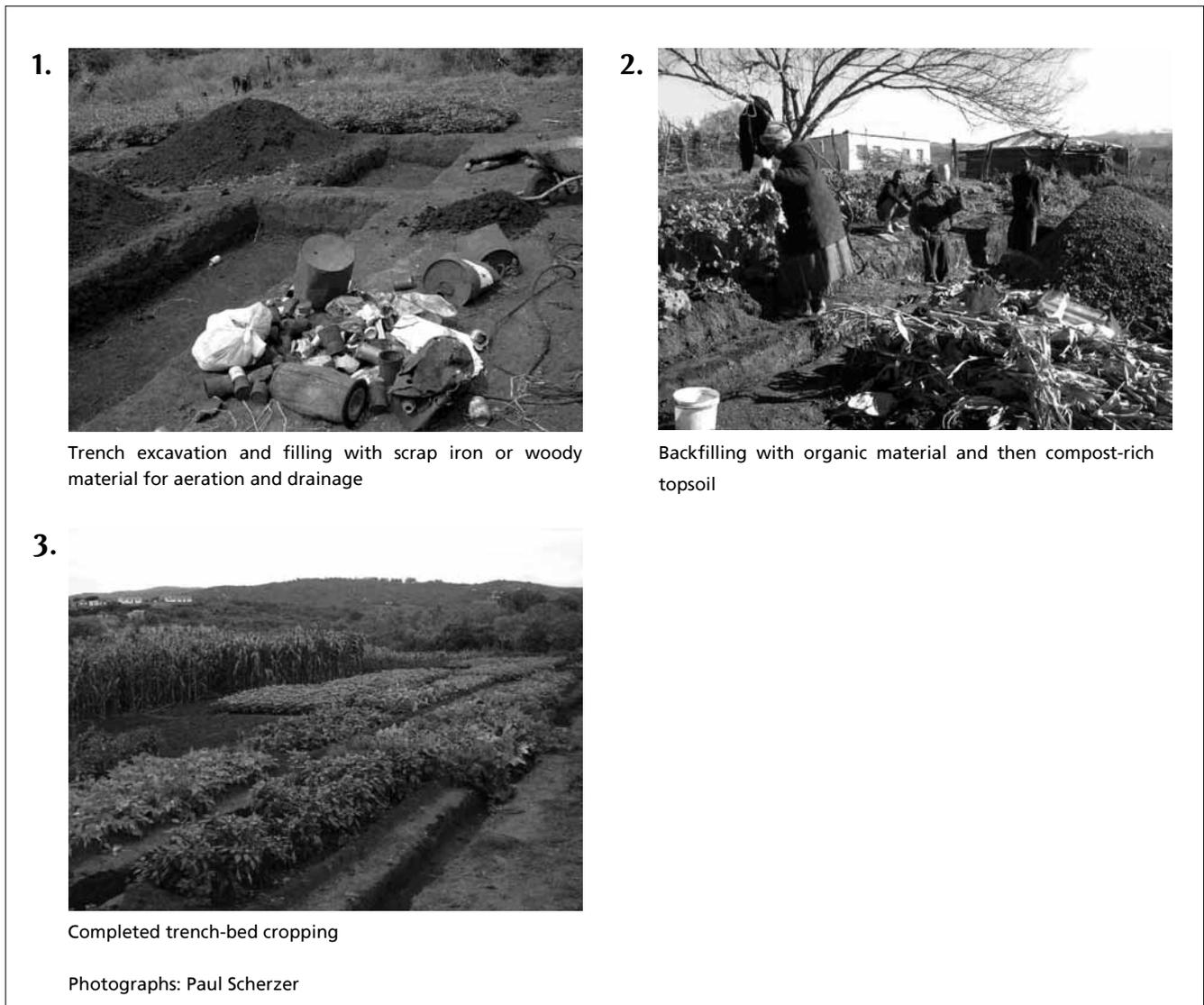
Trench-bed gardening as it is increasingly practised in South Africa today was developed by Robert Mazibuko in the 1950s and 1960s in the Valley of a Thousand Hills in KwaZulu-Natal. This unique system was inspired by, and effectively replicates, the functioning of wetlands by creating soils which have very high moisture-holding capacity, are soft and loamy, and have high fertility (Bloch 1996, in Auerbach 2003). Auerbach explains that the trench system is made by removing the soil from the bed (usually one metre wide, two metres to three metres long and one metre deep). The topsoil is separated from the subsoil and mixed with manure or compost. Organic material (grass, maize stalks, compost) is placed in a thick layer in the bottom of the trench and the soil is returned, topped by the

**Figure 3.4: Infield rainwater harvesting run-off and planting areas**



Source: Botha et al. (2003)

**Figure 3.5: Trench-bed process**



manure-rich topsoil which is mounded above the ground level. Figure 3.5 shows the stepwise development of the beds.

In the widespread application of this method by a range of organisations (notably the Department of Water Affairs and Forestry's [DWAF's] Water Harvesting Pilot Programme), the trench-bed approach has been combined with two other methods of water harvesting, as developed initially by Matshepo Khumbane. The first is the water from surfaces adjacent to the garden being fed into the beds by stormwater feeder channels. The second is construction of small storage reservoirs (approximately 30 000 litres) for water collection from ground surface run-off and rooftops. This stored water is used in the dry season, augmented by grey water from the homestead. This combination of methods – trenches plus micro catchment direct to soil reservoir plus micro or macro catchment to 30 000-litre water-storage reservoirs – seems to provide the necessary resilience for food plots to survive the generally dry winters in South Africa. The combined approach has seen increasing uptake, in various forms, in food production programmes across South Africa and presents an opportunity for food producers farming at a small scale.

### **Funding sources for rainwater harvesting**

Rainwater harvesting has received substantial research and experimentation funding from the WRC over the last eight years, with the involvement of the University of Free State, University of Fort Hare, University of Pretoria and private sector research companies and NGOs. Initiatives have moved from experimentation with technical approaches (Botha et al. 2003; Hensley et al. 2000; Kundhlande et al. 2004) to dissemination of knowledge and development of curricula material for universities and agricultural colleges (two major assignments are currently under way). Accordingly, in the past five years, rainwater harvesting has received steadily increasing exposure in the national discourse around agricultural development and water resource management.

However, this increased awareness has not yet translated into embedded policies or programmes, whether those of water affairs or agriculture, although the DWAF Subsidy Policy for Resource Poor Farmers of 2004 has recently been used to fund a water harvesting pilot project in-

volving 80 homesteads. Departmental mandate issues around responsibility for rainwater harvesting (DWAF) and food production elements (other departments) have been extensively debated and remain a central issue. Some DWAF officials insist that DWAF's mandate ends at the point of providing the water-related components and that the agricultural development is either the responsibility of the Department of Agriculture, the Department of Health or the Department of Social Development. Others within DWAF argue convincingly that the rainwater harvesting elements of water and crop production are one and the same in practice. The logic is that the development process of food production and rainwater harvesting cannot be compartmentalised and that the whole production system is at high risk of failure when addressed as separate initiatives – one technical and water related, and another agricultural and crop related.

In October 2008, new regulations were promulgated. The current policy and regulations provide for minimal funding, amounting to R5000 per household, against the experience of the pilot project which found tank costs in the region of R15 000 to R26 000. The facilitation, community mobilisation and food-production elements cost an additional 50% of these tank construction costs, per household. The gap between available funding (R5000) and what is required per household (R38 000) is a major challenge. This calls for collaborative funding from other sources, or requires ministerial approval for greater funding to be allocated per household (the latter being the mechanism for the past and current phases of the DWAF pilot programmes), or the development of scalable implementation approaches that are simply not as costly. The intergovernmental mandate and cooperation debates remain an ongoing challenge, but have been sufficiently resolved so that DWAF's Pilot Programme Expansion Phase is moving forward once again, in cooperation with the Department of Agriculture and the Independent Development Trust. This is currently the main government initiative around rainwater harvesting implementation. Besides the government, a number of NGOs are actively involved in developing techniques and disseminating knowledge and, to some extent, funding. These are mainly agricultural development and multiple water-use activities involving water collection for domestic use, animals and crops.

# Chapter 4: The ‘scan’

## Introduction

One of the research activities conducted as part of this study was a ‘scan’ of successful smallholders and smallholder schemes. This comprised on the one hand inputs from team members based on their own work and experience and, on the other, a telephonic survey of provincial agriculture departments, in which they were requested to describe instances of ‘successful smallholders’ in their respective provinces, comprising on the one hand inputs from team members based on their own work and experience and, on the other, a telephonic survey of provincial agriculture departments, in which they were requested to describe instances of ‘successful smallholders’ in their respective provinces. Both components together yielded a total of 61 brief descriptions. Although the scan was originally envisaged as an intermediate step for the purpose of selecting the in-depth case studies, it became clear during the course of the study that it represented a valuable body of information in its own right; what it lacks in depth, it gains in number and diversity.

The purpose of this chapter, therefore, is to summarise some of the main themes emerging from the scan. For this purpose, the smallholder instances are grouped broadly into four groups: agricultural land reform, irrigation schemes, individual/emerging farmers, and food/semi-subsistence farming. However, in some cases the instances showed characteristics of more than one group. The discussion that follows highlights three main themes: success factors, nature of support received, and challenges.

## Land reform projects

### Background

Land reform projects comprise farms which were acquired through land reform, including restitution projects and both older (SLAG) and newer (LRAD) redistribution projects. The majority of the projects are organised formally as communal property associations; however, in most of the projects a significant proportion of the initial beneficiaries has dropped out of the group. In many instances, there is evidence of considerable effort devoted to enterprise and project

planning. The holdings are large portions of land relative to those of the typical resource-poor smallholder farmer in South Africa.

### Agricultural enterprises

Agricultural enterprises across these projects include arable, livestock and mixed farming. The majority of the projects are commercially oriented and use/apply conventional commercial production practices. One exception is the Munzhedzi ‘project’<sup>33</sup> in Limpopo, where current land use appears to reflect a stronger demand for residential land than for agriculture.

### Success factors

Most of the successful projects have received significant support from municipalities and/or provincial departments of agriculture. The ability to access markets, whether local or non-local, formal or informal, plays an important role in the success of the projects. Formal market access includes access to agro-processors (e.g. atchar factories) and fresh produce markets (e.g. the JFPM), while informal markets include roadside stalls and informal bakkie traders.

In some instances, mentorship and/or farm management partnerships with more established commercial farmers play an important role in the success of the projects. Another important success factor is adequate farm infrastructure, whether this is the state in which the property was acquired or is achieved by means of rehabilitation.

### Support provided

Various forms of support were provided to the beneficiaries of the projects. Financial support in the form of CASP or other grants plays a role, as does agricultural extension from the provincial agriculture departments. Skills training and strategic partnerships with nearby commercial farmers are some of the other types of support afforded to beneficiaries.

### Challenges

Notwithstanding the fact that projects were selected for the scan on the basis that they func-

<sup>33</sup> Munzhedzi was selected for an in-depth case study, which reveals that although Munzhedzi is a restitution project in formal terms, its development was characterised by a gross deviation from the project plan, in that most of the 931 households who presently reside there are not in fact claimant households.

tioned reasonably well, a number of them faced major challenges. However, it is difficult to identify the root cause on the basis of brief descriptions: for some projects, it would appear that poor infrastructure was a concern; for others, beneficiaries' lack of experience and appropriate skills seemed to be the main problem. The number of beneficiaries tended to decline in relation to the number of problems experienced – the lack of reward may have led some members to lose interest. While this could indicate that the project land was insufficient to support the original number of beneficiaries to begin with, it could also point to the fact that the project design was inappropriate to the nature of the group, or that it takes projects a certain amount of time to establish themselves, which for some members was too long.

The other challenges faced by the land reform projects can be said to be generic problems faced by smallholder farmers. These include difficulties related to marketing as a result of the poor quality of the products or inability to access bigger and more formal markets. Furthermore, some projects have inadequate resources to expand and/or diversify their production, whether these are human, financial or physical resources. There is also an expressed view around the importance of good-quality agricultural extension services and support, as well as the need to include other relevant stakeholders.

## Smallholder irrigation schemes

### Background

Smallholder irrigation schemes in South Africa are multi-farmer irrigation projects on more than five hectares (van Averbeke 2008). These were historically established by agencies responsible for agricultural development in the former homeland areas or in resource-poor areas. Such projects are spread throughout the country and have been the subject of much attention as they are seen to have the potential to be used in agricultural development and employment creation.

The scan captured seven such schemes (or individuals based on such schemes), two in the Eastern Cape, four in Limpopo, and one in KwaZulu-Natal.

### Agricultural enterprises

Irrigation schemes cover a broad spectrum of enterprises but commonly produce vegetables and field crops. The extent to which particular households favour one or the other generally depends on whether they are commercially oriented or subsistence oriented. In the schemes noted, household plots vary from two to five hectares in size. While not all land is used on the schemes, the proportion that is idle at any one time appears to be far less than is the case with smallholders' dryland plots in the respective former homeland areas.

### Success factors

The success of the various irrigation schemes is attributable to a variety of factors, including the diversification of the farming enterprises, especially where farmers were afforded individual ownership of the plots. Generally, successful farmers are those who manage their own marketing strategy rather than relying on the government's market – mediated, for example, through the Massive Food Programme in the Eastern Cape.

### Support provided

Commonly, irrigation schemes have benefited considerably from the previous governments, first in the establishment of the infrastructure, and secondly in respect of ongoing support. The general pattern is that ongoing support in recent years has been far less, for example in terms of extension support, support for tractor services, and direct support for management. The rehabilitation of some schemes represents a desire by government to improve and modernise the generally dated physical infrastructure, but doubts have been raised by both farmers and analysts as to the direction of some of these changes.

### Challenges

Common challenges associated with farmers on smallholder irrigation schemes include financial difficulties, as the schemes used to be heavily reliant on government subsidies. The withdrawal of these spelt a tough period for the majority of the schemes, as they couldn't find the financial resources to continue.

For some, the poor state of the irrigation infrastructure is a daunting problem as it leads to an

irregular water supply due to interruptions as a result of breakages in the systems. The absence of appropriate and adequate extension services also poses an important threat to the success of the schemes, as some do not receive any extension support at all. Furthermore, some schemes rely mostly on sales at the farm gate, where prices are typically low and so impede the success of the farmers. Another common challenge in the irrigation schemes is the precarious and/or unclear land tenure systems, as farmers still use power-take-off irrigation pumps.

## Individual/emerging farmers' initiatives

### Background

These initiatives are mostly those where farmers work alone as opposed to in a group. Some of the farmers have a long history of involvement in farming and the farm sizes differ considerably. Many of these farmers are in communal areas, where the land is collectively owned but the enterprises are individually driven.

### Agricultural enterprises

Some of the farmers in this category are exclusively crop farmers, others are livestock farmers, and still others practice mixed farming. The cropping activities include vegetable production, grain crops, fodder crops and cash crops. The livestock activities include poultry production (broilers and layers), cattle, pigs, sheep and goats. As such, the enterprises pursued by farmers in this category are highly diverse.

A notable feature of these farmers is that they either operate independently, or they operate within a group setting where some resources are shared, but in such a manner that each farmer still farms for his or her own account. In some cases, land abandoned by unsuccessful farmers is taken over by remaining farmers, who then have an opportunity to expand their operations.

### Support

In some cases emerging farmers get substantial support from the province's support initiatives. These include assistance with acquiring land (from provincial departments of agriculture, the Department of Land Affairs, municipalities), and the provision of subsidised inputs, implements

and machinery for farmers (e.g. Massive Food Programme, CASP). In addition, some of the projects get assistance from the scheme managers, who provide both managerial and technical support to the farmers.

Researchers from various institutions (University of Fort Hare, the Agricultural Research Council, etc.) also provide technical and new technologies by involving the farmers in the development and demonstration of new and improved technologies. These farmers are generally progressive, enterprising and open to the introduction of new ideas. In addition, creative support initiatives by the different provincial departments of agriculture (participatory extension in Limpopo) have seen concerted efforts to improve the extension services provided to farmers.

### Success factors

The success of the emerging farmers seems mostly to be pinned on access to both informal (local) and formal markets (e.g. supermarket chain stores, fresh produce markets, Fruit and Veg, Pro Veg, Mega-Food Parks). In certain instances, farmers are also involved in value-adding activities – like grading and packaging – which improve the prices that they fetch. Farmers receive better prices from the market than the low prices obtained at the farm gate.

The individual nature of the initiatives allows farmers to make independent decisions about the enterprise and practices they wish to employ, therefore giving them control of all production and post-production activities. This is in sharp contrast to the group initiatives, which are prone to be pulled down by group dynamics; this negatively affects production on the enterprise. Interventions aimed at capacity building, instead of the common ones that mainly concentrate on acquiring materials, have also been shown to be an important success factor. As a result, farmers participate fully in their capacity development, and use appropriate technologies and cultural practices. Furthermore, the farmers commonly have relatively secure or full security of tenure, thus allowing them to invest in their plots.

### Challenges

Some of the challenges faced by the group of farmers are similar to those experienced by smallholder farmers the world over, especially in sub-Saharan Africa. These include:

- high transaction costs;
- delayed payments from the formal markets (chain stores, fresh markets, etc.);
- poor quality and packaging;
- high transportation costs, mainly due to poor or absent transport infrastructure;
- lack of resources to expand or improve production;
- lack of access to credit;
- lack of an organised arrangement for marketing the produce.

## **Food security/subsistence/ semi-subsistence farming**

### **Background**

These enterprises, as the section head implies, are mainly meant for food security, thus production is largely aimed at home consumption and only the surplus is marketed, usually among neighbours. Production is mainly on small plots situated in homestead gardens and community gardens, and under various forms of irrigation, including dryland, supplemental irrigation and fully irrigated. Generally, the land under production is very small, under collective ownership or even communal land tenure. The farmers produce as individuals, groups or a community, and the projects have mainly women as participants.

### **Agricultural enterprises**

The agricultural enterprises in this group are diverse, including vegetables, legumes, fruit trees, dryland field crops, indigenous crops, and organic agriculture.

### **Support**

Most of the projects get some form of support from a variety of institutions or have even been

initiated by such bodies. The institutions include independent research organisations, local and district municipalities, government departments, universities and NGOs.

Support includes technical support and extension service in the form of improved and revitalised indigenous technologies, as well as the initial provision of inputs to participating farmers, skills development, capacity building and motivation. The majority of farmers in this group bemoan the lack of (or inadequate) access to government extension services.

### **Success factors**

While most of the land under production is communal, the farmers have secure land rights. The small plots allow them to use their pieces of land efficiently by adopting more productive but less costly production technologies.

### **Challenges**

The major challenge facing this group of farmers is poor access to resources, especially land and capital. In some cases, there is also inadequate human capital (labour) to participate in the projects. Some of the projects are made up largely of elderly people and youth participation is minimal.

The small plots available are also a hindrance for farmers who wish to expand their production. While production is aimed at home consumption, some projects are able to produce surpluses which are generally sold in the local market and thus fetch low prices. This in turn limits the potential for the farmers to successfully expand their production. Other constraints include difficulty in accessing formal markets, poor infrastructure, high input costs and a lack of skills among the participants.

# Chapter 5: Findings from in-depth case studies

## Introduction

Sixteen in-depth case studies were conducted for this study. They are listed in Table 5.1, while the full write-ups are included in Volume 2.

In this section we summarise the principal findings from the case studies according to the main research questions that were identified at the beginning of the report. However, although originally there were 11 distinct research questions, in practice two of these overlapped to such an extent that it was decided it would be easier to combine them ('Marketing and transactions costs' and 'Economic cooperation and coordination'); a third ('Institutions and access') overlapped with a number of other questions and thus is not discussed separately; and a fourth ('Implementation strategies') is taken up in Chapter 6 rather than here because the broadness of the discussion goes well beyond reporting on the findings from the case studies.

## Change and adaptability

*How have successful smallholders overcome common constraints (such as lack of access to capital) and adapted to changes in the wider economic environment over the past 5, 10 or 20 years? What does this tell us about what it takes to 'succeed' or survive as a smallholder?*

The premise of this research question was that, where smallholders are concerned, the ability to adapt – whether in terms of withstanding shocks or seizing opportunities – is perhaps the single most important determinant of smallholder success. This is not to suggest that we did not also consider other obviously important 'performance indicators', such as profitability (which informs much of the analysis across the board, but which is not singled out as a separate research question as such). The purpose of focusing on adaptability was to help identify distinctive features we might look for when seeking to make choices about how to direct/invest scarce resources. In principle this could mean either determining when an inability to adapt could be remedied through some kind of intervention, or where

smallholders who are demonstrably adaptable are especially worthy of particular kinds of support, or perhaps both.

Two themes emerged in respect of this research question: the first was the diversity of specific measures that smallholders appear to employ to either address constraints or pursue opportunities, and the second was the distinctive behaviour of individual smallholders versus groups ('projects').

