



GTAC/ CBPEP/EU project on employment-intensive rural land reform in South Africa:  
policies, programmes and capacities

Commodity study

Fresh produce production under irrigation by small-scale farmers in South Africa

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## List of acronyms and abbreviations

AIM	Amsterdam Initiative Against Malnutrition
BEE	Black economic empowerment
BFAP	Bureau for Food and Agriculture Policy
CASP	Comprehensive Agricultural Support Programme
CBD	Central business district
CBPEP	Capacity Building Programme for Employment Promotion
CRDP	Comprehensive Rural Development Programme
CSR	Corporate social responsibility
DAFF	Department of Agriculture, Forestry and Fisheries
DALRDD	Department of Agriculture, Land Reform and Rural Development
DARD	Department of Agriculture and Rural Development (Provincial)
DPME	Department of Planning, Monitoring and Evaluation
DRDLR	Department of Rural Development and Land Reform
DWS	Department of Water and Sanitation
EWOC	Expropriation without compensation
GAIN	Global Alliance for Improved Nutrition
GHS	General household survey
GIS	Geographic information system
GTAC	Government Technical Advisory Committee
ICT	Information and communication technology
IMT	Irrigation management transfer
IRWH	Infield rainwater harvesting
JV	Joint venture
LRAD	Land Reform for Agricultural Development
MFPM	Municipal fresh produce market
NAMC	National Agricultural Marketing Council
NDP	National Development Plan
NERPO	National Emergent Red Meat Producers' Organisation
NFPM	National fresh produce market
NGO	Non-government organisation
NPC	National Planning Commission
PHA	Philippi Horticultural Area
PLAAS	Institute for Policy Land and Agrarian Studies
PLAS	Proactive Land Acquisition Strategy
PTO	Permission to Occupy
QLFS	Quarterly Labour Force Survey
RECAP	Recapitalisation grant (land reform)
RSA	Republic of South Africa
SADT	South African Development Trust
SANBI	South African National Botanical Institute
SLAG	Settlement and land acquisition grant
SME	Small and medium enterprise
SSA	Sub Saharan Africa
WRC	Water Resources Commission

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## Executive summary

This report documents the status of fresh produce production (vegetables and green maize) under irrigation by small-scale farmers in South Africa and investigates the potential for expanding current levels of production, with an emphasis on land redistribution. There are an estimated 100, 000 existing 'market-oriented small-scale farmers' already producing on irrigation schemes and in homestead gardens (Cousins, 2018). There are likely to be an additional 10, 000 operating outside these contexts, in rural areas and in land reform contexts (Cousins and Chikazunga, 2013; Khulisa, 2016). These 'market-oriented' small-scale farmers, who are already succeeding in spite of receiving little or no support, are proposed as the key beneficiaries of a redistribution programme aimed at extending fresh produce production. It is envisioned that this could precipitate a process of 'agricultural accumulation from below'<sup>1</sup> (Cousins, 2015; Greenberg, 2013). Many of these households are located in the former 'homelands'. Redistributing land and resettling these producers outside of these areas, could also free up plots on existing irrigation schemes and contribute to decongesting communal areas.

Production of vegetables is particularly labour-intensive, creating between one and five jobs per hectare (Bunce and Aliber, 2019; BFAP, 2011). The proposal presented here entails redistributing 1, 287, 500 hectares of arable land to 100, 000 market-oriented smallholders in loose value chains, 5000 market-oriented smallholders in tight value chains and 5000 small-scale black commercial farmers, for the production of fresh produce. Sub-division is proposed of plots ranging between two and 50 hectares, which is an appropriate size for farming to become an important contributor to livelihoods. This could potentially create around 3, 218, 750 employment and self-employment opportunities on farms. This assumes an average of 2,5 jobs per hectare and intensive production of vegetable (including labour-intensive varieties like tomatoes). A very conservative estimate, based on a mixed farming system (e.g. some land reserved for livestock and subtropical fruit and nuts), assumes one job per hectare and would still create 1, 287, 500 jobs. This redistribution programme would also create an estimate of at least 54, 000 indirect jobs in the extended value chain e.g. for bakkie traders, hawkers and in the processing sector.

There are a number of benefits to small-scale production of fresh vegetables, including: the large number of jobs created, lower costs of production, quick turnaround on investment, several harvests are possible year-round with irrigation, competitive advantage with large commercial farmers (although crop and regionally dependant), and more flexible local market conditions. There are also important gendered implications of fresh produce production, since the majority of producers are women (Domenech and Ringler, 2013; Cousins, 2013; van Averbeke and Khosa, 2011). However, incomes do tend to be low. Based on existing estimates, mostly for small-scale farmers in informal value chains, we can assume a mean gross output value of R18, 000 per hectare (Cousins, 2018), however, noting considerable variation. Creating full time fresh produce farmers is therefore unlikely to be a viable strategy for most households and mixed livelihood systems will continue to characterize the sector. Wages, social grants and remittances are important income sources for these households (May 2000; Cousins 2013; Neves and Du Toit 2013). Mixed farming systems should also be encouraged to increase incomes and employment e.g. through livestock or fruit production, alongside fresh produce (Bunce and Aliber, 2019).

The National Development Plan suggests extending the current 1.5 million hectares under irrigation by 500, 000 (NPC, 2012). The proposal in this report would make use of some of this expanded area of irrigation, however, also suggests redistribution of existing water rights on redistributed land and from other commercial users in catchment areas. Land redistribution will have to be more clearly aligned in the future with an equitable division of water rights and improving inter-departmental coordination and the current functioning of water user's associations (Cele and Wale, 2018; Bunce and Aliber, 2019). Expanding the area under irrigation has the potential to increase incomes and create more job opportunities by raising crop yields, permitting multiple

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<sup>1</sup> "Accumulation from below' refers to farmers using their own resources to expand into capitalist producers with eventual possible absorption into agribusiness value chains" (Greenberg, 2013: 3).

cropping cycles, improving crop quality and reducing drought-related risks (Van Averbeke & Denison 2013). A limitation, however, is that promoting farming under irrigation by small-scale farmers involves the adoption of technologies and infrastructure which can be costly and requires government support and investment (Cousins, 2018). Limited success to date with the capital-intensive approach of smallholder irrigation development requires that we rethink the types of technologies and institutional arrangements that underpin irrigation systems (Van Koppen et al., 2017; Denison & Manona, 2007).

This report suggests that considering lower-cost, farmer-led irrigation systems holds promise as an alternative (Scoones et al., 2019; Woodhouse et al., 2017). Research has also indicated that there is potential to expand successful 'infield rainwater harvesting and conservation' techniques from food gardens into croplands, without the need for costly formal irrigation systems, which is already happening on a limited scale (Backeberg, 2009). Should a conducive environment be created for farmer-led irrigation, there could be even more job opportunities created, for example, suppliers of cheap pumps and small repair businesses etc. (Scoones et al., 2019).