## Diversity of adaptation strategies

Among the most common measures or means of adapting to change or opportunities, we noted the following:

- finding external assistance, whether technical, financial or managerial/strategic, and often a combination of two or more (e.g. Chata, Wadela, Marang, Prince Albert);
- experimenting and investing (e.g. Dzindi, Msinga, Mr Booi);
- observing and adapting by example (e.g. Dzindi, Msinga);
- reducing numbers of members (e.g. Nkuke Ketla Ema);
- diversifying out of agriculture (e.g. Marang, most of the Munzhedzi farmers, one of the Rabula farmers, most of the Friemersheim farmers);
- pooling resources (e.g. Chata, Nkuke Ketla Ema).

While on the face of it adaptability is inherently a laudable quality, the relative frequency with which external assistance was identified as the means of adapting can also be regarded as a cause for concern. In some situations, such as Chata, the farmers' strategy involved not only recruiting external partners, but subordinating themselves to these partners. In Chata, for example, the land owners in the group preferred to become wage labourers on their own land, guided by the (thankfully benign) management of a

non-member manager.<sup>34</sup> In other cases, moreover, the external assistance sought is not necessarily logical, and thus not truly adaptive at all. From the case study of poultry farming in Limpopo, a curious observation is that among the generally poorly performing poultry projects (as opposed to the far more successful broiler enterprises run by individuals), there is an uncannily common tendency to identify the same solution to their problem, namely to secure funding for an abattoir. The origin of the belief that an abattoir would solve the problem of these projects is obscure,<sup>35</sup> but in the context of these specific projects it is almost certainly misguided.

Reducing the numbers of people involved is not a conscious or deliberate strategy as such, but a common adjustment in group projects by which people drop out, generally out of frustration as they fail to realise the benefits they had expected. In some instances, this is to the benefit of those who remain. In the case of Nkuke Ketla Ema, for example, the group dropped from 60 to 12 members, meaning that those who remained ended up being able to use on average five times as much land as they began with. Given that the land is almost fully utilised, this translates into real benefits on a per capita basis. These remaining 12 members now regard the land they access as too little, which is why, now that their benefits from the project are visible, they shun approaches from other community members who want to join. A second advantage one can infer is that the management problems that commonly afflict group projects become less acute as the size of the group diminishes.<sup>36</sup>

Lastly, there were a number of instances where the strategy to adapt was more unambiguously positive, for example among those farmers at Dzindi and Msinga who tended to keep their ears open for more advantageous market opportunities as a matter of routine, or who opted to switch to more profitable cultivars or crops. Among these, in a manner that is consistent with the extensive literature on technological diffusion in agriculture, one can distinguish the leaders from the followers. The leaders tend to be those with more resources, who are able to seek new opportunities relatively far afield and/or bear the risk of experimenting with new crops or methods. Where they are successful, other farmers in the area are likely to follow, which is its own form of adaptation.

Not surprisingly, smallholders employ some of the same risk-coping mechanisms as large-scale commercial farmers, not least in terms of diversification. Diversification is pursued both within agriculture and beyond it, that is, combining non-farm income sources with income from farming. One particularly interesting case was that of one of the two Rabula farmers profiled: Mr Njemla owned a farm under freehold, but it was too small to allow him to 'get by' on farming alone. What was interesting about Mr Njemla's diversification strategy was that his non-farm activities were in a sense extensions of his farming, or at least complementary to it. Thus he offered tractor services (including cartage services) and milling services, both of which made it more economical to have his own tractor and hammer mill than it would have been if they were merely for his own use.

### Individual entrepreneurs versus group projects

Implicit in the above is that group-based projects tend to show less evidence of adaptability than individual entrepreneurs. The two case studies that most vividly portrayed situations where smallholders failed to adapt were: i) the subsistence farmers in Limpopo who grew African vegetables at home but who were encouraged by extension officers to join a community garden project, which subsequently collapsed when the borehole pump was stolen (case study number 12), and ii) Phakamani Mawethu, a well-supported redistribution project which started well but then went into decline (case study number 7). In the latter, the closing down of the group's poultry abattoir due to problems with hygiene standards initiated a domino effect in which the group decided to suspend broiler production, which affected cash flow so that they could no longer afford electricity, which then meant that they could not irrigate, which meant a severe drop in crop production and therefore crop income. On the face of it, the reason appears to be that group projects, even if they are ostensibly enterprises, have a tendency to not behave entrepreneurially, in the sense that they are slow to take decisions and fail to explore new opportunities, not least because they tend to be waiting for someone else to make these decisions on their behalf. Why were the Limpopo villagers unable to replace the pump with their own re-

<sup>34</sup> In an ongoing study of land reform in two district municipalities in Limpopo province, PLAAS has found that approximately 14% of projects lease some or all of the land back to relatively well-off farmers or entrepreneurs; in some of these cases, the erstwhile beneficiaries become wage earners on their own farms (PLAAS, 2009).

<sup>35</sup> It reflects the conventional wisdom that value-adding beyond primary production is the route to profitability, which as a proposition is discussed in its own right later in this report.

<sup>36</sup> This logic was part of the rationale for increasing the land redistribution grant sizes between the old SLAG that prevailed from 1995–2000, and the LRAD funding model that replaced it from 2001.

Table 5.1: Overview of in-depth case studies conducted for this study

No.	Name	Province	Land reform?	Orientation	Production	Interesting features
1	Abalimi Bezekhaya and the Phillippi Fresh Produce Market	Western Cape	No	Mostly commercial	Organic vegetables; n/a – marketing facility	Contrasting strategies for stimulating/supporting urban smallholders.
2	Friemersheim Agricultural Association	Western Cape	Yes	Mixed	Mixed, with trend towards livestock	Some renting out, some contract farming, and prominent cycles in and out of agriculture; also, contrast between those with poor water access but for whom fields are close to homes, and those for whom water access is good but further away from homes.
3	The Prince Albert Commonage users	Western Cape	Yes	Mixed	Highly mixed	Diverse activities and approaches within the ambit of a municipal commonage project, including contract farming.
4	Chata irrigation scheme	Eastern Cape	Yes*	Commercial	Vegetables, field crops, and tree crops	Struggling group project based on land pooled from individuals and receiving copious external support.
5	Mr Booii and the Zanyokwe Irrigation Scheme	Eastern Cape	No	Commercial	Field crops and vegetables	Successful individual development of marketing strategy that contrasts starkly with 'government-arranged' markets for other farmers in area.
6	Rabula freehold farmers	Eastern Cape	No	Mixed, trend towards commercial	Dryland field crops, some irrigated vegetables, and livestock; agricultural services such as milling and tractor hire	Multi-generation black freeholder farming families; case study focuses on two farmers with contrasting farming/livelihood strategies.

7	Phakamani Mawethu Development Trust	Eastern Cape	Yes	Commercial	Broilers, vegetables, field crops, beef, pigs	Sustained group project over relatively long period, including ability to market large number of broilers daily and some 'vertical integration'.
8	Marang Women in Agriculture and Development	North West	No	Commercial	Broilers, honey, vegetables	Initiated and run by well-educated women, successful blend different technologies, successful interventions by provincial agriculture department.
9	Wadela Trust Vegetable and Broiler project	North West	No	Commercial	Vegetables and broilers	Contract farming, tunnel farming, seemingly successful support from of agriculture department, but with curious political and ethnic dynamics.
10	Msinga smallholder irrigation farmers	KwaZulu -Natal	No	Mostly commercial	Green maize and vegetables	Large number of very small plot holders, little/no government assistance, little mechanisation, emerging lucrative marketing networks.
11	Dzindi Irrigation Scheme	Limpopo	No	Mixed	Maize and vegetables	Long-standing irrigation scheme with earlier baseline data, demonstrating that smallholders have adjusted well to recent shocks.
12	Home-plot African vegetables versus externally initiated community gardens	Limpopo	No	Subsistence	Indigenous vegetables	Attempt to introduce exotic vegetables through borehole-based community gardens generally failing, while extension staff neglect low-input home-based production of nutritionally significant African vegetables.
13	Madiba Trust Farm	Limpopo	Yes	Commercial	Mangoes and vegetables	Struggling but stable commercial operation accessing formal markets. Labour shedding.
14	Nkuke Ketla Ema project	Limpopo	No	Mixed	Vegetables	Long-standing community-based project with individual plots and early government support.
15	Small -and medium -sized broiler production in the Thohoyandou area	Limpopo	No	Commercial (various scales)	Broilers, via individual entrepreneurs and group-based initiatives	Make use of available baseline information, helpful to determine and understand different trajectories over time between individual and group-based approaches.
16	Munzhedzi land restitution project	Limpopo	Yes	Subsistence	Home garden vegetable and maize production	Evidence of strong demand for multi-purpose homesteads; model of viable land use?

Source: Compiled by authors

Note: \* The Chata community lodged a successful claim to the Commission for Restitution of Land Right on the basis of the historical harm caused to the community by 'betterment planning'. The award to the community was therefore not in terms of restored land but, inter alia, funding for development initiatives, some of which was used for the revitalisation of the irrigation scheme.

sources?<sup>37</sup> In the absence of a functioning abattoir, why did the Phakamani group not resort to selling live birds, as is successfully done by many other broiler producers?<sup>38</sup>

Probing the deeper reasons for this goes beyond the scope of this study, but it may be that groups are not entrepreneurial but rather excel at attracting external support.<sup>39</sup> However, another reason for this may be that groups often fail to assign entrepreneurial responsibilities to any of their members, except to the extent that these are often subsumed within the broader management responsibilities of a designated leader. The fact that this is a possibility is illustrated by the Prince Albert Commonage project, in which a particular project member is explicitly tasked with developing networks and exploring opportunities (i.e. the 'champion'). The point, therefore, is not necessarily that groups must always be avoided, but rather that, where a group seeks to operate as an enterprise, thought must be devoted as to how it can ensure flexibility and adaptability despite being a group.

### Adaptive individual entrepreneurs

Among individual entrepreneurs, it was noted above that one can broadly distinguish between the 'leaders' and the 'followers'. Again in accordance with the classic literature on diffusion in agriculture, it appears from our case studies that the leader farmers are those who are better off in the first place which, among other things, means that they are better able to take risks. At Msinga, over a brief period of two or three years, virtually all the farmers had substituted the 4.1.4.1 strain of maize seed that they had used for years with the Zimbabwean-developed SC-701 strain, which is in greater demand in green maize markets and thus fetches a higher price. However, initially it was just a handful of farmers who switched to SC-701, although the others quickly followed. A similar development took place at Dzindi, where farmers also produce for the green mealies market, among others.

On a more speculative note, it may be that well-funded group projects have the opposite effect: for example, because a group that receives a state-of-the-art broiler house cannot seemingly generate a profit, would-be entrepreneurs residing in those same communities might well infer that the minimum investment one needs in order to succeed is very large indeed.

## Access to the means of production

*How have successful smallholders obtained access to essential means of production such as land, labour, capital, inputs, technology and management advice?*

In respect of this research question, the case studies churned up few clear patterns. Certainly some smallholders examined have benefited from the government's past investments in irrigation infrastructure, or more recent investments in redistributive land reform. Group projects based in former homelands tend to access land via the traditional authority. Of course, forming groups is in itself a means of attracting support, whether from government, donors, or via corporate social investment. The Marang project in North West and Phakamani Mawethu in the Eastern Cape have become exceptional at attracting soft money through donors, to the extent that it is difficult to determine how sustainable they are. We would not regard this, however, as an exemplar for smallholder success.

Among the successful individual entrepreneur farmers, there is little evidence that loan capital played a significant role in their success. One exception from the case studies is Mr Njemla, one of the Rabula farmers, who took out a loan to purchase a second-hand tractor. The fact that he managed to repay the loan within three years is likely related to the fact that, as mentioned, he earned money through tractor services as well as from farming. However, one of the Friemersheim farmers succeeded in getting a Land Bank loan (also for a second-hand tractor), and was frustrated to still be repaying it eight years later. Similarly, some of Mr Boo's peers at the Zanyokwe Irrigation Scheme had taken out loans with Uvimba, which they were struggling to repay. The group project Phakamani Mawethu now has three different loans to service which, in light of reduced production, it services in large measure by means of depleting the project's herd.

It is not entirely clear whether the apparent unimportance of loan capital to smallholder success is because, in the absence of access to such capital, smallholders simply find other means of marshalling resources (for instance, borrowing land, which appears to be more common than taking out institutional credit, and less problematic), or because borrowing money is not an attractive prospect for many such entrepreneurs. The evidence favours the latter, at least insofar as few

37 The reason appears to be more that they were unwilling than unable: the per-member contribution would have been about R100. The fact is that even when the project was functioning, its benefits were modest. But this merely begs the question why the project members were never more unequivocal about the failure of the project, as though feeling obliged to continue to 'give it a chance.'

38 There is perhaps one characteristic associated with entrepreneurs that one does find among group projects, but not necessarily in a positive manner. This is the so-called tolerance for risk. Tolerance of risk is regarded as an adaptive entrepreneurial trait because, without it, farmers will not innovate, or try new technologies, or expand into new activities, etc. Nor will they take credit, which in itself imposes risks of future cash flow problems or even forfeiture of assets. Among groups, however, there appears to be specific tolerance of the risk associated with taking loans. Thus a number of the case studies involving groups distinguish themselves by having large loans. Our speculation is that – apart from cases where the loan was a necessary adjunct to a land reform grant with which to acquire land – the willingness of groups to take on credit relates to the fact that, for whatever reason and regardless of the technical legal reality, their individual members do not feel liable for the repayment, i.e. the group's debt does not equate to individual members' debt.

39 It would be simplistic to suggest that this behaviour is a function of the fact that the projects were conceived by external agents, for example the provincial department of agriculture, because such behaviour is observed even when the external agent merely sought to assist a group that had formed itself already. (See for example the case study on the poultry enterprises in the Thohoyandou area).

of our case study entrepreneurs describe gaining access to loans as a priority for the future.<sup>40</sup> This is not to suggest that lending schemes are unimportant, but that perhaps they are secondary to addressing other constraints. The low uptake for Mafisa anticipated for the next several years should thus not be cause for great concern.

Smallholders access inputs such as fertilisers, seed and feed in the conventional manner, for example through farmer supply outlets; however, particularly small producers may also rely on local general dealers for things like fertiliser, whereas this is not the case among large farmers. Some smallholders also use kraal manure and save their own seeds, though the latter appears to be an art that is gradually dying away. The case studies reveal numerous missed opportunities for securing better terms through coordinated purchases. The broiler survey of the Thohoyandou showed no instances of small broiler producers coming together to exploit discounts for large orders of day-old chicks, and only one instance of coordination to benefit from cheaper bulk feed prices. At Dzindi, such forms of cooperation used to happen when there was a stronger government presence on the scheme, but now it does not appear to happen. Mr Boo from the Eastern Cape spoke of his attempts to coordinate with other farmers in order to collectively transport produce to more distant markets; the economic logic was clear, but it was often a frustrating exercise because the other farmers might not be ready on time, or might have inferior produce or lack of volume, etc.

One of the striking features of the Msinga farmers is the prevalence of donkey traction, whereas in the Limpopo and Eastern Cape sites this was rare. For group projects, tractors are also the norm. The use of donkey traction at Msinga, however, should not give one the impression that the farmers there are somehow tradition-bound; rather, their production and marketing systems are sophisticated and constantly evolving. Donkey traction happens to be suitable to the circumstances partly because the nature of the cultivation is land-intensive rather than extensive. Msinga farmers were willing to pay a bit more for donkey-based ploughing services than for the subsidised tractor services one could procure from the municipality, for the simple reason that the latter were often unavailable anyway. Private tractor services were also available in the area, but cost significantly more than the

donkey ploughing, indicating that the benefits of donkey-based services are that they are both available and low-cost. One might surmise that the price advantage of donkey services over hired tractor services becomes ever greater when diesel prices rise, which they have continued to do since the case study was conducted. However, it is clear that many communities across the country have effectively lost the know-how for animal traction. Thus, on the Munzhedzi restitution project, for example, of 135 households surveyed, only one uses donkey traction for land preparation, versus 61 who use hand implements and 73 who hire tractor services.<sup>41</sup>

Access to technology and management advice comes through various channels. For group projects, generally the agency supporting the project is the key source of these and, as noted, in these scenarios management advice can even come in the form of on-site hired management. The sophisticated production and marketing system established at the Abalimi Bezekhaya project is perhaps an extreme case, in the sense that a large share of the collective turnover of the scheme is required to cover the management costs (initially 47% but projected to decline to 28% over time), while at the same time the individual farmer members have no autonomy in respect of production and marketing decisions. Rather, they are like wage employees who enjoy the modest advantage of individual production-related incentives. The question of the irrigation technology on irrigation schemes in Limpopo is somewhat controversial, owing to the fact that the introduction of new floppy sprinkler systems has been generally contrary to the wishes of farmers. This is not to suggest that there are not good reasons for wishing to shift to water-saving irrigation methods. However, the would-be beneficiaries were not fully reconciled to the consequences, such as electricity charges for what had for decades been a gravity-fed furrow system.

An entirely different approach to the securing of inputs and expertise is evidenced among the onion seed producers working on the Prince Albert commonage. These farmers are effectively outgrowers. The advantages and disadvantages of outgrower schemes are the subject of a sizable body of research literature; for our purposes, we note that the overall message and experience is ambiguous, owing to the fact that the outcomes for smallholders are diverse. A second consideration is whether there is in reality much scope

40 For example, of the nine farmers who were closely studied at Dzindi, two indicated that lack of financial resources constrained them from realising their potential as farmers; another mentioned their advanced age as their main problem; and the other five were positive about their performance and did not mention the need for financing.

41 The distinction between those who rely on tractor hire versus those who plough by hand is interesting in itself. Bearing in mind that these are generally garden plots no more than 600 m<sup>2</sup> in size, one might wonder why anyone would bother to pay R150 to R200 for tractor hire at all. The basic reason is that for those who feel they can afford it, it is worth sparing the time that would otherwise be required, whereas many judge that they cannot afford to pay for tractor hire even though they would like to.

for outgrower schemes to extend to many other commodities, and thus potentially involve large numbers of smallholders.<sup>42</sup>

A more problematic input is labour, which came up in a few of the case studies. The picture that emerged is that commercial smallholders struggle to secure the supply of labour they need because the 'traditional' means of ensuring labour supply are no longer fully operational. Farmers tend to rely on three kinds of labour supply: family labour, casual labour (for cash or kind), and through labour exchange (pooling). The problem with (extended) family labour is that at least in some contexts it can no longer be assumed to be free, that is, for employees to work only for in-kind compensation. Thus Mr Booi, for example, went out of his way to use gifts of food to cultivate gratitude on the part of family members and friends whose labour he required, so that when he did call upon them to come to the fields, they were willing rather than reluctant. Otherwise, he would be forced to do what other farmers in his area do – depend on family members who don't show up or don't work hard, or pay higher costs for casual workers.

More than one smallholder from the case studies indicated that casual labour has become more difficult to hire than in the past, because people are less willing to work for the modest combination of in-kind compensation and wages that was traditionally on offer, sometimes with the cash part delayed. 'The youth' are often identified as the culprits: they lack interest in agriculture generally and, as far as casual work goes, tend to demand immediate payment, which is often not possible.

One of the Rabula freehold farmers, for instance, 70-plus-year-old Mr Tsengiwe, has become so frustrated at securing labour at what he regards as a reasonable cost, that he has invested in machinery that specifically reduces his need for workers. One interpretation is that he lacks Mr Booi's strategic knack, but Mr Booi resorted to his own costly strategy to deal with labour supply in addition to the one mentioned above: he employs one full-time permanent worker who he can rely on to always be there, but at considerable expense. In any event, Mr Tsengiwe's strategy is sobering for those who hope that growing the cadre of black commercial smallholders will necessarily increase labour demand.

Arguably the most significant need among smallholders in terms of ensuring fair and predictable

access to the key means of production is order or authority, particularly in respect of land and water. On irrigation schemes, the systems formerly in place for governing water distribution have in many places collapsed, in particular due to the withdrawal of water bailiffs. While water-user associations or block committees are meant to take up this responsibility, as at Dzindi, they do not necessarily function properly or have sufficient authority to call wayward farmers to order. Similarly, in former homeland areas there has been a long-term deterioration in the traditional means of ensuring that livestock do not invade people's fields. This appears to be one of the main reasons why a large share of arable land in former homelands remains fallow, leaving households to tend their much smaller (and relatively easily fenced) homestead gardens. While fencing subsidies may assist (for example, allowing those who own contiguous fields to erect a common perimeter fence), this on its own is likely to prove insufficient, since the underlying ambiguity as to who is responsible for damage from livestock remains unresolved.<sup>43</sup> A related dimension of the land problem in former homeland areas is the general absence of mechanisms that allow for households to rent land from one another with greater security.

## Marketing and transaction costs

*What are the predominant marketing strategies of successful smallholders, and to what extent have these benefited from formal institutions, private sector innovations, etc.?*

It is commonly suggested that commercially oriented smallholders are prone to struggling because they 'cannot compete' with established, sophisticated large-scale commercial farmers. The objective of 'levelling the playing field' is premised on this notion. However, practically speaking, what this means is not entirely clear.