An evaluation of the 'Government Supported Smallholder Farmer Sector' (Khulisa, 2016) found that 'strategies to support smallholders are not working effectively or efficiently' and that in particular there are no services in place to support 'small-scale farmers in informal (loose) value chains'. Since most fresh produce producers operate within informal value chains, there is room to improve livelihoods and expand production through improved farmer support. It is suggested that support services be disaggregated according to a typology of small-scale farmers (see Section 3 of this report and Table 3). Informal fresh produce value chains have a particularly powerful job multiplier effect, for example, hawkers, bakkie traders and local input suppliers.

Although dynamic informal markets exist for fresh produce across South Africa, small-scale farmers still face challenges in marketing their produce and several crops are subject to frequent market gluts. This has led numerous authors to suggest that preferential procurement policies for public institutions including hospitals, prisons and schools, could provide secure markets (Manyalo et al., 2014; Khulisa, 2016; Aliber, 2013; Cousins, 2015). Providing assured markets for risky but profitable, perishable crops like tomatoes and cabbages could encourage their production and help improve incomes and stimulate employment. This is already happening on a limited scale in various pilot projects, through the Zero Hunger Programme and on an ad-hoc basis and should be scaled up (Aliber, 2018).

There are clearly some successful examples of including small-scale black commercial farmers into formal fresh produce value chains, which could provide an avenue to expand production under small-scale black commercial farmers. However, we must take heed of the various risks associated with 'adverse incorporation' of small-scale farmers into corporate value chains (Hickey and du Toit, 2007; Greenberg, 2013). Research has indicated that it would be unwise to attempt to displace informal markets altogether, which clearly support a range of livelihoods for other intermediaries and local consumers. A number of measures could, however, assist small-scale farmers who want to expand their reach in formal markets. The AgriBEE act could be used more decisively to ensure that supermarkets (particularly in rural areas, where transaction costs are lower for farmers to reach them) procure at least 30% of fresh produce from them. Processing companies should similarly be required to procure from them. Around 10% of all fresh produce is processed and quality standards for produce are less prohibitive than quality requirements for supermarkets or National Fresh Produce Markets (Barlow and van Dijk, 2013; Louw et al., 2008). However, processing shouldn't be seen as a panacea as small-scale farmers complain that prices received are much lower for processing. Efforts should rather be made to ensure a range of marketing options are available for the variable quality of fresh products produced by farmers (Bunce and Aliber, 2019).

# 1 Introduction

This report documents the status of fresh produce production under irrigation by small-scale farmers<sup>2</sup> in South Africa and investigates the potential for expanding current levels of production, with an emphasis on land redistribution. *Fresh produce* includes the cultivation of vegetables and green maize under irrigation. *Irrigation* includes both formal irrigation schemes as well as systems organised by individual farmers (including rainwater harvesting). This report forms a part of the Capacity Building Programme for Employment Promotion (CBPEP), funded by the European Union and undertaken by the Government Technical Advice Centre (GTAC).

## 1.1 Objectives of the study

The specific objectives of this commodity study are:

1. To quantify the current scale of fresh produce production by smallholder and small-scale black commercial farmers in South Africa, and to characterize the key features of their production and livelihood systems;
2. To describe and assess the effectiveness of the support services offered to such farmers;
3. To describe and assess the character of the value chains in which these farmers participate;
4. To quantify and assess the outcomes of both current and potentially expanded systems of fresh produce production by such farmers, in relation to income, employment and social differentiation;
5. To explore the implications of research findings for land reform policies and implementation frameworks, with an emphasis on land redistribution

## 1.2 Research methods

This study involved a systematic review of 94 reports of small-scale fresh produce production under irrigation, along with other studies on the political economy of agrarian change. The review included academic, grey and official literature and evaluation reports and newspaper articles to summarise and evaluate existing evidence. Primary research was conducted in the Limpopo Province and included a number of small and large-scale fresh produce farmers, farmer/ commodity associations, agribusiness firms and government officials. The report also drew on insights from previous research conducted by the author over the last five years, including interviews with a wide range of respondents and particularly small-scale farmers producing fresh produce on irrigation schemes, in homestead gardens and plots, as well as those engaging in mixed-farming systems.

## 1.3 Background

The NDP asserts that in the agriculture, agro-processing and related sectors government should aim to create an additional 643 000 direct jobs and 326 500 indirect jobs by 2030. Among the strategies for achieving this is extending the current 1.5 million hectares under irrigation by an additional 500, 000 for labour-intensive forms of small-scale farming on redistributed land and in communal areas. The NDP claims that this can be achieved through more efficient use of existing water resources, along with establishing new irrigation schemes (National Planning Commission, 2012). Irrigation has the potential to increase incomes by raising crop yields, permitting multiple cropping cycles, improving crop quality and reducing drought-related risks. Irrigation also provides benefits for labour by spreading labour usage evenly throughout the year and provides stability to cash flow within farming enterprises (Van Averbeke & Denison 2013). A limitation, however, is that promoting farming under irrigation by smallholders involves the adoption of technologies and infrastructure which can be costly and requires government support and investment (Cousins, 2018).

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<sup>2</sup> For ease of use this report will make use of the term '*small-scale farmer*' to refer collectively to *smallholders* and *small-scale black commercial farmers*. However, in reality this is not a homogenous group but is socially differentiated. *Smallholders* are farmers who rely mainly (but not exclusively) on household labour in their production systems. *Small-scale black commercial farmers* are farmers who rely mainly on hired labour in their production systems. The degree to which they are capitalised falls within the bottom third of all commercial farming enterprises producing similar products in South Africa.

The New Growth Path envisions expanding the small-scale farming sector from 200 000 to 500 000 by 2020 (EDD, 2010). However, the South African government's policy towards small-scale farmers has been marred by confusion and tends to pay lip service to the idea of supporting a small-scale farming sector. In reality, interventions are favoured which focus on de-racialising existing agrarian capital through strategic partnerships or other arrangements such as the 'Strengthening the Relative Rights of People Working the Land: 50/50 Policy Framework'. These programmes usually entail maintaining and/or promoting large-scale capitalist farming enterprises rather than sub-division for small-scale farmer production. This perhaps has its roots in misconceptions regarding what constitutes a 'small-scale farmer', as well as an unclear vision for developing the sector. Aliber and Hall (2012) for example note that government policy has been characterised by a bias towards policies that seek to transform 'small-scale farmers' into large-scale commercial farmers.

Apart from an initial period of policy support for small-scale farmers, in the first years of the land reform programme, the South African government in practice continues to define viability in terms of the large-scale commercial farming model (Aliber and Cousins, 2013; Cousins and Scoones, 2010; Aliber, 2019). There are a number of reasons for this bias. There is a strong discourse in South Africa that only large-scale farmers can be competitive and small-scale farmers will eventually be squeezed out (Aliber, 2019). This dynamic is also enforced by the political power of both (largely white) agribusiness, who has benefitted greatly from the current trajectory of land reform (Cousins, 2015) and political pressure from potential well-off/ connected beneficiaries, who aspire to become large-scale commercial farmers. These stakeholders have relatively more power on policy processes than the majority who in fact desire relatively small plots (Aliber, 2019).

Since 2004 the appetite in South African land and agrarian reform has clearly leant towards the dominant market-based development paradigm. This sees private sector involvement and market-oriented strategies as the primary means for achieving social justice, while avoiding negative outcomes for productivity and profit levels that might result if land were subdivided. The strategic partner model has thus been adamantly promoted as a means to ensure the continuity of pre-existing models of large-scale commercial production on transferred land and also in the context of efforts to revitalise agriculture in the former 'homelands' (Bunce, 2018; Davis, 2014; Lahiff et al., 2012; Spierenburg et al., 2012; Aliber et al., 2008; Hellum and Derman, 2008;). However, this report argues, as others have before, that large-scale redistribution of land and sub-division among small-scale farmers can in fact produce a land reform more able to provide much needed jobs, while also safeguarding food security and realising the social and political imperatives of land reform.

The case for a small-scale farmer focused land redistribution approach is not premised on the perception that they are more productive than large-scale farmers, as the 'inverse farm-size productivity hypothesis' asserts (Lipton, 1996, Binswanger & Deininger, 1996). Apart from being an ideologically driven stance, evidence does not suggest that they are always more productive in relation to output per hectare. However, of more interest, is that evidence suggests that small-scale farms are more labour-intensive. Given the context of South Africa this is of great significance because the country is largely food self-sufficient, however, household-level food security continues to be a challenge, as does stubborn unemployment (Aliber, 2019). If land redistribution were to be refocused onto the existing 200, 000 - 250, 000 market-oriented small-scale farmers, who are already succeeding, in spite of the tremendously challenging context, their existing success could be built on. Land could also potentially be freed up (especially for grazing) in the former homelands to support diversified livelihoods for other beneficiaries (Cousins, 2015; Aliber, 2019).

The need to rethink the current approach to land redistribution is clear since the agricultural sector is becoming increasingly less labour-intensive. In June 2017, 748 113 labourers were recorded in permanent and casual/seasonal employment<sup>3</sup> (StatsSA, 2017) compared to 1.2 million permanent and casual jobs recorded in 1990 (Bernstein, 2015). These labour shedding tendencies are linked in part to changes to the agrarian structure, particularly the concentration of land and farming units, and also the pressures of deregulation and

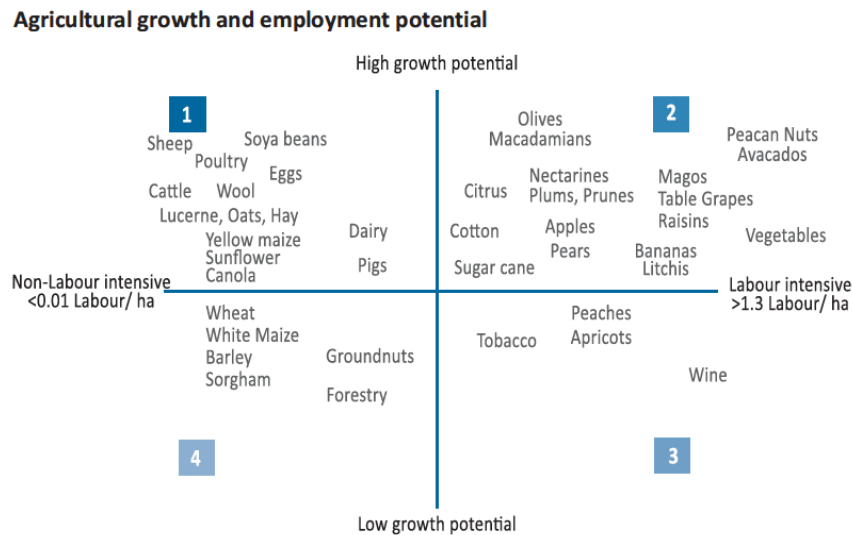
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<sup>3</sup> This includes people employed in 'agriculture and related services industry' (StatsSA, 2017).



liberalisation (Vink and Kirsten, 2000). Legislation enacted to protect the tenure rights of farmworkers, has also unexpectedly resulted in evictions and an increased incidence of casual and seasonal work (Hall et al., 2013; Aliber and Simbi, 2000).

**Figure 1. Agricultural growth and employment potential matrix**



Source: Bureau for Agricultural Policy, 2011<sup>3</sup>

In an effort to support a 'labour-intensive' small-scale redistribution programme, agricultural commodities which provide small-scale farmers with a competitive advantage and require more labour in the production process should be considered. Fresh produce under irrigation provides particular promise for creating a large number of jobs year-round, as the above matrix in Figure 1 indicates (BFAP, 2011; Cousins, 2015; Bunce, 2018). The production process for fresh produce provides a particular advantage to small-scale farmers since it is not amenable to mechanisation. The many small-scale farmer support programmes, like the massive food production programme and Fetsa Tlala, which to date have supported maize and other grain production do not play to the strengths of the labour regimes and means of production possessed by small-scale farmers (Jacobson, 2013; Cousins, 2015).

## 2 Key features of fresh produce production under irrigation by smallholders and small-scale black commercial farmers<sup>4</sup>

Approximately 100, 000 hectares of all irrigated land (or 7.7%) is farmed by small-scale farmers, mostly located in the former homelands (Van Averbeke, 2008; Van Averbeke and Khosa, 2011; Fanadzo, 2012). More or less half of the 100, 000 hectares of irrigated land is made up of small home gardens<sup>5</sup>, making use of various systems organised by farmers, while the other half of this land is located on smallholder irrigation schemes located predominantly in the former 'homelands' (Cousins, 2018; Denison and Manona, 2007). Fresh produce production by small-scale farmers also occurs in urban and peri-urban areas, some of which is extensive, like the Philippi Horticultural Area (PHA) in the Cape Metropole. 1800 hectares (of a total 3074 hectares) is used to produce vegetables, employing around 2000 people (de Satge, 2011; City of Cape Town, 2008).

<sup>4</sup> See the table found in the index of this report for a summary of key features of small-scale fresh produce farmers on irrigation schemes and other projects.

<sup>5</sup> This number is an estimate, as "a national database of food gardens, or clusters of food gardens is probably not realistic" (Denison & Manona, 2007) and has not been undertaken but can be estimated from GHS data that captures the number of households engaged in subsistence agriculture (Cousins, 2018).

Fanadzo (2012: 13) notes that "smallholder irrigators in South Africa have been categorised into four groups namely farmers on irrigation schemes, independent irrigation farmers, community gardeners and home gardeners ... there are 200 000 to 250 000 smallholder irrigators contained in these four groups". As well as fresh produce these small-scale irrigators produce fruit, sugar and cotton. Cousins's (2018:370/1) estimates that at least 50, 000 hectares of irrigated land is farmed by around 100, 000<sup>6</sup> small-scale black farmers for the production of fresh produce for the market.

There is widespread agreement that dynamism in agriculture in communal areas is now found predominantly in homestead gardens rather than in dryland field plots. Households make use of various rainwater harvesting systems (Bunce and Cousins, 2015; Backeberg, 2009). For many, resource constraints and the isolation of homesteads from fields (a legacy of 'Betterment planning') has meant that home gardens have become a more pragmatic option (Hebinck and van Averbek, 2013). Many of these gardens are very productive and a variety of fresh vegetables are cultivated (Cousins, 2015). However, the majority of food gardens seldom meet the full consumption needs of households, as the bulk of food is bought in town with social grants and wages. There are, however, cases where a surplus is sold from these gardens. Some of these farmers have received support from government's Siyazondla or Comprehensive Rural Development Programme (CRDP) or from civil society organisations (Fay, 2013; Cousins, 2015; Impact Economix, 2013).