Smallholders examined for this study illustrate the three main marketing strategies common to smallholders elsewhere, namely: i) local direct marketing in one's own community (most of the poultry enterprises in Thohoyandou area, Nkuke Ketla Ema, Wadela Trust, etc.); ii) via formal established marketing chains (Mr Booi, some farmers at Dzindi); and iii) high-value niche markets (Msinga, Abalimi). Apart from these, outgrower smallholders (Prince Albert, Friemersheim) in a sense don't market at all, although the rela-

---

42 Here it is possibly useful to distinguish between those situations in which the outgrower approach is natural or logical, versus those for which it is possible. By the former we mean those cases where, say, a processing plant has an incentive to offer outgrower contracts as a means of ensuring throughput, as is the case in the sugar industry. As for whether it is possible, in principle a grain milling company could offer outgrower contracts to small-scale maize producers, but there is little compelling economic reason why it should do so, first because the investment in processing capacity is relatively modest (meaning that the opportunity cost of idle capacity is not as great as with, say, a sugar mill), and second because the production conditions for maize (i.e. generally rain-fed) are such that it is more difficult to draw up (much less enforce) meaningful contracts.

---

43 Moreover, in some former homeland areas, there used to be government-funded fencing wardens to maintain the sanctity of fences. As with water bailiffs, this function has largely disappeared.

tionship of the outgrower to the principal can be thought of as a solution to the challenge of marketing, among other things.

We discuss each of these in turn.

### **Local direct marketing**

Local direct marketing is by far the simplest marketing strategy, and for many smallholders works perfectly well. The obvious limitation of this strategy, however, is that the market is almost certainly limited, meaning that it can only support so many commercial smallholders. While no instances of local market congestion were observed among our case studies, Monde et al. (2005) cite a case where a significant number of residents of a single village started being able to produce surplus vegetables owing to greater water availability, the consequence of which was a glut of vegetables for sale in the village.<sup>44</sup> One consideration that does arise from our case studies, however, is the potential for competition between lavishly supported (but unremunerative) poultry projects and poultry enterprises operated by independent smallholders. Another way of expressing this is that, logically, the presence of a government-financed group poultry project in a community works against the emergence or expansion of true entrepreneurs there.

Local direct marketing is to some extent the default marketing strategy of smallholders, who lack the means or interest to invest in more developed marketing strategies. However, it is worth noting that, in some instances, it is the most appropriate strategy as well, for example for pumpkin leaves, which cannot be transported far (Msinga smallholders and Limpopo African vegetable producers). Also worth noting is the fact that, even while this market is shrinking due to the gravitation of rural consumers to town-based supermarkets and other shops, smallholders who produce for this market are increasingly competing with large-scale commercial farmers. This competition has always been there in that large farmers have traditionally sold their second-rate produce to informal market agents or hawkers for the roadside market, for example in and around former homeland towns. In addition, there is evidence that some commercial broiler producers have recognised the potential of marketing live birds to rural households, meaning that this market is not the preserve of local small-scale broiler producers.

<sup>44</sup> While the availability of cheaper vegetables at village level is surely a good thing, in this instance it was unsustainable.

Local direct marketing is usually performed by the farmers themselves, but sometimes, as with the example of large-scale commercial farmers mentioned above, it can be via intermediaries, such as 'bakkie traders' and roadside hawkers. The role of bakkie traders cannot be underestimated, especially as smallholders do not always have their own transport (even relatively prosperous ones like Mr Booi) and, more intangibly, are not necessarily able to keep track of where the markets are. As in the part of Limpopo where the African vegetable farmers' case study is located, some bakkie traders include a strategy of following pension pay-points over a wide area.

### **Marketing into formal established value chains**

One of the main findings of the study is that black smallholders have had more or less the same experience as their larger white counterparts of the impact of market deregulation in the early/mid-1990s. Thus, on the one hand marketing into established value chains is more difficult than it used to be, but there are some black smallholders who have risen to the challenge and are managing well. As indicated, the ability to do so appears to be more a function of personal characteristics (such as an entrepreneurial orientation and pure doggedness) than anything else. While there is reason to believe that the challenge for black smallholders is all the greater than for larger-scale white farmers, the dynamic is similar.

The story of Mr Booi is a case in point. Other smallholders at Zanyokwe have relied on the government's assistance to market their maize through the Massive Food Programme. Mr Booi joined the scheme initially, but withdrew after figuring out that he could make more money by marketing his maize elsewhere. However, it required considerable research on his part to find this preferable alternative. While Mr Booi hasn't become wealthy as a result, he is managing reasonably well (though it should be mentioned that he grows not only maize but also other crops, diversity also being a feature of successful or at least durable smallholders), dispelling the notion that for smallholders to 'chase volumes' (i.e. to produce and market low-value crops) is necessarily a route to poverty. As for his cabbage production, much of that is destined for formal retailers (e.g. Fruit and Veg, Proveg). The problem, however, is that in order to make it worth the cost of hiring transport, Mr Booi has

to organise with other local farmers, but when these farmers fall short, the transport is not used to capacity and thus the unit cost escalates. This is perhaps a good illustration of the disadvantage of being small, as well as of the feasible but imperfect strategies for overcoming that disadvantage. The other notable feature of Mr Booi is that he quickly learned that he had to pay close attention to the particular requirements of different buyers, especially in respect of variety and quality. This sets him apart from many of the other farmers at Zanyokwe. In other words, Mr Booi is a good entrepreneur. For those who do not figure it out autonomously, like Mr Booi, this also underlines the importance of one of the pillars of the 'market development approach', whereby farmers are trained to better appreciate the importance of product quality and presentation. However, at this stage Mr Booi's commitment to quality does not give him an unambiguous advantage, in that it complicates his efforts to benefit from collective marketing arrangements such as that just mentioned for cabbages, because there are few other farmers with whom he can combine his consignments without it reflecting poorly on his own.

### Niche markets

The main cash crop of the Msinga farmers in KwaZulu-Natal is green mealies for the taxi rank market. The market is quite lucrative, allowing gross margins in the region of R30 000 to R40 000 per hectare (or R2000 to R2500 per bed; most farmers plant two beds per season), which is one reason farming households manage to do reasonably well despite many having small parcels of land. One strategy used by the farmers is to produce earlier than large-scale commercial farmers, which is possible because of favourable growing conditions specific to the area, albeit at the expense of yields. The farmers collectively agree on a selling price so as to prevent undercutting and the various problems (both social and economic) this could lead to. Most of the marketing takes place via traders who transport the cobs as far away as QwaQwa and Durban, which should disabuse one of the assumption that production of fresh produce for the 'black market' necessarily means hawking within one's own community and earning a pittance. (This is also why, at this stage, there is little danger of overproduction of green mealies at Msinga.)

An interesting contrast is Abalimi Bezekhaya. Abalimi is a carefully managed urban scheme in

which members intensively farm vegetables on small plots according to an intricate production schedule worked out by the NGO that started and manages the scheme. The produce is packed in 'vegetable boxes' which are sold weekly on a subscription basis as non-certified organic vegetables to suburban Cape Town households.<sup>45</sup> Schools and other institutions are used as depots where the scheme can drop the boxes and subscribers/buyers can collect them. Part of the beauty of the enterprise is that the market is fairly predictable; although there are fluctuations in subscriber numbers, when a bed is prepared there is a high degree of certainty as to whom it will be sold and at what price. Another obvious benefit is that there is no third-party retailer/distributor, meaning that the scheme earns a much larger reward per kilo of vegetables than it would if the vegetables ended up in the fresh produce section of a supermarket.

The key similarity between Msinga and Abalimi is that, in both instances, the product is meticulously produced to market specifications; the key difference is that the Abalimi scheme depends critically on the project edifice created by the NGO which, even if it does eventually prove to be financially self-sustaining, is not necessarily robust. This is not a criticism of Abalimi, which is an admirable and impressively creative enterprise; rather, it is a generalisation of the risks of complex projects, but equally of their scalability.

To summarise, of the three main marketing strategies, direct local marketing can serve as a useful 'nursery' for smallholders attempting for the first time to turn agriculture into a main income source, but it has obvious limitations. One question is whether local (or almost-local) markets could be reconfigured to make this limitation less severe, in particular so that local producers capture a larger share of the local demand that manifests itself in the nearest town centre.<sup>46</sup> For example, while supermarkets in Limpopo report purchasing from smallholders, they are largely passive: the smallholders must contact them, arrange transport, etc. Supermarkets report that the smallholders are too unreliable to form pre-production agreements with, both in terms of quality and quantity, so while fresh produce managers might try to accommodate smallholders, they will not necessarily go out of their way to give smallholders business. Moreover, intermediaries such as bakkie traders do not seem at this point to be closing the gap between small-

<sup>45</sup> The possibility of acquiring true organic certification was explored but then deemed too expensive; the approach is rather to declare that the vegetables are produced according to organic principles, which appears to be good enough for many households in the targeted middle-class market. It is also worth noting that initially the scheme attempted to sell vegetables in the local townships, for example via roadside stands. However, it quickly became clear that this market was saturated and that organic (certified or otherwise) would not command a premium there.

<sup>46</sup> In other words, why is it that the largest supermarket in Limpopo can only support 25 smallholders, in an area that has the largest concentration of smallholders in the country?

holders and supermarkets in the same way that they sometimes do between smallholders and informal markets. Why not?

Moving out of strictly local markets requires a large step, in that smallholders must come to grips with transport costs and/or seeking the most advantageous market opportunity. Some smallholders benefit from arrangements in which the buyer assumes responsibility for the transport, but this in itself does not generally make things any better for the smallholder (except in terms of cash flow); the price received reflects this fact. Indeed, there appears to be a general rule of thumb that the more passive the producer, the less they earn, and this applies as well to situations where the smallholder depends on other people to arrange their transport and/or make their marketing arrangements for them. This is not to diminish the sometimes positive role of market intermediaries, but for smallholders in particular there is evidence to suggest that such intermediaries can and do exploit their superior information to the disadvantage of small-scale farmers.<sup>47</sup>

By and large, the findings reported here support the recent policy initiatives that appear to be gathering momentum within the Department of Agriculture. These initiatives first of all seek to strengthen smallholder-oriented commodity-based associations, which have the potential to improve the flow of information to smallholders, including an appreciation of the ins and outs of seeking the best deal for one's products. These initiatives also provide for interventions that will reduce the transport and other transaction costs that frustrate smallholders in particular, among other things by investing in strategically located physical infrastructure. While we would conclude in general terms that these initiatives are well conceived, much depends on how carefully and skilfully they are designed and implemented. The case study on Abalimi also documents a R34 million City of Cape Town initiative, implemented in conjunction with the Department of Agriculture and private investors, to construct a state-of-the-art, multifunctional fresh produce market in Philippi, a township within the greater Cape Town metropolitan area. Near the time of its launch in 2006, its proponents predicted that the facility would serve as the "suction force to enable the establishment of more than 2 500 emerging farmers and the development of more than 5 000 hectares of farmland over a five-year period in the Philippi and Cape Flats area".<sup>48</sup> The facility includes a pack-house, a bakery, a dairy

outlet, and space for fresh produce traders and a fresh produce wholesaler. Two years later, the facility was only 70% occupied but, more to the point, the vast majority of its supply came from large-scale commercial farmers in and around Cape Town. This does not represent a failure per se, but it would appear that the designers of the facility anticipated that the response from local small-scale farmers would be much stronger. Presently, the operating company of the facility and the provincial department of agriculture are devising a strategy to try to assist local smallholders to overcome whatever obstacles have prevented them from becoming suppliers, including accessing inputs (such as the 'right' cultivars) and support for transport. In short, the Philippi Fresh Produce Market may have been a brilliant idea, but it failed to stimulate smallholder production and its conception was passive, in other words, it did not interact with smallholders to inform them of the opportunities offered by the new facility, to understand their constraints, and to offer appropriate support.

As for means of assisting smallholders to access niche markets, our evidence is modest. Generally, we would support the proposals flowing from the parallel study on value chains conducted as part of the Second Economy Strategy, whereby the government devises mechanisms to 'incentivise' the private sector to seek out smallholder producers and support them as necessary. Whether this assumes the form of outgrower schemes or something simpler is immaterial. The main point is that there is clearly potential in this regard, particularly as a solution to the conundrum between over-investment in 'project superstructure' (as in the case of Abalimi which, incidentally, one could argue does not really foster smallholders so much as incentivised farm workers), and interventions in improving the enabling environment that most smallholders will fail to take advantage of. Having said that, our expectation is that these schemes will produce some notable success stories, but remain modest in number relative to the less glamorous (and less remunerative) subsectors such as common vegetables, field crops, and cattle and sheep.

However, if one accepts that Abalimi does not represent a robust and scalable model, what is the lesson from Msinga? This is hard to answer, given that it is difficult to envisage an intervention so that the success enjoyed at Msinga could be replicated at scale elsewhere. Attempts to introduce farmers at Msinga to supposedly lucrative opportunities (i.e. jam tomatoes and

47 The famous National Wool Growers Association intervention in the Eastern Cape, whereby local sheep owners managed to secure better prices through collective marketing – and thus circumventing intermediaries – is a dramatic example. Cobus Dowry, Western Cape Minister of Agriculture, cited in 'Ultra-modern fresh produce market for Western Cape', Cape Gateway, 17 January 2006. Retrieved from <http://www.capegateway.gov.za/eng/pubs/news/2006/jan/100749/>.

48 Provincial Government of the Western Cape, 2006.

bamboo shoots), backed by donor money and good intentions, failed spectacularly. The success of the Msinga farmers – whether in terms of production efficiency or market savvy – cannot be attributed to any particular intervention at all, except the irrigation infrastructure which was already long in place. Most likely the main implication is statistical: the more commercially oriented smallholders there are who enjoy a reasonably conducive production environment, the more cases will emerge of particular smallholders who on their own account succeed in identifying and supplying lucrative niche markets.

## Participation in other segments of agricultural commodity chains

*Do successful smallholders participate in or benefit from economic activities either 'upstream' or 'downstream' of farm production (e.g. in agro-processing)? Is there the potential for them to participate more actively or to benefit more from such activities?*

The received wisdom is that diversifying into agro-processing raises a farming enterprise's chances of becoming profitable and sustainable. One underpinning of this belief is that the agro-processing and distribution system accounts for such a large share of the value of food products, presumably indicating that the margins enjoyed by agro-processors are immense. Certainly the margins enjoyed by some agro-processors are immense, but this largely derives from the market power exerted by a small number of 'apex' agro-processors and traders, and not second- and third-tier agro-processors such as abattoirs and feed producers. Agro-processing at this level is intensely competitive, not least because of commodity chains and supermarket networks that mean, for example, that beef purchased in northern Limpopo might well have been produced in Namibia, fattened in the Free State, and slaughtered in Gauteng. A local abattoir does not necessarily have any power even within its immediate vicinity.

Among our case studies, the benefits of agro-processing were not observed, though in fairness this could be attributed to the study's small sample and the lack of particular attention to agro-processing in selecting case studies. What we did observe, however, was a distinction between individual entrepreneurs, on the one hand, who usually produced diverse commodities, but who

did not venture into value-adding activities, and group projects on the other hand, where agro-processing was either practised or was being sought. For the former, we cannot say based on our evidence that these smallholders would *not* benefit from extending into agro-processing. However, for the group projects that do engage in agro-processing, the experience is mixed. As with the case of the group broiler projects in the Thohoyandou area, there is a sense that perhaps more importance is attached to agro-processing in policy discussions than is justified.

One interesting exception is the Spitzkop group, which was covered in the scan of this study but is not a case study. In 2007, the provincial department of agriculture assisted the Spitzkop group to start producing maize seed, that is, seed they would sell as opposed to maize for sale as food or for own consumption. Most of this seed is meant for sale to other local smallholder farmers. The department assists the group to market the seed, but it is also marketed through local spaza shops. The group is at liberty, therefore, to decide at what price to market the seed; for the first year, the group was able to sell it at a very competitive price but still earn more than they had done when producing maize for food. The spin-off effects of this project, however, have not yet been studied, but beyond the opportunity for the Spitzkop members to diversify their agricultural enterprises and earn more income, is the real possibility that it will benefit the smallholder community at large – seed prices are often cited by subsistence producers as a real problem, and this approach is probably preferable to input subsidies and starter packs, which are the main means by which government is seeking to improve access to inputs.

Also from this somewhat broader perspective, there is reason to suppose (albeit based on indirect evidence) that local agro-processing capacity can in principle serve to stimulate local demand, and/or reduce transaction costs. Thus, for example, in the locale of one of the case studies in the Eastern Cape (the Zanyokwe Irrigation Scheme in the Keiskammahoek area), it appears that an absence of village-level maize mills means either that villagers seek to convert their maize into meal through laborious hand methods (done mainly by women, who often experience a time deficit already), or transport their maize to a nearby town where a mill exists. Although we cannot prove it, we would suppose that this absence of local milling capacity serves as a disin-

centive to grow maize. By contrast, in the communities around the Munzhedzi case study in northern Limpopo, for some reason local maize milling capacity is widely available and, probably not coincidentally, affordable. Most plot holders who plant at all, do so to capacity.

If that is the case, what is wrong with funding abattoirs for struggling group-based broiler projects? There are at least three problems. First, in terms of meeting local demand for chicken meat, much of the demand in fact remains for live birds, which is why the individual entrepreneurs manage perfectly well without having an abattoir, and also why even larger-scale (i.e. white-owned) broiler operations in northern Limpopo are presently trying to penetrate the local live bird market. Second, to produce at a level that would make an abattoir worthwhile, the project would have to direct more of its output to the urban market; however, its prospects of competing with the agro-industrial broiler producers are uncertain, if not poor.<sup>49</sup> And third, the difficulties that groups have in managing primary production may well be repeated in the management of beneficiation activities; to the extent that agro-processing capacity is lacking and is introduced to stimulate primary production, it would generally be better if it were not linked to existing fragile projects. Moreover, it is unclear whether the government is capable of determining where and what investment in processing capacity is desirable; it would probably be preferable if these decisions were taken by actual entrepreneurs, perhaps assisted by specialised credit products.

There is one rather different perspective on the question of the participation of smallholders in commodity chains that is worth noting, though it does not relate to any of our case studies. This is the situation where smallholders, usually organised in a group, acquire a stake in an existing agro-processing facility that they supply. One example from the scan is a group of smallholders near Groblersdal who own a 25% stake in a local marketing hub facility. Another example is that of a group of forestry smallholders in the Eastern Cape who acquired a stake in a local sawmill. The precise implications of smallholders acquiring a minority share in an agro-processing enterprise to which they are suppliers is not clear. Apart from diversifying their income stream (which has nothing to do with the fact that they are suppliers to the facility), the benefits seemingly include better access to markets and more support for improving product quality.

In principle, this kind of approach could become a particular focus of Agri BEE – to the extent that Agri BEE seeks to encourage agro-processors to diversify their ownership structures, among other things, it could be tweaked so as to specifically encourage partnerships between smallholders and the agro-processors whom they supply, perhaps linked to existing grant modalities such as LRAD.

## Gender

*How widely are the benefits of successful smallholder production accruing to female as well as male producers, either as producers in their own right or within farm households?*

Notwithstanding the fact that, according to the LFS data, commercially oriented smallholders are equally likely to be women as men, among the case studies we examined, men predominate among the commercially successful independent smallholders, and women among subsistence producers and group-based projects. While this could well reflect a bias in the manner in which we selected our case studies, it is noteworthy that even in the case studies involving numbers of independent smallholders operating as neighbours (e.g. Dzindi and Msinga), the common pattern is that most of the commercially successful farmers are men (or, more accurately, male-headed households), whereas among the subsistence-oriented farmers women predominate.<sup>50</sup> While this long-standing stereotype has many exceptions, it still appears to be largely based on reality.

There are a number of reasons for this, some of which emerge from our case studies and others from the literature. First, there is evidence that a large share of the most successful commercially oriented smallholders are those who have other sources of income or have savings based on other sources of income. The commercial orientation of many of the smallholders at Msinga began in the late 1980s when a number of men who had been working in the mines returned home, at which point some of them determined that farming would replace mining as their main source of income. To the extent that women are less likely to have other income streams or savings (or, at any rate, discretion to use these as they choose), they have a disadvantage in terms of being positioned to invest in agriculture.

A second reason may be the asymmetry in labour availability between male-headed and female-

49 It is interesting to note that both the Phakamani Mawethu Development Trust and Wadela Trust vegetable and broiler project were doing quite well with what were effectively informal abattoirs, which they would use to sell dressed and wrapped birds to local shops. However, neither could break into the supermarkets or other large formal markets because of a lack of proper certification, for which they were not eligible due to poor facilities. Phakamani Mawethu is now receiving R500 000 to establish a 'proper' abattoir facility. It remains to be seen whether this will be used to capacity and assist the project to break into the formal market on a sustained basis. An alternative policy approach would be to determine criteria for observing adequate hygiene standards that are appropriate to small-scale livestock operations, and which they would have the means to maintain.

50 In Glass's contribution to the mid-term review of the FSP, which focused on Hlabisa in KwaZulu-Natal, he observed that "the contrast between commercial and subsistence farmers is not only one of farming practices and general outlook on life but between the male farmer and family man and the female farmer who is either acting head of the household because her husband is a migrant or who is tradition-bound by her unemployed husband. Traditionally wives are workers of the male farmer" (Glass 1995:122-123). Glass offers a range of stereotypical situations of women farmers distinguishing between the role or non-role of their husbands in farming, the existence or non-existence of the husbands' other economic activities, and the nature of the relationship between wife and husband. While we cannot do justice in this study to the complexity of these different situations, we also observe that women farmers are not necessarily married, and whereas 'traditionally' this was particularly the case among widows, there is now the growing phenomenon of never-married women with children. (See later in respect of the Msinga case study.)

headed households, which relates in turn to the issue of women's time constraints, which are such that women relegate agriculture to a part-time or marginal activity by virtue of having too many other competing demands on their time.

Third, there is sometimes a bias in how government initiatives target men and women, and/or how traditional institutions treat women compared to men. When many of the irrigation schemes in Limpopo were established, for example, those female-headed households that were accommodated at all were allocated half as much land as their male counterparts (Thagwana forthcoming). The pattern of male primogeniture that typically characterised and still characterises tenure systems in former homeland areas was thereafter replicated on the schemes. To its credit, in the pilot phase of the Mafisa micro-finance scheme, about 60% of all clients were women.<sup>51</sup>

Fourth, to the extent that households seek to diversify their livelihoods beyond agriculture, it appears to often be men who take the lead. For example, in her study of change over time at Tshi-ombo irrigation scheme, Thagwana (forthcoming) found that over the past two or three decades, women have come to dominate farming activities at all five villages within the scheme, the main reason being that their husbands have increasingly been seeking non-farm incomes and leaving their wives to run the farms. Those men who have remained are either the old or the very successful, though even the latter tend also to be involved in non-farm enterprises.

In some instances, finally, women appear to be handicapped because of an emerging clash between traditions and contemporary realities. Two such instances were illustrated by the Msinga case study. First, in this community, as in other areas in KwaZulu-Natal, the customary practice of *ukuzila* obliges abstinence from farming for a few days following the death and burial of a fellow community member. Contravention of this practice entails a high cost in terms of social relationships and farmers' well-being within the community. However, the observance of *ukuzila* falls particularly on women; in light of the frequency of funerals commonly associated with the HIV/AIDS epidemic, women especially lose a great deal of time that they would otherwise be using to farm. Second, while a woman's tenure security on marital land is generally secure following the death of her husband, this is not the case if the marriage was not properly con-

summated – meaning the woman was entitled to assume her partner's surname. Over the past decade or two, there has been an increase in female-male unions which do not meet the traditional criteria of marriage (some would say because of the increasing difficulty men have paying *lobola*), resulting in an increasing number of widows who do not have secure land rights.

For group-based projects, there are particular dynamics at work in respect of gender. In the first place, our casual observation is that, outside of land reform, group-based projects tend to be initiated and dominated by women. However, at the same time, women-dominated projects tend to have one or two men as members, often with the 'official' designation of chairman. Such was the situation at Nkuke Ketla and Spitzkop. While it is tempting to suppose that these men were able to assume positions of leadership out of chauvinism, close observation suggests that they are typically passive and accommodating and were relegated to these positions because, in the view of the women, it was advantageous to be 'represented' by a man when interacting with the rest of the community. For example, in areas characterised by intense patriarchy, it is difficult for women to make direct approaches to traditional leaders, and so having a male 'face' is a strategic move. Thus, when the predominantly female farmers at Msinga need to approach the *nkosi*, for example to address a problem, they enlist the help of a man.<sup>52</sup>

In the case of Spitzkop, this need for a male face was counterbalanced with a strategy to ensure that men did not take over the project at the time that the project was first being formed. The way this was done was that the initial female members went out of their way to invite the wife of any man who showed an interest in participating; this way the women could ensure that they kept numerical superiority, but it was also believed that the presence of a man's wife would moderate his behaviour that otherwise might be aggressive or commanding.

While these strategies appear to serve women well, they are nonetheless signals of the challenges that women face in a male-dominated environment. In cases where mixed-gender group-based projects do end up being genuinely dominated by men (as with many land reform projects, e.g. Phakamani Mawethu), but equally in non-project situations where a level of coordination among farmers is required (as with many of the irrigation schemes, including Dzindi), it is

<sup>51</sup> Personal communication, Department of Agriculture, September 2008.

<sup>52</sup> It is worth mentioning that the problem of preventing livestock damage to crops has a gender dimension in that cattle in particular tend to belong to men and most crop production is done by women.

difficult for women to assert their interests and sometimes even to make their voices heard.

## Class

*Do successful smallholders have any specific class characteristics, for example do they generally have access to capital from other business enterprises to invest in their agricultural enterprises?*

This research question has already been touched on in some of the previous sections, with various pieces of evidence pointing to the fact that smallholders who can be described as commercially successful tend to have income and/or wealth from other sources, or come from families where at least someone is able to provide capital. The Dzindi case study illustrates this: of the nine farmers interviewed, the three most successful include one who offers tractor hire services, a second who has his own construction company, and a third whose wife earns a regular income of R2500 per week. However, this is not always the case, as the example of Mr Booi demonstrates. Like Mr Booi, some commercially successful smallholders began farming with modest means, stuck to farming full-time, and with diligence and perseverance managed to build their agricultural enterprise over time.

Rather than expanding on the evidence already noted, in the rest of this section we draw attention to the seemingly bifurcated manner in which the policy on black agriculture is cast. On the one hand, there is a common assumption that agriculture is a ready means of reducing abject poverty, thus the proliferation of government-led poverty reduction projects such as community gardens and poultry projects. In this perspective, 'agriculture is for the poor'.

On the other hand, there is another prevalent perspective that such scarce resources as we have available are best used either to assist subsistence producers to commercialise (as with the initial focus of the FSP), or to support those who are already successful to become more so.

There is nothing wrong with this dual approach; in fact, we support it, despite the danger of imagining that the types of farmers in question are as easily categorised in reality. The question is, is it possible to achieve more synergy between the efforts to support these distinct groups? One element of an answer goes back to the observation made earlier that, in terms of adaptability, there is often a distinction between those farm-

ers who initiate and those who follow. While this happens spontaneously, recognising this dynamic implies opportunities to use the success of progressive farmers to support poorer farmers, if only because progressive farmers often offer the best insights as to what works. This is not to suggest that we advocate that the 'master farmer' extension approach be adopted, but that, given the general agreement that extension officers have little to offer smallholders in terms of practical advice, one rich source of information would be the progressive farmers in their midst. Another element relates to the idea that agricultural development policy could and should adopt a more strategic framework based on the idea of the 'agricultural ladder' or development pathways, as explored in the next chapter.

## Tenure

*To what extent is tenure insecurity proving to be a hindrance to productive investment among smallholders, and/or inhibiting rental arrangements that might otherwise result in more economic land use? What local innovations enable people to cope with the absence of effective tenure reform?*

There is little or no evidence from the case studies of smallholders who were constrained by the fact that they operated in former homeland areas where statutory freehold tenure is absent. Thus, farmers in communal areas who use land that they inherited generally do not fear losing that land and, by implication, are not hesitant to invest in the agricultural potential of that land on grounds of perceived tenure insecurity. Even at Munzhedzi – which, although a restitution project, has mainly been settled by non-claimant households who were allocated (sold) plots by a 'chief' who few residents regard as legitimate – there is little evidence of tenure insecurity, and instead much evidence to the contrary in the form of massive investment in house construction.

However, this is not to say that tenure did not emerge as an important and problematic issue. In Zanyokwe, tensions have arisen between those who were allocated plots under the scheme and those who claim that the scheme sits upon their ancestral land, of which they were effectively dispossessed when the scheme was established. Mentioned above was the case of some widows in the area around Msinga who, because their partnerships are not recognised as

proper marriages in terms of local custom, are unable to hold on to the land upon the deaths of their partners.

But by far the most significant kinds of tenure constraints that emerged were in respect of renting land, and determining responsibility for damages to crops caused by livestock. For example, at Zanyokwe Irrigation Scheme, many if not most of Mr Booi's fellow farmers are (unlike him) renting, but generally from year to year, with the perception that if they do too well, the owner will not allow them back the next year. Similarly, although renting in land is not uncommon among the Msinga smallholders, it is not desirable, and farmers are clear that they do not invest in irrigation infrastructure on rented land. Farmers who participate in the Spitzkop project generally would like to plough more land than is presently available to them at their project. Although there is a fair amount of idle arable land in the community, by and large the farmers shy away from trying to gain access to it because generally they are unable to negotiate a multi-year arrangement with the owner which they can rely upon.

This dual tenure problem obtains across many if not most communities in South Africa's former homelands. Lyne and Thomson (1998) undertook a practical experiment in selected communities in KwaZulu-Natal in the mid-1990s, and demonstrated a significant increase in the number of rental transactions and a reduction in the extent of idle land. The initiative involved a consultative process through which some neglected traditional practices were reinstated (e.g. sanctions for those who allowed their livestock to wander into arable areas after the commonly agreed 'planting date'), while new practices were encouraged, most significantly the drawing up of pro forma lease contracts and buy-in from tribal courts that they would recognise and uphold such contracts. Despite a lack of active reinforcement within the communities where Lyne and Thomson conducted their experiment, fieldwork conducted by Crookes and Lyne (2003) about five years later demonstrated that the impacts Lyne and Thomson had engendered and then observed had in fact amplified.<sup>53</sup> The economic merits of the initiative are threefold: i) land-constrained farmers are able to access more land and thus better exploit the other resources they have on hand, for example capital, technical skill and management acumen; ii) households lacking the labour or capital for farming, but who

have land, are able to derive an income from leasing out, without forfeiting ownership of the land; and iii) underutilised economic resources are brought into use, thus stimulating the local economy.<sup>54</sup>

More recently, under the auspices of a project funded by the WRC in the Eastern Cape and Free State, Umhlaba developed and implemented a 'local rural planning process' that involves a consultative process for developing rules and procedures for local land administration, together with a land register. In terms of developing the land register, the methodology has parallels with the participatory systematic demarcation processes being applied elsewhere in Africa but, interestingly, the initiative is proceeding in advance of the implementation of the Communal Land Rights Act of 2004. The legal framework used by Umhlaba is the Interim Protection of Informal Land Rights Act (No. 31 of 1996), which defines informal land rights, protects against the deprivation of informal land rights, and ensures that any processes through which land use is changed happen only with the consent of the rights holder. A survey conducted among rights holders at the WRC sites indicates that many are interested in either renting in or renting out; however, it is too early to say what the effect of the process has actually been.

Neither the Lyne/Thomson experiment nor the current WRC/Umhlaba exercise was a 'local innovation' in the sense of the research question. The only local innovation observed among the case studies was some households' investment in fencing and structures as a means of visibly 'staking one's claim', as is widespread, for example, at Munzhedzi.<sup>55</sup> On the other hand, both the Lyne/Thomson and the WRC/Umhlaba initiatives have to some extent sought to build on traditional practices that have been lost, while also trying to encourage (and modernise) types of transactions that are common elsewhere in the world under broadly similar conditions.<sup>56</sup> The point is that there is reason to believe that some kind of intervention along the lines of those described here is possibly among the most efficacious that can be contemplated as a means of promoting smallholders within former homeland areas, but it will not happen spontaneously. Nor will the eventual implementation of the 2004 Communal Land Rights Act, in whatever form, given that the Act merely lays broad procedural parameters for land administration, but does not seek to encourage economic transactions of any particular

---

53 Also interesting is that the nature of the rental market had changed – there were now fewer transactions involving a larger total amount of land. The general conclusion was that the rental market was evolving in such a way as to facilitate the emergence of a cadre of larger, commercially oriented smallholders (Crookes & Lyne 2003).

---

54 The case study of Dzindi reported in Volume 2 mentions that upon beginning their fieldwork there in 2003, researchers from the Tshwane University of Technology casually encouraged locals to rent land in and out more, and this was enough to lead to gradually increased land use over time.

---

55 Other studies have highlighted a much larger array of local innovations in this respect, but these appear to focus on peri-urban and urban areas, under the label 'neo-customary' strategies of land access and tenure definition.

---

56 An obvious example is the widespread and long-standing practice of sharecropping in Lesotho.

kind or address itself to the all-important question of livestock. The tricky question is whether an aggressive application of a Lyne/Thomson or WRC/Umhlaba-style land administration process would complicate or compromise the eventual implementation of the Act. This is all the more difficult to determine given that, if and when the Act is eventually implemented, it may not be in its current form.

One final point is that, strictly speaking, the absence or presence of rental markets is not only an issue in former homeland areas, but can also apply on freehold land acquired through land reform. The Friemersheim case study from the Western Cape is a good, albeit unusual, illustration. It is unusual in the sense that it is one of the few land reform projects across the country where formal subdivision has taken place: a group of people applied for land, but rather than taking ownership of the land as a group, it was surveyed and formally subdivided and ownership of the separate portions transferred to the respective individual beneficiaries. Increasingly, this is a model that government wishes to promote, based largely on the belief that group ownership is one of the central reasons many other (non-subdivided) land reform projects fail to work. While we are sympathetic to this perspective, the case of Friemersheim tells a slightly different story. Owing to a range of reasons (e.g. better off-farm income opportunities, crop failure), more than half of the individual Friemersheim beneficiaries effectively gave up farming after the first few seasons. Much of the unused land was subsequently leased out to other beneficiaries or non-beneficiaries so that, presently, most of the land remains in use, albeit by a smaller number of farmers than there were original beneficiaries. What made this possible was that the freehold nature of the ownership was such that land owners felt sufficiently secure leasing out their land to others, whether or not a formal contract was signed. On the one hand, this reinforces the importance of the kinds of interventions discussed above for areas where rental transactions are not backed up by the

same kind of statutory property rights. On the other hand, it suggests perhaps a more nuanced understanding of the options available when designing land reform projects, in that the issue is not necessarily individual beneficiary ownership, but a system whereby individual beneficiaries can freely and securely choose to rent (or sell?) their plots to one another, whether or not the expense of formal subdivision has been incurred.

## Conclusion

One is tempted to conclude from the case studies that successful smallholders are farmers who have had as little as possible to do with government. Beyond the obvious dichotomy between independent individual farmer entrepreneurs versus government-supported groups, there was evidence from the case studies of individual entrepreneur farmers of striking own initiative, shrewd planning, and determined self-reliance. Among subsistence-oriented smallholders there was also evidence of self-reliance, as well as of mutual assistance and innovation.

However, this would be a superficial understanding of the conditions for the success of these smallholders. In the first place, among the successful smallholders were those who took advantage of irrigation and other infrastructure put in place by the government, however dated and simple this infrastructure may be. Second, even though transport and marketing pose challenges, it is clear that the relatively good state of roads and of the telecommunications network is an advantage, without which smallholders would not be able to search for opportunities as effectively as they do, or reach markets so far away. Third, there were in fact instances of excellent government training and extension services, such as the training in poultry production made available through the department of agriculture in Limpopo. And fourth, there is some evidence that the 'artificial' tenure systems on irrigation schemes have worked relatively well, in the sense that an active rental market allows successful farmers to expand, and leaves relatively little land idle.

# Chapter 6: Conclusions and recommendations

## Introduction

This concluding chapter has three aims: first, to attempt to tie up some of the main debates running through the presentation so far; second, to identify what we regard as the priority interventions for government and partners in terms of supporting various categories of smallholders; and third, to venture order-of-magnitude estimates as to what these interventions could achieve and cost.

## Where to focus: subsistence versus commercial?

Certainly no one would suggest that determining whether to focus on the promotion of subsistence-oriented smallholders or commercially oriented smallholders should be understood as an 'either/or' proposition, but rather as one of determining an appropriate balance, keeping in mind the limitations of these oversimplified categories. The overall impression of the study team is that, notwithstanding the Ilima/Letsema campaign,<sup>57</sup> current policy has placed excessive emphasis on commercially oriented smallholders, seemingly predicated on the belief that subsistence production is neither developmental nor a route out of poverty. The extent of this bias is perhaps most visible in the way that land reform policy has evolved in recent years (especially land redistribution policy), but it is also discernible in the manner in which some of the irrigation schemes are being renovated, as well as in other ways. One sign of this determination to foster black commercial farmers is the growing amount of material support per beneficiary as programmes are revised or new ones introduced. Another is the increasing emphasis placed on strategic partnerships or commercial farmer mentors; thus, for example, the Limpopo agriculture department decided to encourage plot holders in revitalised irrigation schemes to enter into partnerships with experienced commercial farmers to form joint ventures.

While we would not necessarily dispute the idea that subsistence production does not offer an escape from poverty, there is much to be said about spreading the advantages of subsistence

production to those who for some reason do not enjoy them, as well as enhancing the benefits among those who already do. First, subsistence producers are already there in great numbers, and there is reason to believe that some interventions could allow them to benefit even more as subsistence producers. At the same time, there are threats to the efficacy of their systems which, if not addressed, could aggravate poverty and insecurity for hundreds of thousands of households. Second, subsistence production is a naturally good complement to households' multiple livelihood strategies, in a manner that commercially oriented production often is not. The key issue is that subsistence production is low-input in terms of both time and purchased inputs. Therefore, for relatively little investment, subsistence production makes a meaningful difference to the lives of many in a manner that is relatively low risk. And third, relative to commercially oriented farming, subsistence production is robust in the face of price risk, and to some extent production risk. The 81% increase in the cost of farming requisites between 2000 and 2007 may be of concern to subsistence producers (e.g. those who hire tractor services or who use the odd handful of fertiliser), but it can be crippling to those who rely on production for the market in order to make a living.

Having said that, to some extent the measures we will argue below deserve the most emphasis in future, particularly in former homeland areas, are not specific to either subsistence or commercial producers, thus the 'balance' would be determined not by policy-makers, but by the manner in which things evolve on the ground in different communities. This is desirable because, as policy-makers and researchers, we cannot be sure what to prescribe in different situations.

However, this would not apply to redistributive land reform, which must operate according to more directed plans. For land redistribution especially, there is a real concern that the present models do not allow for the accommodation of significant numbers of landless people, thus ultimately will not translate into large numbers of people being able to derive benefits from farm-

<sup>57</sup> According to the LARP concept document of February 2008, the Ilima/Letsema campaign "aims to bring about an increase in production by unlocking the potential of currently 'dead' land and other assets, in particular in communal areas". The envisaged activities include input subsidies and livestock breeding programmes.

ing. While the scope for land reform to assist in the development of black commercial farmers is regarded as valuable, again it comes to a question of balance, and there is reason to be concerned that presently the scales are increasingly tipped in favour of commercial farmers who cannot even be defined as smallholders, given the amounts of land they are assisted to acquire.

### Is there a role for 'projects'?

Over the last several years there has been a gradual recognition within government and civil society of the inefficacy of 'projects' as a means of promoting poverty reduction and employment creation. The cited shortcomings of projects are numerous, but include above all that their robustness is doubtful, especially to the extent that they seek to function as economic enterprises. They also tend to require large amounts of time from implementers, making it difficult or impossible to render them in large numbers (i.e. they are not 'scalable').

Indeed, these critiques feature in our analysis of the case studies (see for example Chapter 5). However, it is difficult to say that the door on agricultural projects is entirely closed. The main reason is that within agriculture, projects are not always the creation of external project implementers, but are often the initiative of community members themselves. While it was noted above that in some cases this might be because people think that coming together in a group might prove to be a means of attracting external support, we also observed cases in which the motive is merely to assist one another to address common problems. Based on our case studies, we would characterise these as attempts to pool scarce resources in pursuit of otherwise unattainable investments. Moreover, for all that has been written about the free-rider problem in agricultural and other projects, we also know that, under certain circumstances, people do like to work together, as in the widespread tradition of rotating labour pooling arrangements, which was in evidence in more than one of our case studies.

This is not to say that these spontaneous attempts are always thought through or well directed, but it is a fact that there is a limit to what a single low-income household can accomplish on its own, particularly if it lacks access to technologies that are tailored to the level of a single household. Thus, for example, in one of our case

studies (Nkuke Ketla), a number of individuals from the same community got together to dig a well for their common use for vegetable farming. Perhaps these households would have done better to adopt household-based rainwater harvesting techniques, but they did not know of them and in any event may not have been able to afford them.

From our own case studies and by common acknowledgement, the undoing of many such group projects is when they attempt to become economic enterprises based on group solidarity. This is when vast amounts of implementer time are potentially absorbed (if any implementers are involved, as indeed they might be after the group has already established itself), and/or when things fall apart. The suggestion, therefore, is that perhaps there is still a role for projects, provided that that role is properly understood and circumscribed. In particular, where investments in infrastructure are more efficient for a group than for separate individuals, yet where this does not oblige a group-based enterprise, there may indeed still be a rationale for a project. Apart from boreholes,<sup>58</sup> a good example is collective fencing around contiguous fields (as is done in some cases through CASP) and, on a grander scale, irrigation schemes. Thus, for all of the concerns raised in earlier sections about projects, the conclusion is that they may still have a role to play, but that it must be limited and carefully considered.