### 2.1 *Brief history of smallholder irrigation schemes*

There are 317<sup>7</sup> smallholder irrigation schemes found across eight provinces of the country, covering approximately 50,000 hectares of land. One-third of these schemes were reported as inactive in 2007 and those still in use are 'utilised well below their potential' (Denison & Manona 2007; Cousins, 2012/8; Averbek et al., 2011; van Koppen et al., 2017). There are approximately 33 000 active plot holders on smallholder irrigation schemes, each cultivating a mean of around 1.5 hectares (Denison & Manona 2007: 11). These irrigation schemes utilise a variety of different irrigation systems, with *bulk water supply* being 'pumped' or utilising a 'gravity-fed' system and *infield irrigation systems* ranging from flood, canal, overhead/sprinkler and micro-irrigation (Denison and Manona, 2007; van Averbek et al 2011; Ncube, 2018). The majority of these schemes are concentrated in Limpopo (180 public irrigation schemes), followed by KwaZulu-Natal and the Eastern Cape province (van Koppen et al., 2017).

The history of small-scale irrigation in South Africa has been well documented in a number of reports (Van Averbek, 1998/2008/2011; Denison & Manona 2007; Cousins, 2013/8; van Koppen et al., 2017; Laker, 2000; Bembridge, 1987). A look at the historical trajectory of smallholder irrigation allows us to understand the character of production systems and what challenges are posed to expanding these systems under fresh produce. During the 1950s and 60s the government through 'segregation and apartheid-era government policies aimed to support 'full-time farmers' on small plots, and seventy-four schemes were constructed' (Cousins, 2012: 125/6). From 1975 onwards the state stopped developing canal schemes, which were replaced by overhead irrigation systems, reflecting global modernisation trends. A number of very large and capital-intensive schemes were built (Faurès et al., 2007; Averbek et al., 2011; Bembridge, 1987; Laker, 2000). Until around 1996 these irrigation schemes were governed by the relevant Bantustan governments and their agricultural parastatals (Van Averbek and Khosa, 2011).

During Apartheid, the plan to create 'a class of permanent farmers' on these irrigation schemes faced tremendous challenges. Among the reasons for this were the unreasonable pressures placed on household reproduction, and the connected challenge of overcrowding in the former homelands (Switzer, 1993: 326). Many of the larger irrigation schemes included, a central commercial estate that was managed by the Bantustan

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<sup>6</sup> 33 000 producers on formal irrigation schemes, with a mean plot size of 1.5 hectares, along with 67 000 fresh produce producers with smaller homestead gardens (Cousins, 2018).

<sup>7</sup> Some reports assert that there are 302 schemes (Van Averbek et al., 2011; Fanadzo 2012).

parastatal, some 'commercial smallholder' units of between 4-12 hectares, alongside 'subsistence' units of small food plots for household production of 0.1-0.25 hectares (Cousins, 2012; Van Averbeke et al., 1998).

On several irrigation schemes the central commercial estate was run by the homeland parastatals and landowners received land rents and/or a share of the profits. 'Commercial smallholder' units were reserved for own-account farming by a select few farmers, but was not a feature on all irrigation schemes. Therefore many farmers were not involved directly in commercial production and management was reserved for scheme managers (employed by homeland parastatals). Averbeke et al., (2011) note that 'the mechanised farming system that prevailed on these schemes carried high operational and maintenance costs and required sophisticated management systems'. As a result, many of these smallholders were never really able to farm independently and thus when the homeland parastatals were liquidated in the democratic era, many of these schemes fell into disrepair (Cousins, 2012). Unfortunately, the trend of funding capital-intensive projects has persisted in much of the democratic government's attempts to revitalise schemes (Van Averbeke and Khosa, 2011).

When the former 'homelands' were dissolved and reincorporated into South Africa, in most cases there was a total lack of handover in terms of key organizational functions to the democratic regime. Hence financial and institutional support to farming households was withdrawn in a chaotic manner. This resulted in a near total collapse of production following the dismantling of the parastatals and a number of schemes were vandalised (Van Averbeke and Khosa, 2011; Denison & Manona, 2007; Bunce, 2018). Research has demonstrated that the outcomes of 'homeland-era' smallholder irrigation development were diverse in terms of relations of land, labour, capital and dynamics of class and gender relations. This is critical to take into account in planning a system of expanded production under small-scale farmers. (Bunce, 2018).

## 2.2 *Number of small-scale farmers producing fresh produce under irrigation*

The lack of data on small-scale farmers means that the exact numbers are not known, let alone the numbers producing fresh produce under irrigation. Numbers provided here are therefore only estimates<sup>8</sup>. Another difficulty is that definitions of different types of 'small-scale' producers vary widely, as do definitions of formal and informal agriculture and markets. From the available data we can, however, conclude that the majority of small-scale fresh produce producers operate in the informal sector in 'loose value-chains' or produce only for subsistence as part of diversified livelihood strategies (Cousins, 2018).

The GHS in 2015 indicated that there are 2 501 476 black households involved in *some kind of agricultural production activities*. Although the GHS doesn't collate data on numbers of employees that these households/farming enterprises employ, it does distinguish which farms sell a surplus. Using this data, in 2015 it was calculated that there were 184, 000<sup>9</sup> market-oriented 'informal-sector farms' (Cousins, 2018). Cousins (2018) estimates that there are likely to be around 200, 000 'informal-sector farms' as of 2018. Aliber (2019) puts the number at slightly less with 170, 000 for a category of 'market-oriented small-scale farmers'. Cousins (2018:370/1) estimates that around 100, 000 of the 200, 000 'informal-sector farms' produce fresh produce for the market. The 100, 000 farms assumes 33 000 producers on irrigation schemes, with a mean plot size of 1.5 hectares, along with 67 000 fresh produce producers with smaller homestead gardens. The average plot size across these producers is thus 0.5 ha each (Cousins, 2018).

Many fresh produce producers are also recipients of land reform farms. They would comprise at least 50% of 'market-oriented black smallholder farmers supplying tight value chains' and 'small-scale black commercial farmers' (about 10, 000 farmers in total). If we include subsistence-oriented smallholder farmers, the numbers producing fresh produce are likely to be much larger, with a very conservative estimate that at least half of

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<sup>8</sup> The available data comes from the General Household Survey (GHS) and the Quarterly Labour Force Survey (QLFS), complemented with reference to individual case studies.