### Creating pathways and targeting

The idea of the 'agricultural ladder' – through which producers at, say, subsistence level can graduate to commercial smallholder level, and from there to medium-scale commercial farmer level, etc. – has long been a staple of rural development discussions. The logic of the ladder metaphor is that farming at one level serves as a means of developing skills (and accumulating capital) upon which one can build to move to the next level. Despite the widespread adherence to the idea in principle, there is little in current policy that makes it tangible. Thus, for example, LRAD beneficiaries are not generally more likely to qualify for support to acquire a medium-sized farm if they can demonstrate evidence of having successfully farmed at 'lower' levels. Moreover, although the Department of Land Affairs' municipal commonage programme has from the start been regarded as a good step-

<sup>58</sup> An entirely different consideration, however, is that group infrastructure can be very vulnerable to theft and vandalism, and group-owned pumps have a particular penchant for disappearing, to the extent that they are often simply not worth it.

ping stone towards acquiring one's own land and farming on a larger scale, there is little evidence (perhaps because it is premature?) that it is actively used this way. Lastly, PLAS allows for successful beneficiary tenants to purchase their land, but it does not clearly anticipate that they might want to go a step further, for example, by acquiring the plots of adjacent beneficiaries who are not so successful.<sup>59</sup>

This relates to another concern about agricultural development and land reform in particular, which is not particularly illustrated by our case studies but which we know from other research, namely, that land redistribution (and LRAD in particular) operates on a first-come-first-served basis. While there is an element of fairness to this approach,<sup>60</sup> LRAD could alternatively specifically target black farmers who have already achieved a certain degree of success, and who are thus ripe to be given an opportunity to expand. Thus we find, for example, that on irrigation schemes such as Dzindi, there are a handful of very successful farmers who have managed to expand to the extent that they are renting numerous plots from other plot holders. Notwithstanding our generally positive view of rental markets as a means of mediating between those who need land and those who have it but are less in a position to use it, at a certain point it would be better if such individuals could be assisted to move off to make space for new entrants onto the scheme. This in fact is precisely the wish of some of these very successful farmers on the irrigation schemes, but there is no specific mechanism to target them to become, say, LRAD beneficiaries, and whether or not they hear of LRAD in the first place and apply of their own initiative is left to chance.

Supposing interventions were in place to stimulate agriculture in the former homelands more generally, then indeed there might be a much larger need and opportunity to provide pathways for the more successful and ambitious farmers to graduate out onto their own private land acquired through land reform. In a sense, the importance of municipal commonages is to provide such opportunities for growth from a small scale, in parts of the country where former homelands cannot serve this function.

## Priority interventions

Mindful of the evidence as to what accounts for 'smallholder success', but also bearing in mind

what the government is good at and what it can feasibly provide at scale, we offer a small list of priority interventions for the smallholder sector. The list is an eclectic mix of measures that includes some interventions that fit what conventionally goes by the label 'creating an enabling environment', but it moves beyond these to include direct and sometimes costly interventions that seek to engage with the population at a large scale.

Based on our case studies, we identify four priority interventions that we feel would go a long way towards revitalising the smallholder sector, including both subsistence-oriented and commercially oriented smallholders.

### Addressing land administration in communal areas

While not dismissing the potential importance of redistributive land reform, it would seem that the most auspicious opportunity for reaching large numbers of smallholders and potential smallholders quickly is to embark on land administration initiatives within former homeland areas akin to those developed by Lyne/Thomson and Umhlaba. The fact that initiatives with such similar objectives can be pursued in areas as disparate as KwaZulu-Natal and the central Free State suggests that the key ingredients and principles can be adapted to local circumstances. In any event, the intervention is inherently consultative and must take local concerns and dynamics into account. It is not clear why, in a field where there is such uneven success and widespread frustration as in agricultural development, the successful pilot of Lyne and Thomson was not aggressively seized upon, though perhaps it is just as well that it was never elevated into a 'silver bullet'.<sup>61</sup> One concern is possibly that the relationship between a land administration initiative such as this, and the question of tenure reform, is unclear.<sup>62</sup> The uncertainty about the future of the Communal Land Rights Act, and how such an initiative would relate to it, would have to be discussed with the Department of Land Affairs, among others. Nevertheless, methodologies such as that developed by Umhlaba are presently being implemented, at times with funding from the Department of Land Affairs. It is not difficult to imagine that a land administration initiative could be pursued on a larger, more deliberate pilot basis in selected communities in all the former homelands, before proceeding to a larger scale.

<sup>59</sup> Rather, the idea is that the unsuccessful tenants will be replaced with new beneficiaries.

<sup>60</sup> This fairness, however, is qualified, in the sense that in practice many of the 'first comers' are people who for one reason or another have relatively good access to information, for example about government programmes, while often the most deserving or needy are people who never hear about land reform.

<sup>61</sup> When asked in 2008 to reflect on this question with the benefit of hindsight, Thomson speculated that the provincial department of agriculture officials with whom he and Lyne had interacted could see the value of their pilot, but did not regard this kind of work (which they characterised as 'addressing the transactions costs') to be their responsibility (personal communication, D Thomson, September 2008). Strictly speaking, they were correct.

<sup>62</sup> According to one of the main drafters of the Communal Land Rights Act, one of the benefits of the Act is that it will facilitate interventions along the lines of those piloted by Lyne and Thomson (personal communication, S Sibanda, November 2008).

## Investing in water availability

The significance of irrigation schemes as an environment that lends itself to the development of black smallholders has already been noted. What has not been clarified is that, at present, these schemes accommodate only about 31 000 black smallholders, and account for only about 3.6% of all of the land under irrigation in the country (see Chapter 11 in Volume 2). While another 2% to 3% of irrigated land is held by smallholders outside of these schemes, it remains the case that smallholders account for a very small share (5% to 6%) of the country's irrigated farmland. Furthermore, while it is certainly true that in the commercial farm sector, irrigated production is more labour-intensive than dryland arable production, by a factor of about 4 to 1, our estimate is that the labour intensity of smallholder irrigation schemes relative to irrigated production in the large-scale commercial sector is about 7 to 1. The key point is that if creating conditions for reasonably large numbers of successful commercial smallholders is a priority, then expanding access to irrigation is vital. Rather than going out and creating new schemes, probably the most practical way of doing this is through redistributive land reform, which could be geared to specifically target a certain amount of irrigated farmland. This does not necessarily imply the creation of more 'schemes' akin to Dzindi and Msinga, but the acquisition of properties that lend themselves to some kind of subdivision so that individual irrigated plots can be allocated to smallholders. PLAS would be the ideal vehicle for a targeted land acquisition strategy such as this, provided that attention was given to maintaining and, where necessary, restoring the irrigation infrastructure.<sup>63</sup>

At the same time, the benefits of subsistence production are constrained by the variability of rainfall, which diminishes the risk-mitigating effect of agriculture as part of a multiple livelihoods strategy. This explains the importance evidenced in our case studies of individuals and groups trying to secure a reliable water supply, for example through boreholes. While sinking boreholes is in some instances now covered by CASP, as a scalable strategy it has its limitations, first because of limitations of groundwater, and second because of the group orientation that such interventions would normally have to assume. This suggests the importance of household-based rainwater harvesting techniques, about which various options were presented

earlier.<sup>64</sup> While some of these approaches probably remain too expensive to allow rolling out on a massive scale (about R38 000 per household for the option involving the 30 000 litre tank), and while the promotion and financing of household-based rainwater harvesting does not have a proper institutional home as yet, there is scope for refining the techniques to make them more affordable and less labour-intensive at start up, even if it is at the expense of water storage capacity. Moreover, such strategies must recognise that domestic water demand is often more pressing, and rainwater harvesting interventions have to anticipate this and possibly address it simultaneously with seeking to benefit agriculture.<sup>65</sup>

## Investing in market infrastructure to accommodate smallholders

As mentioned above, we generally support the thinking of the Department of Agriculture in respect of intervening to improve the physical and institutional marketing environment for smallholders. What form these interventions ultimately take is unclear at this stage; it is even more impossible to forecast the extent to which this infrastructure will succeed in linking smallholders to formal value chains and, if it does, how many smallholders will be able to avail themselves of these new opportunities. Nonetheless, even though some existing smallholders are managing to get their products to the market despite the absence of this infrastructure, it is clear that even they would benefit from a more conducive environment, as would many others who have some potential as commercial smallholders but who have not been able to overcome present challenges. Regarding what is currently in the policy pipeline, the only concern we would voice is that the lesson of the Philippi Fresh Produce Market be borne in mind, that is, that new physical infrastructure need not sit there passively, but can be complemented by information campaigns and other interventions to encourage its actual use.<sup>66</sup>

## Integrating redistributive land reform within a broader agricultural development strategy

As noted, an important ingredient in creating appropriate opportunities for smallholders is to conceptualise pathways or trajectories that some can follow as they move from success to success. Presently, there is little sense that such

63 It must be noted that even while irrigation is a significant factor for smallholder success in the context of the schemes, it is the Achilles heel of many land reform projects. The main reason appears to be that beneficiary groups lack the skills, finances or inclination to maintain irrigation infrastructure.

64 It bears mentioning that rainwater harvesting would likely do much to create resilience in the face of climate change as well.

65 Personal communication, Tessa Cousins, AWARD November 2008.

66 Part of the need for information would in principle be catered for through the new emerging producer commodity associations that are also envisaged in the draft policies. However, it is unclear to what extent smallholders will readily identify with and benefit from these associations.

a conceptualisation has been captured in policy (even though the idea of a 'ladder' is broadly accepted), and the weakest link is probably the design of redistributive land reform. This is discussed at greater length in the following section.

In selecting these four as priority interventions, we have deliberately avoided proposing a 'holistic approach'. This is so for two reasons. First, there are interventions that are frequently mooted as key to unlocking the productive or entrepreneurial potential of small-scale black farmers, but which in our estimate are second- or third-tier priorities. While there might be value in pursuing these priorities at the same time, it is also important to be clear as to what the true priorities are. Such is the case with credit provision, for example. This is not to suggest for a moment that Mafisa is dispensable, but rather that scaling it up massively should not be regarded as a priority, not least because greater credit availability is not a key success factor in respect of the interventions that are prioritised. And second, some interventions that could make a difference if pursued in the right way and at the needed scale, probably will not be.<sup>67</sup> Thus, while the nascent attempts to upgrade the agriculture extension service are to be lauded, to pin the success of a package of smallholder-focused interventions on this would probably be unrealistic and unstrategic. Rather, the underlying thinking behind the selection of priority case studies is that most smallholders will have to continue to make do without copious and qualified extension support for the foreseeable future.

## The question of redistributive land reform

Assuming government holds to its target of transferring 30% of privately owned farmland from white to black ownership in the near future (the target date of 2014 will almost certainly be adjusted), at whatever point this is achieved, about five to six times as much land will have been transferred in total as is presently the case and, as a group, black people will 'own' more than twice as much land as they presently do. And, as noted, these transfers will be effected through two rather different mechanisms: restitution, accounting for approximately 10 million hectares (Sustainable Development Consortium 2007; this estimate is tenuous), and the rest via redistribution.

The current burden of redistributive land reform is to meet stated targets as quickly as possible (i.e. the 30% target as well as concluding restitution, the target date for which has now shifted to 2011), and to attend to the 'viability problem': the fact that so many land reform projects collapse, and many or most others fall short of their livelihood and economic objectives.<sup>68</sup> Increasingly, government is acknowledging the worry that land reform could have negative implications for food security, which is compelling it to strive ever harder to ensure that projects are productive and economically successful.<sup>69</sup>

The debate about how best to make redistributive land reform more benign and less threatening (seemingly no one is talking particularly about how to ensure that it results in positive net gains) juxtaposes the position that beneficiaries need more and better support, including financial and/or in-kind support, with the view that mentorships and strategic partnerships are the key. A third view is that a humbler individual smallholder-based approach might mean a sacrifice of some aggregate production, but with the benefit of more robust land-use models and significant numbers of beneficiaries. Importantly, these three perspectives are not altogether mutually exclusive. However, a concern we have, particularly with the mentorship/strategic partner solution, is that there is little indication that it is a scalable approach. As for a smallholder versus medium-to-large-scale commercial farmer approach, they are both consistent with a pathway strategy; the problem at present is that, in the absence of an explicit pathway strategy (supported by an appropriate targeting policy), they appear to be alternatives rather than complements.

One final element to consider in respect of the relationship between land reform and smallholders is the spatial issues associated with land reform. Returning to the Munzhedzi case study, one reason so many people moved onto the land in such a brief period was that the land abuts the border between former Venda and former white South Africa, thus offering an opportunity for land-poor households to access new land without having to move far from their social networks, established services such as schools and clinics, etc.<sup>70</sup> Notwithstanding the very limited agricultural potential of Munzhedzi, the level of satisfaction is very high relative to most other land reform projects, and thus one does not ob-

67 After all, the 'breakthrough' move of allocating R500 million to enhance extension services nationally will only allow for the total number of extension officers to return to what it was in the late 1990s, which was hardly adequate.

68 The Director General of the Department of Land Affairs has said in an interview that probably around 50% of all projects have failed or collapsed; this is supported by various partial studies as well as unpublished reports.

69 In the absence of a current, proper study of the (potential) impact of land reform on national-level food security, our feeling is that the concern is exaggerated, though possibly the impact on the current account could be more serious.

70 It is also well established that in some areas commercial farmland adjacent to tribal areas is commonly understood to belong to the tribe, so that when such land is acquired by land reform beneficiaries, there are expectations that they will hold that land in terms of tribal norms and rules.

serve the dramatic attrition of 'active members' that is so typical of other projects. By contrast, when an emerging black farmer acquired land through LRAD about five kilometres down the road, he quickly experienced problems at the hands of his neighbours: most of his irrigation pipes have been stolen or sabotaged, while his border fence is frequently compromised. Similar phenomena have been observed elsewhere, whereby a black commercial farmer established adjacent to a communal area is resented by his neighbours, seemingly because they perceive that 'one of their own' has acquired a vast amount of land compared to what they have. Also by contrast, it is now well known that when beneficiary groups acquire land some distance from their communities (beyond walking distance), most do not relocate to their new property, nor do they carry on commuting to it in order to engage in farming there.

Although admittedly based on scattered case study evidence, these observations serve to illustrate that there are spatial considerations that refer to the type of land reform beneficiary, in the context of the location of the transferred land relative to densely settled rural communities. In terms of integrating redistributive land reform within a broader agricultural development strategy, the suggestion would therefore be that acquisition of land adjacent to densely settled former homeland areas could be prioritised for the establishment of various types of smallholders, from where the more successful cases could be assisted to graduate (and relocate) to larger properties further away.

## Order-of-magnitude achievable

This final section ventures some order-of-magnitude estimates as to possible numbers of households that might be affected by a set of interventions such as those sketched above. We begin by recalling the conceptually distinct types of possible improvements laid out in the introduction:

- improving the performance of subsistence-oriented smallholders;
- encouraging/enabling smallholders who are currently subsistence oriented to benefit from a more commercial orientation;
- improving the performance of commercially oriented smallholders; and

- increasing the participation in smallholder agriculture among those (especially rural dwellers) who do not practise agriculture.

## Improving the performance of subsistence-oriented smallholders

In respect of improving the performance of subsistence-oriented smallholders, the main intervention mooted above was improved access to water. Obviously, a number of other measures could be identified as well, but our attention to water access was to accentuate the benefits of subsistence farming as dramatically as possible. Given current technical and delivery models relevant for rainwater harvesting (e.g. infield rainwater harvesting and trench-bed gardening), the constraints in terms of scaling up are both budgetary and linked to skilled delivery personnel. For the sake of argument, assuming the latter constraint could be dealt with by simplifying the model and building upon a train-the-trainers approach, and assuming furthermore that the unit costs could be reduced to, say, R25 000 per household, then a generous budget of R1 billion could reach approximately 40 000 households. Relative to the current figure of 2 to 2.5 million subsistence-oriented households, this is far too few. Therefore, developing less expensive models is vital. A more viable approach might involve village-level demonstrations, reinforced by modest subsidies on materials needed for own-construction, for example bitumen to line tanks. Given the observation that successful rainwater systems do diffuse through direct observation, the key would be to build on this process rather than seek to engage on a household-by-household implementation approach. A very crude estimate is that with a budget of R500 million, one could reach about 400 000 households.<sup>71</sup> This starts to become a meaningful number.

The second area requiring urgent attention is the protection and enhancement of indigenous agricultural systems, such as the production of African vegetables. The research showed that the government is investing sizable sums into community gardens and other 'poverty alleviation' projects that are effectively fruitless, while neglecting existing systems that are well tailored to the environmental and household circumstances of those affected. However, these systems are under threat and would benefit not only from direct acknowledgement, but also from tangible steps to assist farmers/gardeners to reduce soil erosion, enhance soil fertility, and

<sup>71</sup> This is estimated as one demonstration project for every 800 households at a cost of R100 000 per project, including facilitation and extension, and assuming an uptake by 9% of households and a materials subsidy of R100 per household.

maintain a steadily disappearing body of knowledge.

### **Encouraging/enabling smallholders who are currently subsistence oriented to benefit from a more commercial orientation**

In terms of encouraging smallholders who are currently subsistence oriented to become more commercially oriented, the main measure indicated above is the creation of supportive marketing infrastructure. At this stage we can only speculate as to the extent of the response, but assuming a modest 'conversion' from subsistence to commercial of, say, 5%, an order-of-magnitude estimate is 100 000 households, involving perhaps 200 000 individuals. Assuming a modest increase in access to irrigated land through redistributive land reform of about 50 000 hectares (which is about the extent of current irrigation schemes), and plot sizes similar to those on existing schemes, then this would allow for a further 15 000 to 20 000 commercially oriented smallholder opportunities, and would probably absorb about one-quarter to one-third of the capital budget for redistribution for 2007/08, taking into account both land purchase and infrastructure costs. Any such measures should be complemented by efforts to address the transactions costs that impact on smallholders benefiting from commercial opportunities, including marketing cooperatives that assist smallholders to benefit from bulk discounts on purchased inputs and have more bargaining power when trying to dispose of outputs.

### **Improving the performance of commercially oriented smallholders**

Improving the performance of commercially oriented smallholders rests on two priority interventions, namely the investment in market infrastructure mentioned above (both physical *and* institutional), and undertaking land administration in former homeland communities in order to free up land for cultivation. In respect of

the latter, our very rough cost estimate is R600 million to R1 billion. Between the two measures, we would conservatively expect half of all existing commercially oriented smallholders to benefit, that is, about 100 000 households.

### **Increasing the participation in smallholder agriculture among those (especially rural dwellers) who do not practise agriculture**

This objective is arguably even more difficult to quantify than those above, given our poor understanding as to why so many rural black households (approximately 1.6 million) do *not* practise agriculture. Our best guess is that land constraints are one factor, where this has to do as much with poor land quality as with availability, while availability of labour and cash are other factors. With a modest budget of about R500 000, one could acquire sufficient land to accommodate about 450 000 households. The rainwater harvesting initiative described above would complement such an effort. Redistributive land reform would have to re-include a focus on landlessness, which has disappeared in recent years.

On the one hand, there is clearly scope for assisting large numbers of people through interventions in the agricultural sector. However, even though the interventions indicated here as priorities are for the most part based on actual experiences (the main exception is the government's plans for investment in marketing infrastructure, about which we do not know enough), none of these interventions has been attempted at scale, and some would require rethinking in order to make them practicable and affordable at scale. Moreover, to the extent that some of the interventions also involve redistributive land reform, they imply a decisive shift away from current land reform practice, which is not at all to suggest that land reform as a whole would have to be reoriented, but that it would have to make deliberate space for the more smallholder-oriented measures.