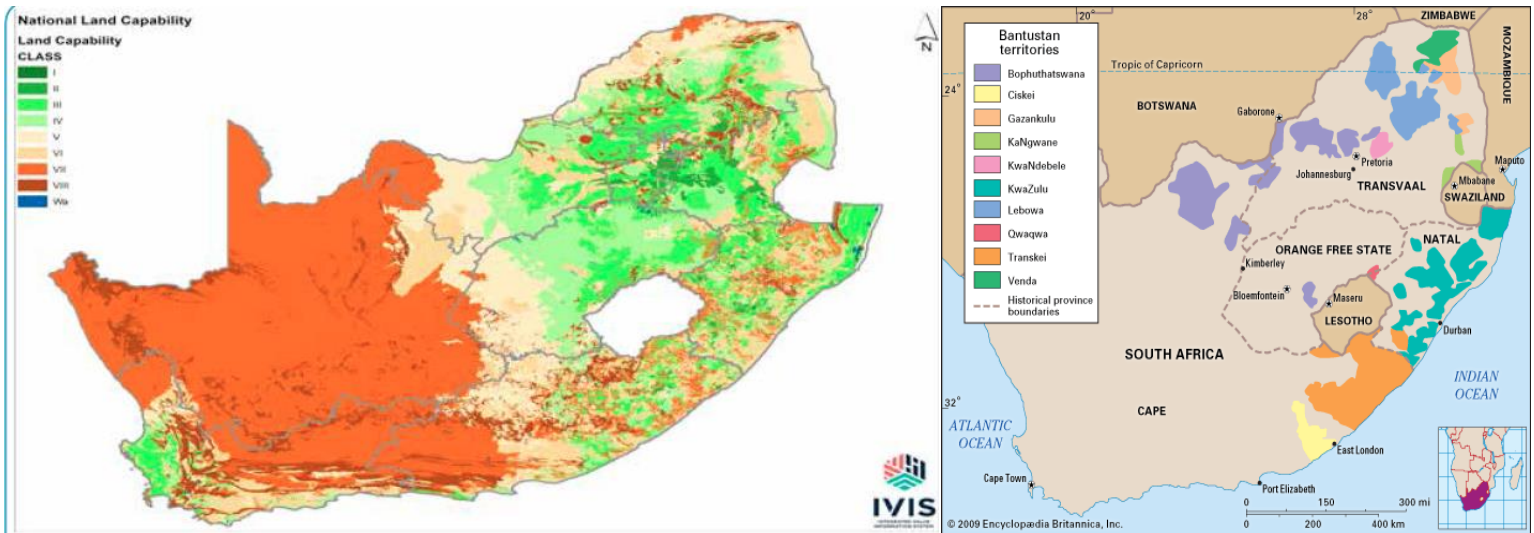
<sup>9</sup> This number actually decreased from 2014 where there were 205, 000 informal sector farms selling a surplus.

these households (1 million) would keep a homestead garden.

### 2.3 Agro-ecological conditions

Only 10.3% of South Africa’s surface area is considered arable and around 10% (1.3 million hectares) of arable land is irrigated (Cousins, 2012). Since much of the land farmed by small-scale fresh produce producers coincides with the territories formerly located in the 'Bantustans'<sup>10</sup>, the location of these farmers can be more or less located on Map 1 below. There is however a minority located outside these areas in land reform contexts.

**Map 1. Agricultural land capability & former 'homeland regions'**



The former 'homeland' areas have variable agro-ecological conditions, land tenure systems and histories of agrarian relations. However, they do contain some of the country's productive arable land (BFAP, 2018). Substantial tracks of arable land are currently 'unutilised or underutilised' or have been used for settlement. A redistributive land reform programme focused on producing fresh produce, among other commodities, should be informed by the various climatic regions and natural biomes<sup>11</sup>. GIS technology has improved our ability to integrate geospatial information with economic information as a tool for targeted interventions (Ibid).

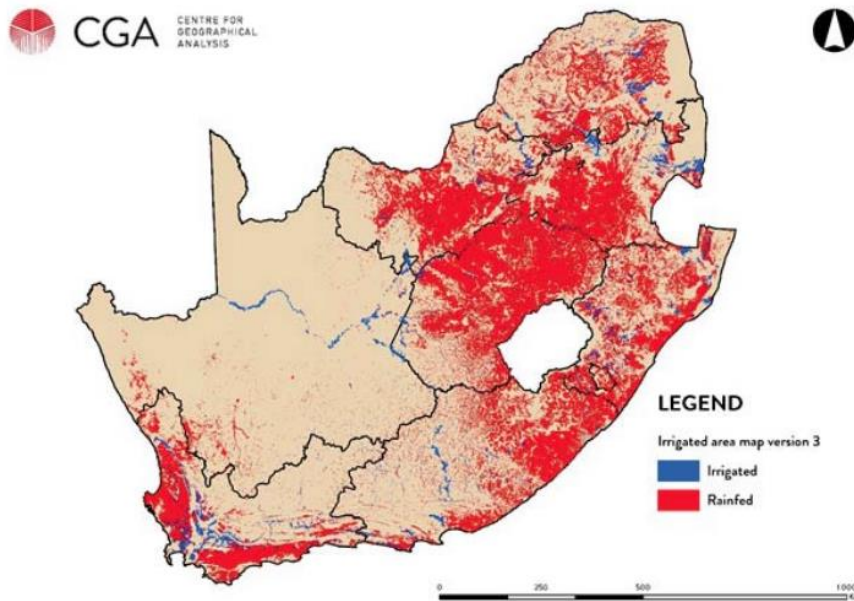
#### 2.3.1 Irrigated water resources

Irrigation is estimated to support 25-30% of South Africa's national agricultural production and uses between 51% and 63% of total available water. South Africa is water-scarce, with annual rainfall of 470 mm, 80% of which is confined to five months of the year. Climate change and population growth are placing further pressures on the country's water resources. With the importance of irrigation to agriculture and livelihoods it is imperative that careful and considered distribution and management of land and water rights are undertaken (WRC, 2018). Map 2 below indicates the irrigated and rainfed areas of South Africa.

<sup>10</sup> The former 'homelands' or 'Bantustans' are a key legacy of the 1913 and 1936 land acts, which reserved only 13 % of the land for black South Africans. There were 10 'homelands' designated for different South African 'tribes' (Claasens 2015).

<sup>11</sup> These include the three dry and extensive production zones (including the Succulent Karoo biome, the Nama-Karoo biome and the desert biome), the grassland and savannah biomes and the tropical Indian Ocean Coastal belt and the Mediterranean 'fynbos' biome found in the Western Cape (SANBI, 2006).

Map 2. Map indicating irrigated and rainfed areas of South Africa

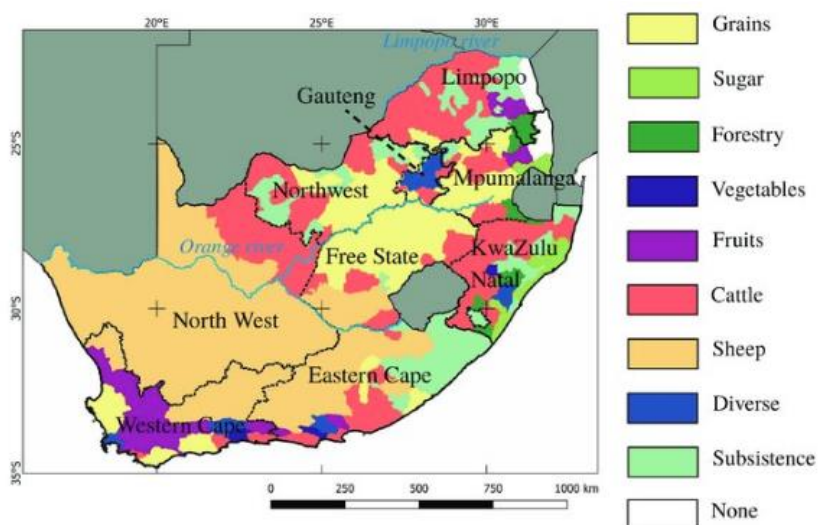


(Source: WRC, 2018).

Irrigation is estimated to account for up to 90% of the production of high-value crops (including vegetables and fruit). Cousins (2018: 370) notes that in the market-oriented informal agricultural sector, 'irrigated cropping of vegetables, including green maize, is more important than dryland cropping and generates considerable economic value'. Irrigation is also important in the production of industrial crops such as sugarcane and cotton, accounting for 25-40% of total production of these commodities in South Africa (WRC, 2018). Map 3 below indicates the various 'agricultural regions' of South Africa, by various dominant commodities. Fresh produce production (vegetables and green maize) by small-scale farmers, especially in informal-sector agriculture, predominate in Gauteng, Mpumalanga and the Free State (Cousins, 2018). However, there are also significant pockets of production in Kwazulu-Natal, Eastern-Cape, Western Cape and Limpopo, as illustrated in the map below and in a number of case studies (Cousins, 2013; de Satge, 2011; Chikazunga, 2009; Fay, 2013; de Klerk, 2013; Bunce, 2018).

A challenge in accessing where fresh produce producers dominate in the former homeland regions, is that in official data gathered by DAFF, they categorise all agriculture in the former homelands as 'subsistence'. This represents a false notion that in the communal areas of the former homelands there is a homogenous group of 'subsistence producers', who are not marketing their produce (Van Koppen et al., 2017; Bunce, 2018). Research documented in this report indicates that a sizeable number are market-oriented farmers. Many small-scale farmers engage in diversified production of various commodities (e.g. combining fresh produce with livestock production on communal grazing land).

**Map 3. Agricultural regions of South Africa with dominant agricultural commodities**



(Source: Waldner et al., 2017)

#### 2.4 2.4 Socio-cultural factors and land tenure systems

Many of the small-scale fresh produce producers located in the communal areas of the former 'homelands' have communal rights to plots on irrigation schemes and residential properties with homestead gardens, although some have private titles. Communal tenure can be defined as 'a degree of community control over who is allowed into the group, thereby qualifying for an allocation of land for residence and cropping, as well as rights of access to and use of the shared, common pool resources used by the group (i.e. the commons)' (Cousins, 2000; 152). Communal tenure in South Africa can also be understood as 'mixed tenure', since land is officially owned by the state (but held in trust for the community), and so legally communities only have a secondary right to reside on and use the land (Cousins, 2000; Kingwill et al., 2015). Customary or communal property rights can be seen as 'socially embedded', being intrinsically linked to political and social dynamics (Berry, 1993; Moore, 1998).

The land tenure systems found across the former homelands is not exclusively communal, involving a strong role for traditional leaders. Different historical and political trajectories in various contexts have produced a variety of tenure regimes including patches of freehold titles, deeds of sale<sup>12</sup>, quitrent titles, municipal land, private trust land and state trust land (Kingwill et al., 2015; Wotshela, 2014). Even in cases where rights to plots are communal, research has highlighted that there is still an active informal land rental market, especially for valuable irrigation plots e.g. Mooi River and Tugela Ferry Irrigation Schemes and many others (Sato, 2018; Cousins, 2013). The informal land rental market is said to facilitate 'accumulation from below' in certain cases, allowing productive farmers to gain access to more land or at least ensuring that land is still used even if the land rights holders are unable to farm it themselves (Cousins, 2013).

Several case studies mentioned insecure tenure as a key challenge for many small-scale fresh produce producers. Tenure reform has been the most unsuccessful of the three-pronged land reform programme. Prior to 1994 the rights to occupy and use land in the former homelands were not recognised sufficiently in law. Many people only had conditional permits in the form of 'Permission to Occupy' (PTO) certificates. These were

<sup>12</sup> On some irrigation schemes, like Keiskammahoek in the former Ciskei and elsewhere, plot owners have 'deeds of sale'. They are awaiting finalization of their title deeds due to the moratorium that was placed on private titling and transfer of SADT land in late 1993 (Hall, 2010; Bunce, 2018).

however usually granted to men, leaving widows and divorcees vulnerable to eviction. Tenure insecurity thus has negative gendered implications for fresh produce producers (Domenech and Ringler, 2013).

Since 1994, tenure insecurity has escalated because pre-existing systems of land administration have virtually collapsed. In the absence of clear policy, land administration procedures have become ad hoc and unclear. Confusion also reigns, as to the relative responsibility of traditional authorities vis-à-vis local government, in allocating land for residence and development (PLAAS, 2016; Cousins, 2012). 60% of the population in former 'homeland' areas have informal rights that are neither recorded nor secure (Hornby et al., 2017). Parliament's *High Level Panel* (2017) emphasised the imperative for effective policy to urgently secure tenure rights. The large number of uncultivated dry land plots have led some to conclude that there is no longer a critical issue of shortage of land in the former 'homelands'. However, this is also a reflection of failed farmer support, drought and other complex factors. If the aim is to expand small-scale production, then there is certainly a shortage of land requiring that we look towards redistribution (Bunce and Cousins, 2015).

### 2.5 *Social organisation*

Many small-scale fresh produce producers are not organised into any formal organisation, besides being embedded in family and kin networks. However, this varies across the country and research in Limpopo indicated that many small-scale farmers were quite well organized under a variety of farmers' associations and other structures (Bunce and Aliber, 2019). Many are organised into water user's associations, cooperatives, commodity associations and CPAs. There are also more informal arrangements of collective action whereby producers engage informally in collective marketing. These different forms of social organization entail different services and support for producers and often affect the types of markets they supply, and incomes earned. In Limpopo, agricultural cooperatives were found to principally provide extension services, while commodity associations mostly provided marketing services. Chikazunga (2009) found that small-scale farmers in Limpopo organised into commodity associations are likely to earn higher incomes. However, 'resource endowed households' are the most likely stakeholders to participate (Chikazunga, 2009).

Farmers located on irrigation schemes usually have individual rights to plots of land, however, they collectively use the irrigation equipment and water, mostly through organisation in a water users' association. The water users' association would normally elect a committee who is responsible for equitable distribution of water to its members. Sometimes they also coordinate maintenance of irrigation infrastructure, cultivation and access to packhouses and tractors. Some water users' associations also market fresh produce, like a commodity association would (Chikazunga's, 2009; Cele and Wale, 2018).

New land reform beneficiaries are often unable to join water user's associations because water rights are not received along with land rights and catchment areas are fully allocated. For example, research in the Greater Tzaneen Local municipality in Limpopo, indicated that the Letaba Water User's Association can no longer allocate water to new users and the DWS has failed to redistribute water rights. Poor water governance is clearly an issue affecting fresh produce producers around the country. Poor cross-departmental coordination is clearly a constraint as this quote indicates: 'There is close to zero collaboration between DWS and DARD. DWS and the municipality are not playing their role in water governance' (Key informant from Limpopo Department of Agriculture and Rural Development) (in Bunce and Aliber, 2019).