# References

- AfricaBio (2004) *Agricultural Biotechnology: Facts for Decision Makers*. Pretoria: AfricaBio.
- Aliber M (2009) *Exploring Statistics South Africa's National Household Surveys as Sources of Information about Food Security and Subsistence Agriculture*. Working Paper. Pretoria: Centre for Poverty, Employment and Growth, HSRC.
- Altieri MA, Rosset P & Thrupp LA (1998) The potential of agroecology to combat hunger in the developing world. *2020 Brief 55*, October. Washington, DC: International Food Policy Research Institute.
- Auerbach R (2003) *Rainwater Harvesting: A Literature Survey*. Durban: Rainmain Landcare Foundation.
- Barret CB & Matumbatsere E (2005) Agricultural markets in developing countries. Cornell University Working Paper. In LE Blume & SN Durlauf (eds) *The New Palgrave Dictionary of Economics, 2nd edition*. Hampshire: Palgrave Macmillan.
- BIOTHAI, CEDAC, DRCSC, GRAIN, MASIPAG, PAN-Indonesia & UBING (2001) *Grains of Delusion: Golden Rice Seen from the Ground*. Los Baños, Philippines: MASIPAG.
- Botha JJ, van Rensburg LD, Anderson JJ, Hensley M, Macheli MS, van Staden PP, Kundhlande G, Groenewald DG & Baiphethi MN (2003) *Water Conservation Techniques on Small Plots in Semiarid Areas to Enhance Rainfall Use Efficiency, Food Security, and Sustainable Crop Production*. Report No. 1176/1/03. Pretoria: Water Research Commission of South Africa.
- Botha L, Mafu J, Mmakola D, Modiba M, Mulaudzi J & Ngcobo T (2005) *Can We Get Them There? A Case of Commercializing Arable Farming at Rust De Winter Farms of Limpopo Province, South Africa*. Working Document Series 124. Wageningen: International Centre for Development Oriented Research in Agriculture.
- Boyce JK (2004) *A Future for Small Farms? Biodiversity and Sustainable Agriculture*. Working Paper Series No. 86. Amhest, MA: Political Economy Research Institute, University of Massachusetts.
- Butler J, Rotberg RI & Adams JB (1978) *The Black Homelands of South Africa: The Political and Economic Development of Bophuthatswana and Kwa-Zulu*. Berkeley, California: University of California Press.
- Byres TJ (2004) Redistributive land reform today. Special issue of *Journal of Agrarian Change* 4(1/2).
- CASE (Community Agency for Social Enquiry) (2005) *Assessment of the Status Quo of Settled Land Restitution Claims with a Developmental Component Nationally*. Forest Town, Johannesburg: Community Agency for Social Enquiry.
- Cleveland DA (1991) New crop varieties in a green revolution for Africa: Implications for sustainability and equity. In RE Downs, DO Kerner & SP Reyna (eds) *The Political Economy of African Famine*. New York: Gordon & Breach.
- Crookes TJ & Lyne MC (2003) Efficiency and equity gains in the rental market for arable land: Observations from a communal area of KwaZulu-Natal, South Africa. *Development Southern Africa* 20(5), December: 579–593.
- Daane J (2007) *New Pathways to Build Capacity for Development Oriented Agricultural Research and Innovation*. Retrieved from <http://www.nuffic.nl/home/news-events/docs/events/kotml/abstracts-and-papers/J.Daane%20New%20pathways%20to%20build%20capacity%20for%20development%20oriented%20agricultural%20research%20and%20innovation.pdf> on 14 June 2008.
- de Grassi A (2003) Genetically modified crops and sustainable poverty alleviation in sub-Saharan Africa: An assessment of current evidence. *Third World Network: Africa*. Retrieved from <http://www.grain.org/research/?id=99> on 25 January 2005.
- de Lange M (1994) *Small Scale Irrigation in South Africa*. WRC Report No. 578/1/94. Pretoria: The Water Research Commission & Murray Biesenbach and Badenhorst.
- de Satge R (1988) Herschel in history. National Land Committee course in land use and

- livelihoods. PLAAS and Developmental Services, Cape Town.
- de Villiers H, Oettle L & Salomon M (eds) (2005) *Catalogue of Farmer Innovations – Prolinnova–South Africa Inception Phase 2004*. Pietermaritzburg: Midnet. Launched at the opening of the Prolinnova–SA workshop, 15–16 February, Pietermaritzburg.
- Denison J & Wotshela L (2008) *Indigenous Water Harvesting and Conservation Practices: Historical Context, Cases and Implications*. Report to the Water Research Commission. Gezina: Umhlaba Consulting Group.
- Department of Agriculture (1995) *White Paper on Agriculture*. Pretoria: Department of Agriculture. Retrieved from [www.gautengleg.gov.za](http://www.gautengleg.gov.za) on 4 June 2010.
- Department of Agriculture (2001) *Strategic Plan for South African Agriculture*. Pretoria: Department of Agriculture.
- Department of Agriculture (2005) *National Education and Training Strategy for Agriculture and Rural Development in South Africa*. Pretoria: Department of Agriculture.
- Department of Agriculture (2008a) *The State of Extension and Advisory Service within the Agricultural Public Service: A Need for Recovery*. Pretoria: Department of Agriculture.
- Department of Agriculture (2008b) *Abstract of Agricultural Statistics*. Pretoria: Department of Agriculture.
- Department of Land Affairs (2008) *Annual Report 2007/08*. Pretoria: Department of Land Affairs.
- D’Haese M & van Huylbroeck G (2005) The rise of supermarkets and changing expenditure patterns of poor rural households: Case study in the Transkei area, South Africa. *Food Policy* 30(1), February: 97–113.
- Drew P (2002) *Concerns Over the Use of Genetically Modified Organisms as Food or Feeds: A Thorough Review*. Retrieved from [http://www.sapet.co.za/Articles\\_Research/GMOpaper.doc](http://www.sapet.co.za/Articles_Research/GMOpaper.doc) on 11 July 2005.
- Duvel G (2003) *Towards an Appropriate Extension Approach for South Africa: Recommendations – Executive Report*. Pretoria: South African Institute for Agricultural Extension, University of Pretoria.
- Endo Y & Boutrif E (2002) Plant biotechnology and its international regulation – FAO’s initiative. *Livestock Production Science* 74(3): 217–222.
- FAO (Food and Agricultural Organisation of the United Nations) (2003) *Training Course on Water Harvesting*. FAO Land Water Digital Media Series No. 26. Rome: Food and Agricultural Organisation of the United Nations.
- FAO (2004) *The State of Food and Agriculture 2003–2004. Agricultural Biotechnology: Meeting the Needs of the Poor?* Rome: Food and Agricultural Organisation of the United Nations.
- Feder G (1985) The relationship between farm size and farm productivity. *Journal of Development Economics* 18: 297–313.
- Ferguson J (1985) The Bovine Mystique: Power, property and livestock in rural Lesotho. *Man, New Series*, 20(4), December: 647–674. [http://links.jstor.org/sici?sici=00251496\(198512\)2:20:4%3C647:TBMPPA%3E2.o.CO;2-U&](http://links.jstor.org/sici?sici=00251496(198512)2:20:4%3C647:TBMPPA%3E2.o.CO;2-U&).
- Fransen L, La Vina A, Dayrit F, Gatlabayan L, Andreas Santosa D & Adiwibowo S (2005) *WRI White Paper: Integrating Socio-economic Considerations into Biosafety Decisions: The Role of Public Participation*. Washington, DC: The World Resources Institute.
- Franzel S, Place F, Reij C & Tembo G (2004) Strategies for sustainable natural resource management. Building on successes in African agriculture. *Focus 12*. Policy Brief 8 of 10. Washington: International Food Policy Research Institute.
- Glass H (1995) *Anthropological Evaluation of the Farmers Support Programme within the Context of Rural Development*. Johannesburg: Development Bank of Southern Africa.
- Gouse M, Kirsten J & Jenkins L (2003) Bt Cotton in South Africa: Adoption and the impact on farm incomes amongst small-scale and large-scale farmers. *Agrekon* 42(1): 15–28. Pretoria: Department of Agricultural Economics, Extension and Rural Development, University of Pretoria.
- Gouse M, Kirsten J, Shankar B & Thirtle C (2005) Bt Cotton in KwaZulu-Natal: Technological triumph but institutional failure. *AgbiotechNet* 2005 Vol. 7, ABN 134, 1–7.

- Gouse M, Piesse J & Thirtle C (2007) Output and labour effects of GM maize and minimum tillage in a communal area of KwaZulu-Natal. *Journal of Development Perspectives* 2.2: 71–86.
- GRHB (Golden Rice Humanitarian Board) (2005) *Biofortification, a contribution to the alleviation of life-threatening micronutrient deficiencies in developing countries. A unique feat: Golden Rice accumulates pro-vitamin A in the grain*. Retrieved from <http://www.goldenrice.org> on 17 November 2005.
- Hart G (1998) Regional linkages in the era of liberalization: A critique of the new agrarian optimism. *Development and Change* 29(1): 27–54.
- Hart T & Vorster HJ (2006) *Indigenous Knowledge on the South African Landscape: Potentials for Agricultural Development*. URED Occasional Paper No. 1. Cape Town: HSRC Press.
- Hart T & Vorster HJ (2007) *African Indigenous Knowledge Systems in Agricultural Production*. Pretoria: Department of Science and Technology.
- Havnevik K, Bryceson D, Birgegard L-E, Matondi P & Beyene A (2007) *African Agriculture and the World Bank: Development or Impoverishment?* Stockholm: Nordiska Afrikainstitutet, Elanders Sverige AB.
- Hayward J & Botha C (1995) Extension, training and research. In R Singini & J Van Rooyen (eds) *Serving Small Scale Farmers: An Evaluation of DBSA's Farmer Support Programmes*. Halfway House, Johannesburg: Development Bank of Southern Africa.
- Hazell P, Poulton C, Wiggins S & Dorward A (2007) *The Future of Small Farms for Poverty Reduction and Growth*. 2020 Discussion Paper No. 42. Washington, DC: International Food Policy Research Unit.
- Heisey PW & Edmeades GO (1999) *World Maize Facts and Trends 1997/98: Maize Production in Drought Stressed Environments*. Technical Options Research Resource Allocation. International Maize and Wheat Improvement Centre (CIMMYT) of the CGIAR.
- Hendricks S & Lyne M (2003) Expenditure patterns and elasticities of rural households sampled in two communal areas of KwaZulu-Natal. *Development Southern Africa* 20(1): 105–127.
- Hendriks S (2003) The potential for nutritional benefits from increased agricultural production in rural KwaZulu-Natal. *South African Journal of Agricultural Extension* 32: 28–44.
- Hensley M, Botha JJ, Anderson JJ, Van Staden PP & Du Toit A (2000) *Optimising Rainfall Use Efficiency for Developing Farmers with Limited Access to Irrigation Water*. Report No. 878/100. Pretoria: Water Research Commission.
- Huttner E (1997) Transgenic crops debut on the world stage. In GD McLean, PM Waterhouse, G Evans & MJ Gibbs (eds) *Commercialisation of Transgenic Crops: Risk, Benefit and Trade Considerations*. Kingston: Department of Primary Industry and Energy, Bureau of Resource Sciences.
- ISIM (Institute for the Study of International Migration) (2004) *Genetically Modified Food in the Southern Africa Food Crisis of 2002–2003*. Georgetown: Institute for the Study of International Migration, Georgetown University School of Foreign Service.
- ISIS-TWN (Institute for Science in Society-Third World Network) (2005) *The 'Golden Rice': An Exercise in How Not to Do Science*. Retrieved from <http://www.i-sis.org.uk/rice.php> on 25 August 2008.
- Ismael Y, Bennet R & Morse S (2002) Benefits from Bt cotton use by smallholder farmers in South Africa. *AgBioForum* 5(1): 1–5.
- Ismael Y, Beyers L, Thirtle C & Piese J (2000) Efficiency effects of Bt cotton adoption by smallholders in Makhathini Flats, KwaZulu-Natal, South Africa. Paper for the 5th International Conference on Biotechnology, Science and Modern Agriculture: A New Industry at the Dawn of the Century, Ravello, Italy, June.
- Jacobs P (2008) *Market Development and Smallholder Farmers: A Selective Literature Survey*. Background Paper for the Second Economy Project. Cape Town: HSRC Centre for Poverty, Employment and Growth.
- James C (2000) *Preview of the Global Review of Commercialised Transgenic Crops 2000*. ISAAA Brief No. 12. New York: The International Service for the Acquisition of Agri-biotech Applications.
- Jayne TS, Mather D & Mghenyi E (2006) *Smallholder Farming Under Increasingly*

- Difficult Circumstances: Policy and Public Investment Priorities for Africa*. International Development Working Paper No. 86. East Lansing: Michigan State University, Department of Agricultural, Food, and Resource Economics.
- Juma C (2001) Modern biotechnology. Appropriate technology for sustainable food security. *Focus 7*. Policy Brief 4 of 9. Washington: International Food Policy Research Institute.
- Kherallah M, Delgado C, Gabre-Madhin E, Minot N & Johnson M (2002) *Reforming Agricultural Markets in Africa*. Baltimore: Johns Hopkins University Press.
- Kundhlande G, Groenewald DG, Baiphethi MN, Viljoen MF, Botha JJ, Van Rensburg LD & Anderson JJ (2004) *Socio-economic Impact Study of Water Conservation Techniques in Semi-arid Areas*. Pretoria: Water Research Commission.
- Kirsten J & Macheche C (2005) *Appraisal of Land Reform Projects in Northwest Province*. Report submitted to the National Department of Agriculture. Pretoria: Department of Agriculture.
- Kirsten J, Townsend R & Gibson C (1998) Determination of agricultural production to household nutritional status in KwaZulu-Natal, South Africa. *Development Southern Africa* 15(4): 573–587.
- Last C (2006) Addressing rural poverty in South Africa: Extension services' new role. Paper presented at the conference on the role of extension in rural development and poverty alleviation programmes, 9–11 May, Berg en Dal, Kruger National Park, Mpumalanga.
- Lele U & Manmohan A (1989) *Smallholder and Large-scale Agriculture: Are there Trade-offs between Growth and Equity*. MADIA Discussion Paper No. 6. Washington, DC: World Bank.
- Letty B, Hart T & Buscher B (eds) (2007) *Prolinnova South Africa: Promoting local innovation in ecologically-oriented agriculture and natural resource management: Catalogue of local innovations 2006/07*. Unpublished pamphlet.
- Liebenberg F & Kirsten J (2003) Status of agricultural research in South Africa. In L Nieuwoudt & J Groenewald (eds) *The Challenge of Change: Agriculture, Land and the South African Economy*. Pietermaritzburg: The University of Natal Press.
- Lipton M (1972) The South African census and the bantustan policy. *The World Today* XXXVIII(266): 7.
- Lipton M (2005) Can small farms survive, prosper, or be the key channel to cut mass poverty. Paper presented at the FAO symposium on agricultural commercialization and the small farmer, 4–5 May, Rome.
- Louw A, Vermeulen H, Kirsten J & Madevu H (2007) Securing small farmer participation in supermarket supply chains in South Africa. *Development Southern Africa* 24(4): 539–551.
- Lyne MC & Thomson DN (1998) Creating opportunities for farmers in communal areas: Adapting institutions to promote an efficient rental market in arable land. In J Kirsten, J van Zyl & N Vink (eds) *The Agricultural Democratisation of South Africa*. Cape Town: Francolin Publishers.
- Magingxa LL (2006) Smallholder irrigators and the role of markets: A new institutional approach. PhD thesis, Department of Agricultural Economics, University of the Free State, Bloemfontein.
- Makanya Z (2004) 12 reasons for Africa to reject GM crops. *Seedling*. Retrieved from <http://www.grain.org/> on 13 January 2005.
- Makhura MT, Goode FM & Coetzee GK (1998) A cluster analysis of the farmers in developing rural areas of South Africa. *Development Southern Africa* 15(3), Spring: 429–448.
- Mano R, Isaacson B & Dardel P (2003) Identifying policy determinants of food security response and recovery in the SADC region: The case of the 2002 food emergency. FANRPAN Policy Paper: Keynote paper for the FANRPAN Regional Dialogue on Agricultural Recovery, Food Security and Trade Policies in Southern Africa, 26–27 March, Gaborone.
- Matungul PM, Lyne MC & Ortmann GF (2001) Transaction costs and crop marketing in the communal areas of Impedle and Swayimana, KwaZulu-Natal. *Development Southern Africa* 18(3), September: 347–363.
- Meinzen-Dick R, Adato M, Haddad L & Hazell P (2004) *Food Policy Report: Science and Poverty. An Interdisciplinary Assessment of the Impact of Agricultural Research*. Washington, DC: International Food Policy Research Institute.

- Ministry for Agriculture and Land Affairs (1998) *Agricultural Policy in South Africa: A Discussion Document*. November. Retrieved from [www.nda.gov](http://www.nda.gov). Pretoria: Ministry for Agriculture and Land Affairs.
- Ministry for Agriculture and Land Affairs (2008) *Land and Agrarian Reform Project: The Concept Document*. Pretoria: Ministry for Agriculture and Land Affairs.
- Monde N, Botha JJ & Mabusela T (2005) *A Situation Analysis of Guquka and Khayaletu at Nkonkobe Local Municipality, Eastern Cape*. Report for the Water Research Commission, Pretoria.
- Mudhara M & Salomon M (n.d.) *Farmer Groups for Participatory Research and Extension: Experiences from KwaZulu-Natal*. Retrieved from <http://search.sabinet.co.za/agri/images/kwazulu.pdf> on 14 June 2008.
- Nesamvuni AE, Vorster HH, Margetts BM & Kruger A (2005) Fortification of maize meal improved the nutritional status of 1–3 year old African children. *Public Health Nutrition* 8(5): 461–467.
- Odame H, Kameri-Mbote P & Wafula D (2002) *Globalisation and the International Governance of Biotechnology: The Implications for Food Security in Kenya*. IELRC Working Paper No. 2003-2. Geneva: International Environmental Law Research Centre.
- Orton L (2003) *GM Crops: Going Against the Grain*. London: ActionAid.
- Oweis T, Hachum A & Bruggeman A (eds) (2004) *Indigenous Water-harvesting Systems in West Asia and North Africa*. Aleppo, Syria: ICARDA.
- Palmer K & Sender J (2006) Prospects for on-farm self-employment and poverty reduction: An analysis of the South African Income and Expenditure Survey 2000. *Journal of Contemporary African Studies* 24(3): 347–376.
- Pardey PG, Alston JM & Piggott RR (eds) (2006) *Agricultural R&D in the Developing World: Too Little, too Late?* Washington,DC: International Food Policy Research Institute.
- Pardey PG & Beintema NM (2001) *Slow Magic: Agricultural R&D a Century After Mendel*. Washington,DC: International Food Policy Research Institute.
- Pingali PL (2001) Conventional research-based technology. Appropriate technology for sustainable food security. *Focus 7*. Policy Brief 3 of 9. Washington,DC: International Food Policy Research Institute.
- Pinstrup-Andersen P (2001) Overview. Appropriate technology for sustainable food security. *Focus 7*. Policy Brief 1 of 9. Washington,DC: International Food Policy Research Institute.
- PLAAS (Institute for Poverty, Land and Agrarian Studies) (2009) *Livelihoods after Land Reform: South Africa Component*. Draft Research Report. Cape Town: PLAAS, University of the Western Cape.
- Poulton C, Dorward AR & Kydd JG (2005) The future of small farms: New directions for services, institutions, and intermediation. In *The Future of Small Farms: Proceedings of a Research Workshop*, 26–29 June, Wye, UK. Washington, DC: International Food Policy Research Institute. Retrieved from <http://www.ifpri.org/sites/default/files/publications/sfproc.pdf>.
- Presidency (2006) *Second Economy Initiatives*. Pretoria: The Presidency of the Republic of South Africa. Retrieved from <http://www.thepresidency.gov.za/docs/reports/asgis/initiatives.pdf>.
- Presidency (2007a) *National Spatial Development Perspective 2006*. Pretoria: The Presidency of the Republic of South Africa.
- Presidency (2007b) *ASGISA Annual Report 2006*. Pretoria: The Presidency of the Republic of South Africa.
- Presidency (2008) *ASGISA Annual Report 2007*. Pretoria: The Presidency of the Republic of South Africa.
- Pretty J (2001) Farmer-based agroecological technology. Appropriate technology for sustainable food security. *Focus 7*. Policy Brief 2 of 9. Washington,DC: International Food Policy Research Institute.
- Provincial Government of the Western Cape, (2006) *Speech by Mr Cobus Dowry, Western Cape MEC for Agriculture, at the opening of Philippi Fresh Market, delivered by MEC for Sport and Cultural Affairs Whitey Jacobs*, retrieved 30 August, 2008 from [http://www.polity.org.za/article.php?a\\_id=97588](http://www.polity.org.za/article.php?a_id=97588)

- Prowse M & Brauholtz-Speight T (2007) *The First Millennium Development Goal, Agriculture and Climate Change*. ODI Opinion Paper No. 85. London: Overseas Development Institute.
- Pschorn-Strauss E (2005) BT cotton in South Africa: The case of the Makhatini farmers. *Seedling*, April. Retrieved from <http://www.grain.org> on 25 May 2005.
- Reij C & Waters-Bayer A (eds) (2001) *Farmer Innovation in Africa: A Source of Inspiration for Agricultural Development*. London: Earthscan Publications.
- Reij C, Scoones I & Toulmin C (eds) (1996) *Sustaining the Soil: Indigenous Soil and Water Conservation in Africa*. London: Earthscan Publications.
- Rosset PM (1999) *The Multiple Functions and Benefits of Small Farm Agriculture in the Context of Global Trade Negotiations*. Policy Brief No. 4. Oakland, CA: Institute for Food and Development Policy, Food First.
- Scoones I (2002) Agricultural Biotechnology and Food Security: Exploring the Debate. IDS Working Paper No. 145, January. Sussex: Institute of Development Studies.
- Scoones I (2004) Debating GM crops. *Insights* 52, December.
- Scoones I, Thompson J & Chambers R (2007) *Farmer First – Retrospect and Prospect: Reflections on the Changing Dynamics of Farmer Innovation in Agricultural Research and Development in Preparation for the Farmer First Revisited Workshop*. Retrieved from [http://www.future-agricultures.org/farmerfirst/files/FFR\\_Overview\\_paper.pdf](http://www.future-agricultures.org/farmerfirst/files/FFR_Overview_paper.pdf) on 14 June 2008.
- Sender J (1995) A failure of analytical categorisation. In R Singini & J van Rooyen (eds) *Serving Small-scale Farmers: An Evaluation of the DBSA's Farmer Support Programmes*. Halfway House, Johannesburg: Development Bank of Southern Africa.
- Sender J & Johnston D (2004) Searching for a weapon of mass production in rural Africa: Unconvincing arguments for land reform. *Journal of Agrarian Change* 4(1/2): 142-164.
- Singh H (2005) The future of small farms: New directions for services, institutions, and intermediation. In *The Future of Small Farms: Proceedings of a Research Workshop*, 26–29 June, Wye, UK. Washington, DC: International Food Policy Research Institute.
- Singini R & van Rooyen J (eds) (1995) *Serving Small Scale Farmers: An Evaluation of the DBSA's Farm Support Programmes*. Halfway House, Johannesburg: Development Bank of Southern Africa.
- Stoop W & Hart T (2005) Research and development towards sustainable agriculture by resource-poor farmers in sub-Saharan Africa: Some strategic and organisational considerations in linking farmer practical needs with policies and scientific theories. *IJAS* 3(3): 206–216.
- Stoop WA (1987) Variations in soil properties along three toposequences in Burkina Faso and implications for the development of improved cropping systems. *Agriculture, Ecosystems and Environment* 19(3): 241–264.
- Stoop WA, Pattanayak CM, Matlon PJ & Root WS (1982) A strategy to raise the productivity of subsistence farming systems in the West African semi-arid tropics. In *Proceedings of International Symposium on Sorghum*, 2–7 November 1981, Patancheru, AP, India. ICRISAT: 519–526.
- Sustainable Development Consortium (2007) *A Settlement and Implementation Support Strategy for Land and Agrarian Reform in South Africa*. Pretoria: Commission on Restitution of Land Rights.
- Thagwana M (forthcoming) Trends in women's participation in agriculture at Tshiombo Irrigation Scheme, Limpopo province. Master's thesis, Institute for Poverty, Land and Agrarian Studies, University of the Western Cape.
- Thirtle C, Beyers L, Ismael Y & Piesse J (2003) Can GM-technologies help the poor? The impact of Bt cotton in the Makhatini Flats, KwaZulu-Natal. *World Development* 31(4): 717–732.
- Tripp R (1999) The debate on genetically modified organisms: Relevance for the south. *ODI Briefing Paper* 1999(1): 1–11. London: Overseas Development Institute.
- Tripp R (2001) Agricultural technology policies for rural development. *Development Policy Review* 19(4): 479–489.