### 2.6 *Other kinds of farming and additional livelihood sources pursued by fresh produce producers*

Several studies note that incomes from fresh produce production account relatively little to total household incomes. The most important income sources are wages, social grants and remittances (May 2000; Cousins 2013/8; Neves & Du Toit 2013). Incomes from fresh produce sales tend to be relatively low. To improve incomes, many small-scale farmers combine fresh produce with rearing livestock. In areas like Limpopo and Mpumalanga fresh produce is commonly combined with subtropical fruit production. In general, for many small-scale farming households, although agrarian activities continue to contribute significantly to household

reproduction their contribution to monetary income is relatively low. It is only among a tiny minority that agriculture comprises a *main* livelihood source (Hebinck and van Averbeke, 2013; Cousins, 2013/8). There is, however, a dynamic interaction between different sources of income that needs to be appreciated. Several authors emphasized that in the apartheid period wages and remittances were central to sustaining agricultural production (Murray, 1981; Spiegel, 1986; James, 1985; Beinart, 1982). Today, this link between off-farm incomes and agricultural production continues to be important (Bunce, 2018; Hebinck and van Averbeke, 2013). Few farmers have access to credit and so incomes from other livelihood sources are crucial to sustain farming (Aliber, 2018).

### 3 Support services for fresh produce production

There is evidence to support the connection between appropriate extension, training and institutional support and the ability of smallholder farmers to access markets for fresh produce (Ncube, 2017; Arias et al. 2013; Torero 2011; Fanadzo, 2010; Amrouk et al. 2013). Extension services focused on water, soil and crop management are particularly critical for fresh produce production. However, many extension officers lack the requisite technical skills to provide this support and government lacks the capacity to effectively provide and coordinate these services. Almost every report reviewed noted challenges with extension services to support fresh produce producers (see Phuhlisani, 2019; Khulisa, 2016; Muchara et al., 2014; Fanadzo, 2012; Mnkeni et al. 2010).

Government has focused many of its interventions on support programmes for small-scale farmers in the former homelands and in land reform contexts. Some of these interventions have been fairly successful like the *Siyazondla Homestead Food Production Programme*, (Fay, 2013; de Klerk, 2013) while others are considered to have had very limited success like the *Massive Food Production Programme* (Mtero, 2015; Madyibi, 2013; Jacobson, 2013), the *Comprehensive Rural Development Programme* (Impact Economix and DPME, 2013) and Fetsa Tlala (Aliber, 2018). A number of national policies, programmes and legal frameworks have included an element dedicated to smallholder support programmes<sup>13</sup> (Phuhlisani, 2019; Khulisa, 2016):

- Broadening of Access to Agriculture Thrust, (1995)
- Settlement Land Acquisition Grant (1995)
- Land Redistribution for Agricultural Development (2000-2010)
- Massive Food Production Programme (2003)
- Comprehensive Agricultural Support Program (2004)
- Siyazondla (2004)
- Proactive Land Acquisition Strategy (2006)
- Ilima Letsema (2007)
- Comprehensive Rural Development Programme (2009)
- Recapitalisation and development programme (2010)
- Zero Hunger Programme (2011)
- Integrated Growth and Development Plan for Agriculture, Forestry and Fisheries (2012)
- Fetsa Tlala (2014)
- Agricultural policy action plan (2016)
- The draft national policy on comprehensive producer development support (2018)

A number of official evaluations<sup>14</sup> of these programmes have been undertaken by the Department of Performance Monitoring and Evaluation (DPME) and are documented in other reports (see Phuhlisani, 2019;

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<sup>13</sup> There are a number of programmes and financial services not included here (see Phuhlisani, 2019).

<sup>14</sup> Evaluations have been undertaken of CASP, CRDP, MAFISA, RECAP and the Restitution Programme.



Khulisa, 2016). In most cases cash funding is not given directly to farmers but rather support is given in the form of extension or input support like fertilisers, seed and fencing (Muchara et al., 2014). This, however, creates challenges for farmers to cover operating costs such as labour and transport (Bunce, 2018). Annual membership fees paid to cooperatives are often insufficient to cover operating costs, as Muchara et al., (2014) note for the Mooi River Irrigation Scheme.

### *3.1 Overview of support programmes*

#### *3.1.1 Revitalisation/ rehabilitation of smallholder irrigation schemes*

A large proportion of the 317 irrigation schemes are either collapsed or are utilised well below potential (Denison and Manona, 2006). The most recent approach to smallholder irrigation development is referred to as 'the irrigation management transfer (IMT) and revitalisation era'. 'IMT refers to the transfer of the responsibility of managing, operating and maintaining irrigation schemes from the government to the farmers' (Fanadzo et al., 2010: 3517). IMT also entails formation of water users' associations and other local management institutions (Perret, 2002). Revitalisation is meant to encompass a holistic approach, focusing on the human factor, 'whole enterprise planning' and ensuring financial sustainability and autonomy for farmers, as well as the infrastructural components of repair and re-design of infrastructure. In reality, most authors conclude that apart from a few more successful experiences, particularly in Limpopo, as a whole a limited approach to IMT has been adopted and most transfer operations have had an unclear vision with more attention placed on infrastructural aspects at the expense of 'human factors' (Fanadzo et al., 2010; Denison and Manona, 2007; Koppen et al., 2017).

At Tugela Ferry in KwaZulu-Natal a repair programme valued at R20 million was initiated under the CRDP (Fanadzo, 2012). In the Eastern Cape R30 million was spent at Shiloh Irrigation Scheme and R66 million at Keiskammahoek Irrigation Scheme through RECAP grants (Bunce, 2018). Ensuring that these existing schemes function to their potential requires a more comprehensive and holistic approach to 'revitalisation', that goes beyond the infrastructural and engineering-centred approach of 'rehabilitation' (Denison and Manona, 2007; Laker, 2000). Of concern, is that many of these schemes are being targeted by agribusiness for joint ventures to legitimise the huge expense entailed in these 'repair programmes', often producing commodities like dairy or grains, which are not as labour-intensive as fresh produce and are not as well suited to smallholder production. This report suggests that an alternative model of organising production on these schemes would be promoting a successful smallholder sector, many of which could produce fresh produce.

#### *3.1.2 Strategic partnerships, mentorships and joint ventures*

In several cases where irrigation schemes have been revitalised through RECAP and other arrangements, this has been done on the condition that small-scale farmers enter into agreements with a strategic partnership or mentor e.g. Tyhefu, Makuleke, Levubu, Giba, Hereford, Keiskammahoek and Shiloh. Documented experience with strategic partnerships on irrigation schemes illustrates that they often result in limited benefits for small-scale farmers, highlighting the need for caution. While profits are often shared 50/50, the relative contribution of the small-scale farmer's assets compared to the strategic partner's, doesn't justify the share in profits (Tapela, 2005; Denison and Manona, 2007; Manenzhe, 2015; Bunce, 2018). A Khulisa (2018: X) evaluation report found that there is 'no evidence to support or refute the assumption that strategic mentorship and knowledge transfer models are effective in building smallholder farmer capacity'. The strategic partner model of support will not create the kind of dynamic small-scale farming sector that can generate the necessary jobs and accumulation of capital required to transform the agrarian sector. Instead these kinds of arrangements risk creating a situation where 'farmers can be marginalised to the extent where they are little more than labourers on their own fields' (Denison and Manona, 2007: 54). However, commodities requiring large financial investments e.g. setting up sub-tropical fruit orchards, might make a strategic partnership worth considering (Bunce and Aliber, 2019). However, for fresh produce production, the upfront investment costs shouldn't necessitate an equity share arrangement.