- Uphoff N, Kassam A & Stoop W (2008) A critical assessment of a desk study comparing crop production systems: The example of the 'system of rice intensification' versus 'best management practice'. *Field Crops Research* 108(1), July: 109–114.
- van Averbeke W (2008) *Best Management Practices for Small-scale Subsistence Farming on Selected Irrigation Schemes and Surrounding Areas through Participatory Adaptive Research in Limpopo Province*. Report No. TT 344/08. Pretoria: Water Research Commission.
- van Rooyen J (1995) Overview of DBSA's farmer support programme: 1987–1993. In R Singini & J van Rooyen (eds) *Serving Small-scale Farmers: An Evaluation of the DBSA's Farmer Support Programmes*. Halfway House, Johannesburg: Development Bank of Southern Africa.
- van Staveren JTh & Stoop WA (1985) Adaptation to toposequence land types in West Africa of different sorghum genotypes in comparison with local cultivars of sorghum, millet and maize. *Field Crops Research* 11: 13–35.
- Vinciani F, Stamoulis KG & Zezza A (2001) Summary of results of the survey. In K Stamoulis (ed.) *Food, Agriculture and Rural Development: Current and Emerging Issues for Economic Analysis and Policy Research*. Rome: Food and Agricultural Organisation of the United Nations.
- Vink N (2004) The influence of policy on the role of agriculture in South Africa. *Development Southern Africa* 21(1), March: 155–177.
- Vink N & Kirsten J (2003). Agriculture in the national economy. In L Niewoudt & J Groenewald (eds) *The Challenge of Change: Agriculture, Land and the South African Economy*. Pietermaritzburg: University of Natal Press.
- Witt H, Patel R & Schnurr M (2006) Can the poor help GM crops? Technology, representation & cotton in the Makhathini Flats, South Africa. *Review of African Political Economy* 33(109): 497–513.
- Wolpe H (1972) Capitalism and cheap labour-power in South Africa: From segregation to apartheid. *Economy and Society* 1(4): 425–456.
- World Bank (2007) *World Development Report (WDR) 2008: Agriculture for Development*. Washington, DC: The World Bank.
- Wynne AT & Lyne MC (2004) Rural economic growth linkages and small-scale poultry production: A survey of producers in KwaZulu-Natal. *Agrekon* 43(1), March: 1–21.
- Yan L & Kerr PS (2002) Genetically engineered crops: Their potential use for improvement of human nutrition. *Nutrition Reviews* 60(5): 135–141.
- Zimmerman FJ & Carter MR (1999) A Dynamic Option Value for Institutional Change: Marketable Property Rights in the Sahel. *American Journal of Agricultural Economics* 81(2), May: 467–478.

# Appendix I: case study methodology

## Objectives of the case studies

The objective of the case studies is to describe a selection of smallholder projects or situations and to analyse these according to the guiding research questions. The case studies will involve the empirical collection of data, even if this is done only to provide an update on issues or to fill in the gaps.

## Data collection in case studies

### The aim of data collection in case studies

The aim of data collection in case studies is to describe the case as comprehensively as possible. This necessitates describing different perspectives of the case. Case studies allow for methodological flexibility. This means that selection of the most appropriate method is based on the type of data needed to describe particular perspectives.

### Choice of methods

Budget and time constraints limit the methodological options and favour the use of rapid rural appraisal methods in data collection but, where necessary and appropriate, other methods should be employed, including observations, in-depth interviews with key informants, and quantitative methods, particularly when the economic perspective is investigated. Whatever method is used in data collection, the *trustworthiness* of the data should be a primary concern and the use of triangulation of information is encouraged for that purpose.

When using rapid rural appraisal techniques involving group activities, Irvin Mariga (of the project team) advises that to ensure the truthfulness of the information secured by the participatory rural appraisal techniques, efforts must be made to separate group leaders from the rest as there is a high risk of dominance by these leaders (e.g. chairperson, secretary, headman). His experience is that such people will present their views to the exclusion of others, in other words, the ordinary

members tend to endorse what the leadership says. The level of involvement changes completely once the 'big fish' are not in the group. One effective way of 'removing' them is to conduct a 'key informant interview' parallel to the group activity. This can be used to get more insight into the project or some other aspects relevant to the project. Likewise, the group should not be engaged in the presence of the extension workers, as this may lead to group members saying what the officials would like to hear about a project. Mariga warns that in a number of cases the group leadership and/or extension staff can be stumbling blocks.

With reference to the economic perspective, the recommendation is to develop farm budgets with participants. As indicated in our workshop, many farmers enjoy this activity because it provides them with new insight into the economic and financial aspects of their enterprise. The use of flip charts to record the information is recommended because it enables participants to see how the budget is being compiled. Michael (project manager) has provided two input documents on the compilation of farm budgets which should be of great help in the different cases. You are reminded that the production systems perspective should provide you with useful information on the specific elements that need to be included in the farm budgets of your specific case.

Lastly, ensure that your case reports contain a methodology section which specifies exactly how the different data sets were collected and analysed.

### Important perspectives of the cases

The proposal to describe the case from different perspectives is justified by the expectation of this project that research teams have to make sense of the complex make-up of their cases. The different perspectives are expected to provide the research teams with the data necessary to describe and analyse their cases in a holistic way, and also enable the teams to answer the research questions that guide this project for the cases they have investigated.

The original list of perspectives that was presented at the first team workshop on 25 June 2008 in Benoni has been adapted in accordance with the comments and recommendations that were made at the meeting on the first version, and subsequent comments and contributions to the second version.

The final list, which is presented in Table A1.1, also elaborates on links between particular perspectives and the research questions. In some cases, several perspectives are necessary in order to answer a question, and this is reflected.

The order in which the perspectives appear in the list is deliberate in that data collection towards developing perspectives appearing early in the list will assist data collection found lower down in the list.

**Table A1.1: Perspectives to be used in the description and analysis of the case studies**

Perspective	Related research questions	Guidance on possible data collection methods
Historical	Change and adaptability	<p>Describing the history of the case provides useful information on how the case came about, how it evolved and how it was sustained. Typically, the history of the case will provide information on important events, such as achievements and mishaps. How these events came about and were dealt with will provide clues to the factors that contributed to success or to ways of coping with setbacks. In my experience, compiling a timeline is probably the most appropriate method to collect data on the history of the case. The timeline method is a participatory data collection method. It involves organising a meeting with participants in the case during which the history of the case is reconstructed using their collective memory. It is advisable to record the timeline on a flip chart and to display the information to participants as it is being recorded. Rick suggests doing the timeline using cards to record key events in the project, which can then be moved into a sequence on a timeline. People do not always agree on dates and the order of things and the cards provide flexibility in the ordering of events. He also recommends that, depending on the nature of the case, timeline construction should be done separately by men and women. This often adds events which otherwise go unreported.</p> <p>Creation of the timeline is best done by two researchers, one to ask questions and facilitate the discussions among participants and the other to record what is being said on the flip chart. Preferably, the duration of a timeline session should not be much longer than one hour because attention to detail and is important for the trustworthiness and comprehensiveness of the discussion. If a break is included for refreshments, two consecutive sessions can be conducted in a day. Alternatively, arrange for a follow-up session on another day at the convenience of participants. The creation of the timeline is best done by constructing a two-column table with the first column containing time references (date, or month and year, or year). To enhance trustworthiness, this transcript is presented to participants in a feedback meeting, enabling them to make corrections, comments or additions where necessary.</p> <p>Triangulation of timeline information can be done by accessing historical documents. Once finalised, the transcript can be transformed into a narrative (see example of Dzindi). Analysis of the timeline would make use of themes that are important to the objectives of this study.</p>
Natural resources	Access to key means of production	<p>Land-based farming activities are often highly dependent on the quality and extent of the available natural resources, that is soil, topography, vegetation, climate and water. Where applicable, these resources should be described as accurately as possible. Data can be obtained by various means but accessing secondary data will probably be the principal method, with empirical data collection being used to fill the gaps. The analysis of natural resource data is typically concerned with their potential for particular types of land use. In cases where environmental conditions are largely controlled by farmers (e.g. broiler units, greenhouses), the natural resources perspective will be less important than in others.</p>

<p>Physical resources</p>	<p>Access to key means of production</p>	<p>Physical resources refer to infrastructure and equipment that is used to farm. Data on physical resources are collected by creating an inventory. Secondary sources of data may be available but it is important to also use direct observation, including photographic evidence. Direct observation should be complemented by conducting interviews with key informants. This can be done during a transect walk of the study site aimed at visiting the different physical resources that are available. During empirical data collection, the quality of the physical resources should get attention. Age, predicted lifespan and current state are important aspects that enable assessment of the quality of physical infrastructure. It is also important to find out how the different physical resources were acquired. This will provide clues on the need for external interventions for replication of the particular case. Ask questions about operation and maintenance of moving equipment, pumps and immovable infrastructure, such as fences and farm buildings.</p> <p>Information collected for developing the physical resources perspective can later be triangulated with data collected for the economic perspective.</p>
<p>Production system</p>	<p>Marketing and transactions costs</p> <p>Economic co-operation and coordination</p> <p>Participation in other sections of agricultural commodity chains</p> <p>Gender</p>	<p>The production systems perspective is concerned with the object of farming and the way it is produced, collected, stored, transformed, distributed and consumed. It is proposed that we use the filière approach presented in Figure A1.1 to develop comprehensive descriptions of the production systems perspective of the cases.</p> <p><b>Figure A1.1: Analytical framework used in the study of a filière</b></p> <p>Figure A1.1 depicts the different steps in the journey of agricultural commodity 'from seed to plate'. Two examples of the use of the filière approach in the development of the production perspective on a particular commodity (in both cases leafy vegetables) can be found in <i>Water SA</i>, 33(3):343-348 and 349-354, accessible through the Water Research Commission website. These articles also provide ideas on the data collection methods that can be used to develop production perspectives of commodities.</p>

		<p>To obtain comprehensive descriptions it is important to accurately describe the different activities that occur during each of the steps, the actors involved and the material and social technology used. During data collection towards the production perspective, carefully note where interactions occur among farmers and between farmers and external agencies. This will assist when collecting data on the institutional perspective. It will also provide clues in terms of additional economic or livelihood activities that are associated with farming in the case. Linked economic activity may be linked to primary production, as in the case of farm workers, or to backward (input and service suppliers) or forward linkages (retailers and processors of produce). Note that Figure A1.1 is deficient in that it only covers primary production and forward linkages but not backward linkages. Backward linkages refer to goods (e.g. seed, fertilisers, plant protectants, livestock feeds, chicks in the case of broiler production, medication and vaccines) and services (land preparation services, health services) that are sourced by farmers to enable or support primary production. The extent to which these goods and services are sourced locally influences the growth effect of agriculture on the local economy, which is an important consideration in local economic development.</p>
Economic	<p>Economic co-operation and co-ordination</p> <p>Marketing and transactions costs</p> <p>Participation in other sections of agricultural commodity chains</p>	<p>The economic perspective is primarily concerned with the cost and income of production. In my experience, the participatory compilation of farm budgets is a rapid but insightful method to develop an economic perspective of a farm enterprise. Participants particularly enjoy the data collection when the farm budget is recorded on flip charts because it provides them with new insights into their enterprise.</p> <p>Note that the production systems perspective provides clues on what needs to feature in the farm budget for the case.</p> <p>Using the historical perspective as a guide, it is very useful to find out how participants have dealt with identified stresses and shocks in the past. Recent examples are the rapid increase in the food (read feed) and fuel prices. One must also consider the link between the natural resources section and the changing nature and frequency of environmental shocks and stresses – extreme weather events, droughts, invasive aliens, changing rangeland composition, temperatures and water scarcity.</p>
Policy	Policy environment	<p>The policy perspective is concerned with the impact of policy decisions on the case. The historical perspective of the case can be used to find information on the policy regime that prevailed at the time the case came about. This information can be obtained by reviewing literature on the history of smallholder policy. The historical perspective can also point out the impact of subsequent policy on the case. These impacts need to be carefully documented, which can be done by interviewing participants who experienced them. The policy framework that applied at the initiation of the project often has a direct impact on the way resources were made available and on the tenure regime that governed access and use of these resources.</p>

<p>Social and institutional</p>	<p>Institutions and access</p> <p>Tenure</p>	<p>The institutional perspective is concerned with agriculture as a social activity, in other words, how people interact with one another and with external agencies in order to access and make use of resources for farming. Resources may be tangible, such as land or water, or intangible, such as information, contacts and networks. Resources may be under the control of individuals in the homestead (gender, age), the homestead as an entity, the group or an external entity. This is a difficult perspective to study over a short period of time, because relevant and trustworthy information is not easily made available by participants. The chapter by Ferguson (1985) entitled <i>The Bovine Mystique</i> is a wonderful example of an institutional analysis that was done in Lesotho. In this case, cattle were the institution that was investigated. The text provides evidence on how data were collected and how these data were analysed and used to explain the bovine mystique.</p>
<p>Human</p>	<p>Gender</p> <p>Class</p>	<p>For the purpose of this project, the human perspective should focus on capabilities and participation. Life histories of selected participants are a useful method to collect data for this purpose.</p>
<p>Livelihood</p>	<p>Access to key means of production</p> <p>Participation in other sections of agricultural commodity chains</p> <p>Class</p> <p>Change and adaptability</p>	<p>For the purpose of this project, new data collection towards development of the livelihood perspective should primarily be concerned with the relationship between farming and the way participants make a living. Information on the other parts that contribute to the livelihood concept can be deduced from data that were collected for the development of other perspectives. Information on tangible livelihood assets, at least as far as farming is concerned, is provided by the natural and physical resource perspective. Information on livelihood capabilities can be derived from the data collected towards development of the human perspective.</p> <p>Information on livelihood outcomes may be obtained from data collected for development of the economic perspective, at least as far as farming is concerned. The time available for the conduct of the case studies does not allow for the collection of comprehensive data sets for livelihood analysis. Instead, it is recommended that the focus be on finding out in qualitative terms what farming represents in the livelihood of homesteads that form part of the case.</p> <p>Of key importance are the livelihood outcomes participants achieve from participating in the case in terms of form, for example social benefits, food, cash, and the degree of adequacy of these outcomes. It is also useful to ask questions about people's expectations, for themselves and particularly for their children. This provides clues to the extent to which participants link their future to agriculture.</p>

Identity	What constitutes success in smallholder farming	This perspective looks at the diversity of perceptions of the case, primarily in terms of its success. The purpose of generating this perspective is to document how different groups that have an interest in the case view the case (e.g. male versus female, participants versus outsiders, public servants and government officials). Focus groups or semi-structured interviews with representatives of different social groups are ways in which data on the social perspective can be obtained.
Future	Implementation strategies  Policy environment	This perspective is concerned with how participants would like their projects to evolve and what they believe is needed to bring about change in the desired direction.
Environmental	Change and adaptability	<p>It is important to understand from people how the technologies and farming practices they are using are impacting on the environment. Are livestock keepers overgrazing certain areas, are environmentally sound/friendly technologies being used? What are the likely short-and long-term effects of the technologies and practices? Is degraded land being reclaimed/restored? Some technologies - depending on how they are implemented - are environmentally friendly while others are not. Various water harvesting technologies are friendly, as are certain types of intercropping.</p> <p>Also, perhaps one should consider how environmentally, socially and financially sustainable certain practices are. A lot of projects of the Department of Agriculture seem to require ongoing financial support and promote the use of agrochemicals - this may not be sustainable in the long term. Permaculture, on the other hand, is based on using what is available and tends to be more sustainable. Some indigenous knowledge practices are environmentally sustainable and others are not.</p>

# Appendix 2: overview of secondary statistical sources and their advantages and disadvantages

## Introduction

Establishing basic facts and figures regarding smallholders is difficult. The annual *Abstract of Agricultural Statistics* put out by the Department of Agriculture (e.g. Department of Agriculture 2008b) has no figures for the number of smallholders, and as for the amount of agricultural land in the former homelands (which is where the vast majority of smallholders are located), the figures presented are from a DBSA study published in 1991, the current relevance of which is difficult to judge. Among Statistics South Africa's household surveys, both the GHS and the LFS ask some questions of relevance; however, they consistently disagree by a large margin. Our preference is for the LFS, for which the filter question regarding involvement in agriculture is appropriately broad, which probably accounts for the fact that according to the LFS there are twice as many black South African households involved in agriculture for their own account than according to the GHS.

Another source worth exploring is the CEC which, in addition to estimating production of major crops by commercial producers, estimates production of maize among 'subsistence producers'.

## Labour Force Survey

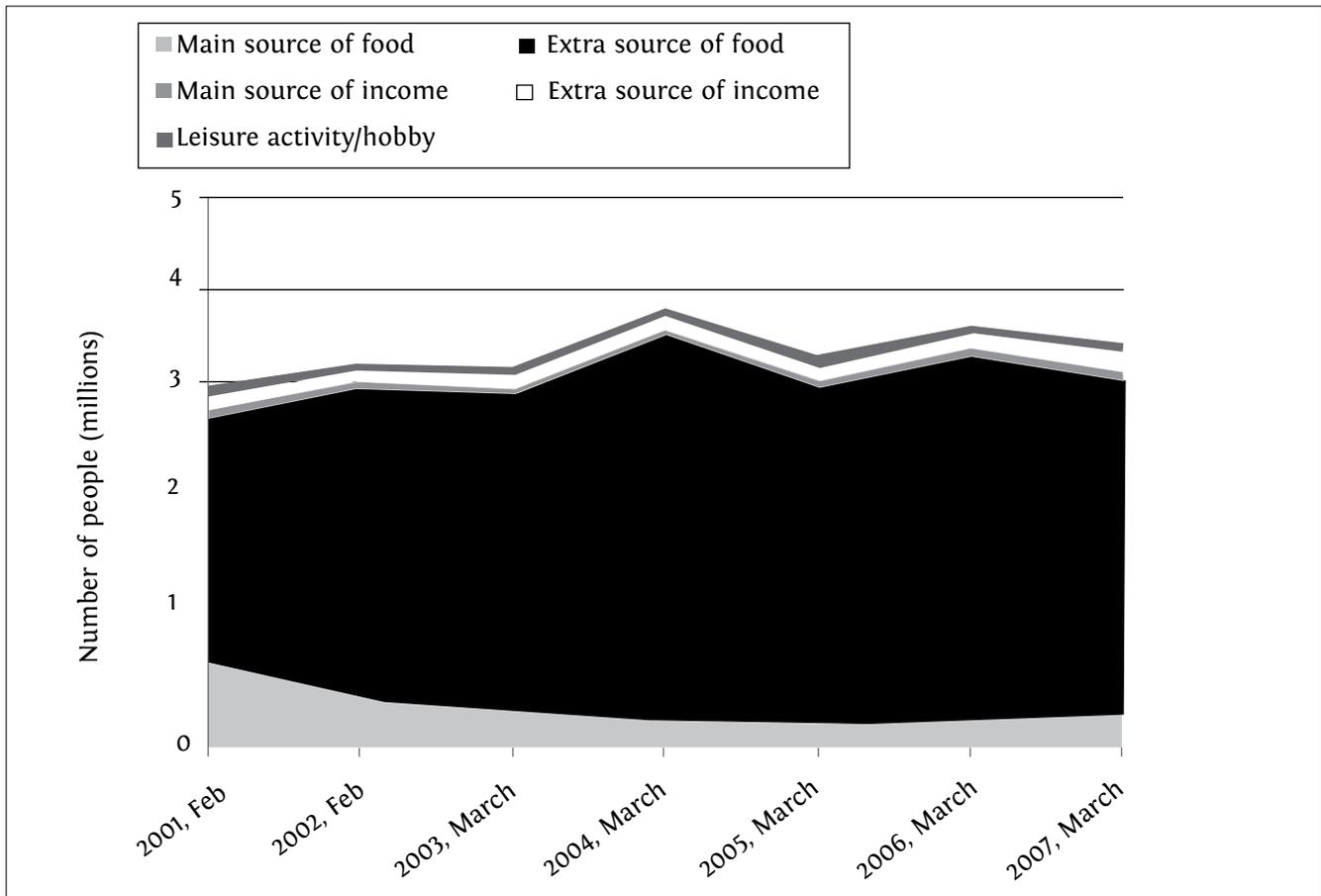
The relevant question from the LFS reads, "Did \_\_\_\_\_ grow or help to grow any produce, e.g. maize or other crops, vegetables or fruit, or keep, or help to keep, any stock, e.g. cattle, sheep, goats, horses, even chickens, for sale or for household use during the last 12 months?" The 12 month reference period is good because similar questions based on a shorter reference period (e.g. one week or one month) tend to miss agricultural activities simply by virtue of when in the year the questionnaire is adminis-

tered. Moreover, the question encourages the respondent to consider a variety of relevant activities, rather than ask about a single concept for which there may or may not be a common understanding between respondents and analysts.

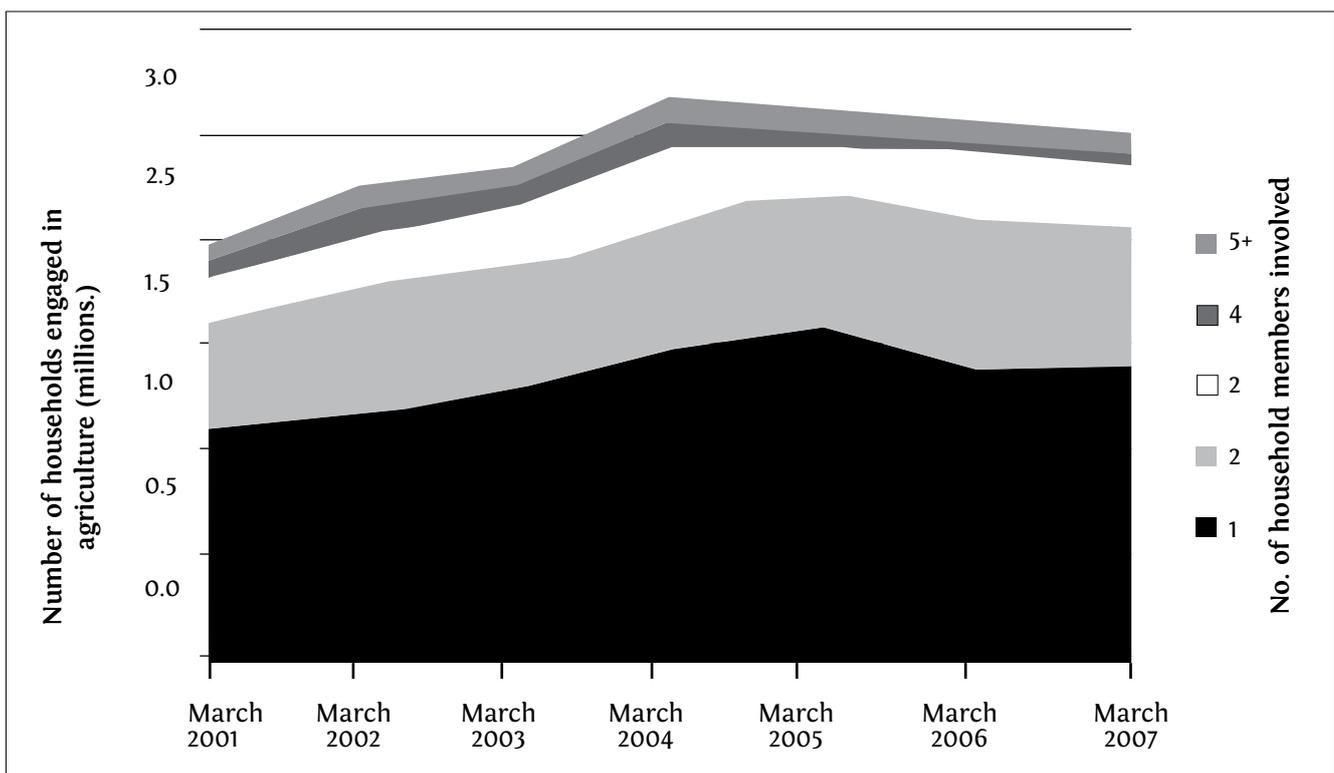
The question in the LFS applies to all individuals 15 years and older. Determining the number of households involved in agriculture is a matter of identifying the number of unique households in which one or more members indicated that they were involved in farming over the previous 12 months. However, determining the 'main reason' for the household is complicated by the fact that where a household has two or more members involved in agriculture, it is possible that different reasons are ascribed for these different members. In the absence of household weights, the 'worker weights' were used. These were checked against the household weights used in the GHS, and found to be reasonably accurate, in the sense that they produce estimates as to the total number of black households that are within 2% of one another.

As mentioned in Chapter 2 of this report, there is reason for doubting the accuracy of the fluctuations in the total number of individuals involved in agriculture. One reason for doubt is that the question relates to the person's activities over the previous 12 months, which should in itself impose a degree of smoothness given that the survey waves are only separated by six months. Moreover, given that the vast majority of black people who practise agriculture are based in former homeland areas, which are in the summer rainfall zone, it is likely that responses to the February or March (as opposed to September) LFS are more reliable. Figure A2.1, therefore, is similar to Figure 2.1, but employs only data emanating from the LFS's February/March editions.

**Figure A2.1: Numbers of black people involved in agriculture for own account, 2000 to 2007, excluding data from LFS September surveys**



**Figure A2.2: Trends in household involvement in agriculture**



Source: Stats SA, Labour Force Survey, 2001-07.

While the picture is not startlingly different to that in Figure 2.1, some of the apparent volatility has disappeared (albeit to some extent just by virtue of fewer data points), and it does accentuate the trend away from producing as a main source of food in favour of as an extra source of food, a process which appears to have levelled off around 2004.

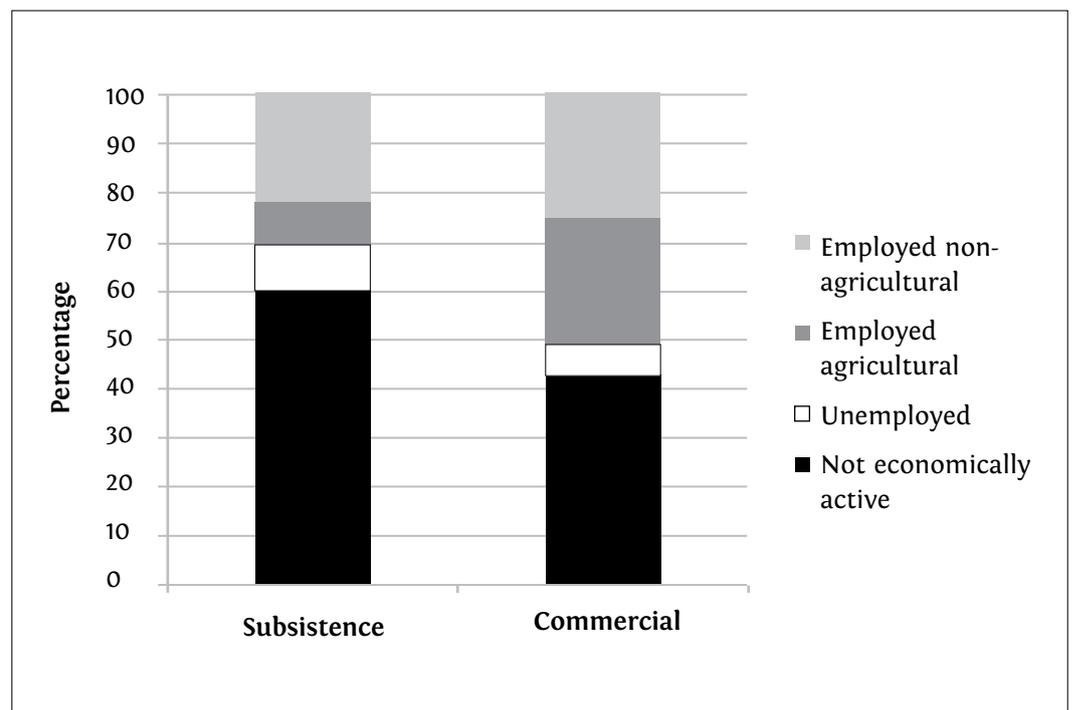
Moving now from an individual to a household-based perspective, we focus on two questions: What is the trend in black households involved in agriculture over time? What is the typical pattern of multiple household members being involved in farming? As above, we draw only on the February/March editions of the LFS. Figure A2.2 seeks to address both questions. In terms of the trend in household involvement, it appears that there was a significant and consistent increase up until 2004, at which point it reached about 2.7 million households, and thereafter a gradual decline. Looking now at the composition of these trends, one observes that, consistently, in the majority (52% to 60%) of households involved in agriculture, only one household member is involved. Moreover, most of the increase

and decrease in overall numbers of households involved is driven by changes in the numbers of households in which only one person farms. One last observation is the relative absence of volatility.

We turn momentarily to the relationship between involvement in farming and one's labour force status. We asked those involved in agriculture at some scale what their official labour force status is as determined by the official definition of employment. For this purpose, we disaggregated those involved in farming into two broad categories, namely those who farm for mainly subsistence purposes (i.e. so as to secure either the main source or an extra source of food), and the much smaller category of those whose purpose is mainly commercial (i.e. as a main or extra source of income).

Figure A2.3 shows that 60% of subsistence producers are not regarded as economically active, that is, they are neither employed nor fit the criteria to be considered unemployed according to the official definition. For commercial producers, the figure is 40%. How can they be not economically active if they are involved in agriculture?

**Figure A2.3: Relationship between involvement in agriculture and formal labour force status**



Source: Stats SA, Labour Force Survey, March 2007

### General Household Survey

By comparison, the relevant question from the GHS is, "Does this household have access to land that is, or could be, used for agricultural purposes?" This is followed by a series of other questions about the nature of the household's land access, and what types of agricultural activities it engages in: "What farming activities, if any, take place on the land? Is it...field crops?... horticulture?" There are two problems with this formulation: first, some respondents may have a narrow view as to what constitutes 'agricultural purposes', and second, the follow-up questions around specific activities seemingly relate to the present moment.

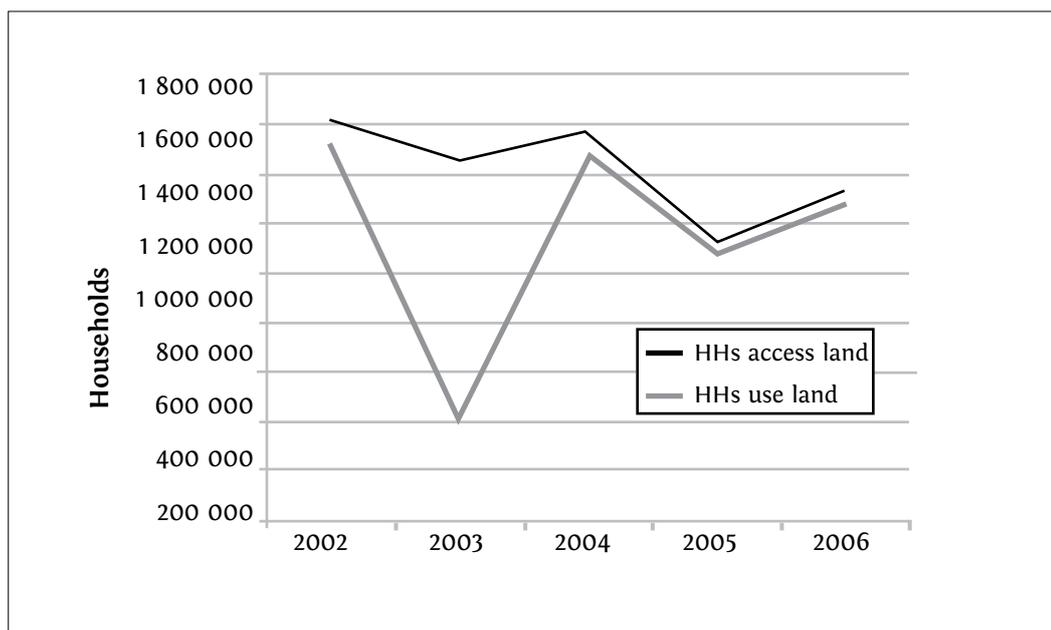
Estimates as to the number of black households having access to and using land are shown in Figure A2.4. The reason for the very large gap between having and using for 2003 is obscure. But more worrying are the fluctuations in the number of black households having access to land over this period. While one expects agricultural production to vary, in the absence of major land dispossession or land reform, access to land

should be fairly stable from one year to the next. This again suggests why the GHS is probably unsuitable as a source of information about numbers of smallholders.

### Crop Estimates Committee

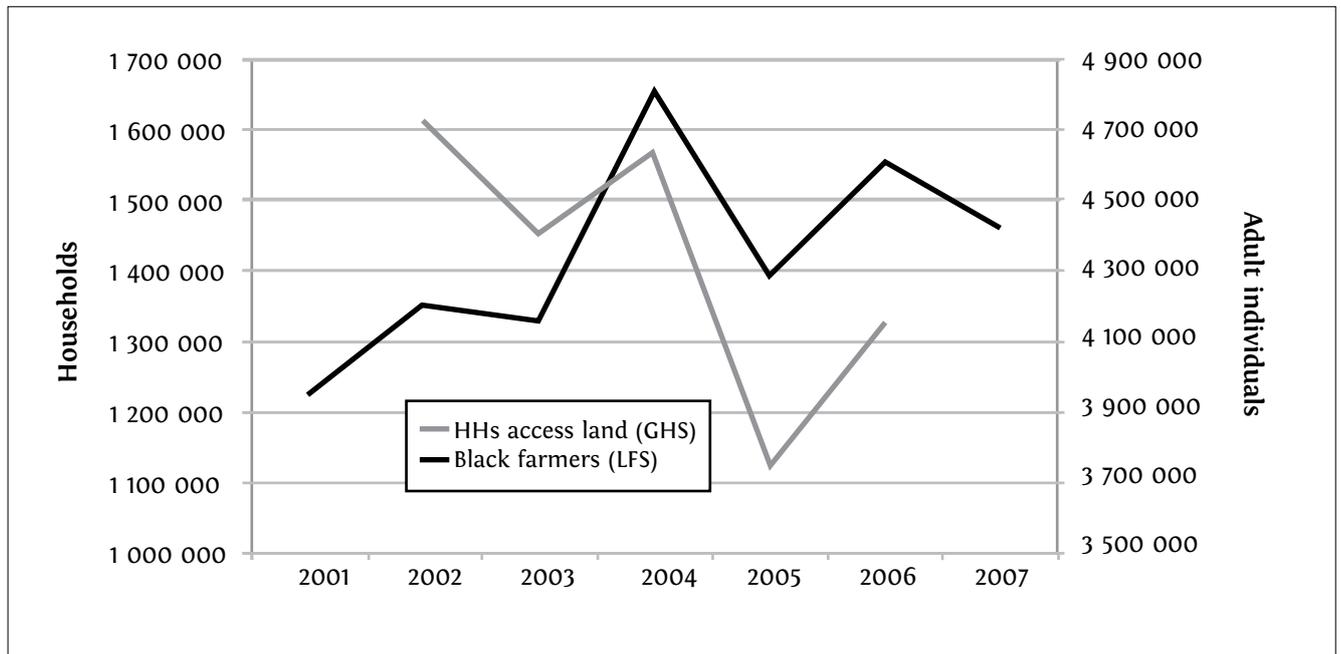
The CEC publishes estimates of maize production by subsistence producers alongside the better known estimates it publishes for commercial farm production of major field crops. This effectively means maize production in former homeland areas. The CEC estimates are based on a combination of analysis of satellite imagery and field reconnaissance by extension officers (especially to assess yields). Trends in 'subsistence maize production' according to the CEC were shown in Figure 2.6. Figure A2.6 combines one of the series from that graph (namely, the one of hectares planted) with the series of number of black individuals engaged in farming according to the LFS. While these variables are 'apples and oranges' in more ways than one, it is surprising that there is not at least some correspondence between them over the depicted period.

**Figure A2.4: Land access and use among black people according to the GHS**



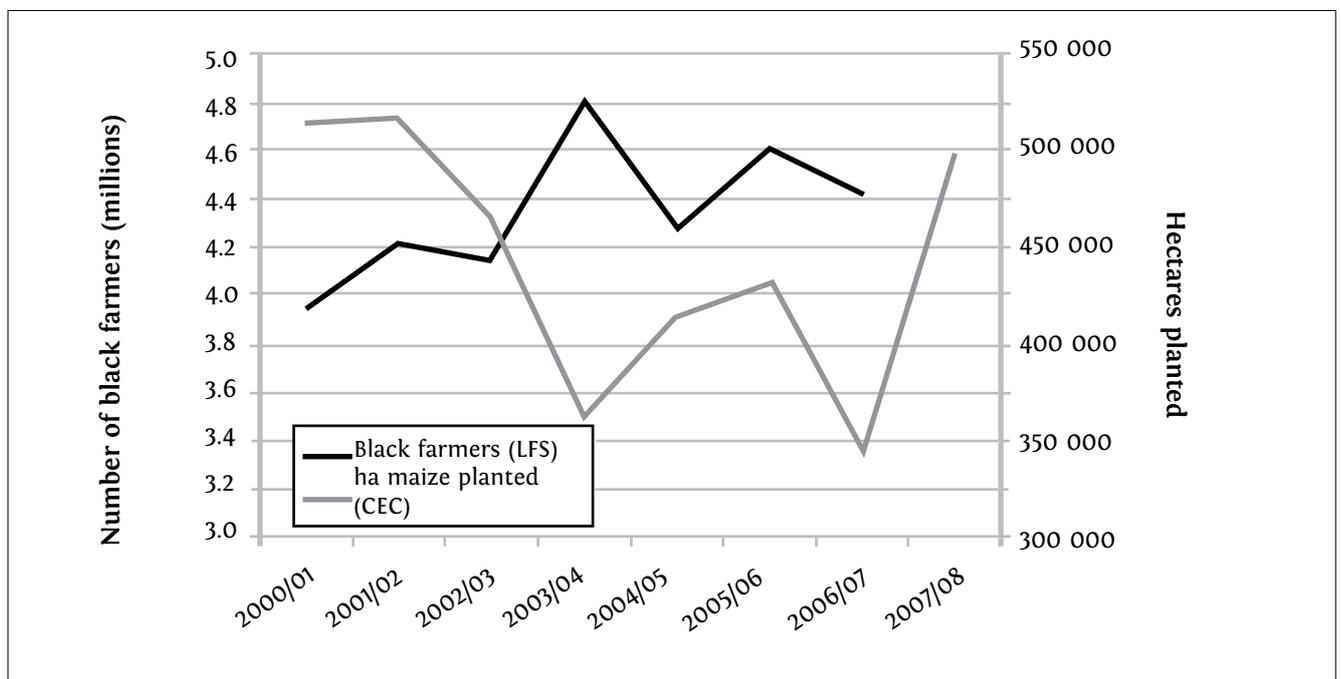
Source: Stats SA, General Household Survey, 2002-06.

**Figure A2.5: Comparison of the GHS and LFS**



Sources: Stats SA, General Household Survey, 2002-06 and Labour Force Survey 2001-07.

**Figure A2.6: Comparison of the CEC estimates and the LFS**



Sources: Stats SA, Labour Force Survey, 2001-07, and Crop Estimates Committee, various releases accessed from Department of Agriculture