### 3.1.3 AgriBEE act

The AgriBEE act states that retailers should source 30% of their fresh produce from small-scale farmers. A number of South-African retailers have begun implementing programmes to source fresh produce (and other commodities) from black small-scale farmers. Some of these initiatives also involve access to finance, inputs and training/information transfer (Barlow and van Dijk, 2013). However, procurement and quality policies and the location of small-scale farmers to these formal value-chains still limit who is able to participate. A number of initiatives exists, stimulated by the AgriBEE Act and CSR protocols. For example, Just Veggies based in Vryheid in KwaZulu-Natal, processes both fresh and frozen vegetables for the retail industry. They purchase fresh produce from surrounding small-scale farmers and have employed agronomists that provide training, skills development and mentorship to participating farmers (Barlow and van Dijk, 2013). However, on the whole the evidence suggests that the AgriBEE act has not been able to enforce this 30% quota and many small-scale farmers still struggle to access formal value chains.

### 3.1.4 NGO support programmes

Some initiatives to support small-scale farmers are run by NGOs. For example, Siyavuna operates in the Ugu district of Kwazulu-Natal with more than 180 small-scale farmers. The project aims to assist fresh produce producers to target the niche organic market by providing training and certification on organic farming and organizing farmers into farmer associations. Siyavuna provides assistance along the whole value-chain, collecting produce, assessing quality, paying farmers directly, providing packing and cooling facilities and marketing and selling fresh produce under the 'Kumnandi' brand to local retailers, the local Ugu Fresh Produce Market and directly to restaurants. However, challenges are noted linking these farmers to formal value chains because of their strict quality requirements (Barlow and van Dijk, 2013).

At the Mooi River Irrigation Scheme in Msinga Kwazulu-Natal, the NGO LIMA offers training courses. These cover topics such as seedling cultivation, crop care and soil preparation. Given that the KZN Department of Agriculture has limited capacity to offer training and extension services, this is a welcomed intervention for irrigation plot owners, many whom produce fresh produce. However, since this service requires a contribution by farmers, there is limited uptake of the programme. A survey conducted by Sato (2018) of 94 farmers, revealed that only 14 had received any kind of assistance from NGOs in 2014.

Abalimi Bezekhaya<sup>15</sup> supports small-scale farmers in the Philippi Horticultural Area and outgrowers in the Cape Metropole. The initiative has also received substantial government funding. The City of Cape Town invested R35 million into establishing a fresh produce market in Philippi, as a joint venture with the Department of Agriculture and private sector partners. However, de Satgé (2011) notes that 'this investment and infrastructure-led approach shows few signs of securing a return on investment'. Abalimi Bezekhaya has provided support programmes, including training initiatives, fieldworkers to provide extension support, access to resources, an organic pack house, administrative support and linking farmers to secure markets e.g. the social business 'Harvest of Hope' which buys their fresh produce and distributes weekly vegetable boxes to consumers (de Satgé, 2011/3; Just Think, 2008).

Questions have, however, been raised regarding the financial sustainability of the project and whether small-scale farmers have become dependent on Abalimi's subsidized production support programme (de Satgé, 2013). Despite the optimism expressed in the literature regarding linking small-scale farmers to niche markets like the organic market, de Satgé (2011: 23) concludes that 'the Abalimi experience suggests that attempting to secure formal organic certification is too onerous for small producers. This requires a new approach which either utilises state support or an alternative framework with more appropriate standards and assessment measures'.

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<sup>15</sup> See: <http://abalimibezekhaya.org.za/about/who-we-are/>

### 3.1.5 SPAR's 'Rural Retail Center' model

In 2013 Spar South-Africa had opened 3 Rural Retail Centers (RRCs) in rural areas of Limpopo<sup>16</sup>, which source a substantial part of their fresh vegetables from black small-scale farmers. The project formed a part of the 'Amsterdam Initiative against Malnutrition (AIM)', which was co-funded by the Dutch Ministry of Foreign Affairs, the Global Alliance for Improved Nutrition (GAIN) and others until 2018. The project provided agricultural training and extension support, information about what fresh produce to cultivate in various quantities, access to finance and other resources and inputs. The production process was streamlined by project managers and the quality of crops strictly controlled to ensure high quality and consumer safety (SPAR- International, 2018<sup>17</sup>).

Various franchise-owned stores also source vegetables directly, for example, SPAR stores in Thohoyandou and Giyani in Limpopo (Jacobs, 2009). Giyani started procuring from six farmers and gradually built up this network to 14 supplying tomatoes, carrots, butternuts, beetroot and green onions (Louw et al, 2008). Visual inspection of fresh produce is conducted on arrival to maintain quality standards. In both cases SPAR reported that delivery requirements were fulfilled by farmers, however, the store reserved the right to refuse produce if there was oversupply. The Giyani store provided technical assistance and interest-free production loans. Thohoyandou, initially provided technical assistance but this was withdrawn after a while (Jacobs, 2009; Buthelezi, 2013). A number of authors view the model as an innovative and sustainable model that could be scaled (Barlow and van Dijk, 2013; Chikazunga and Paradza, 2013; Buthelezi, 2013).

### 3.2 Evaluation of the effectiveness of support services

*'Overall, this evaluation highlights the fact that while there are small pockets of success, strategies to support smallholders are not working effectively or efficiently. The biggest problem is with subsistence smallholders, and farmers in informal (loose) value chains, where services are not currently in place. Where services do exist they are either fragmented or duplicated with limited impact' (Khulisa, 2016: xiii-xiv).*

The evaluation (Diagnostic Evaluation of the Government Supported Smallholder Farmer Sector) found that programmes do not have a clear focus or criteria for identifying beneficiaries. Since the intended beneficiaries are not clear, the types of support services required are not adequately aligned with the differentiated needs for various groups of small-scale farmers (Khulisa, 2018). A number of other studies have also indicated that poor coordination of government funded programmes and activities negatively impacts smallholder performance (Muchara et al, 2014; Impact Economix, 2013).

Averbeeke et al (2011: 799) remark that of the key constraints noted by extension workers on 164 smallholder schemes researched across the country, 'poor management topped the list (50% of the cases); followed by infrastructural problems (15%); water inadequacies (13%); conflict (12%); and theft (7%). This suggests that human (capacity) and social (institutional) resource problems were at the heart of the below-expected performance of smallholder irrigation schemes in South Africa'. Access to financial capital is also considered a key constraint among small-scale irrigators (Muchara et al., 2014:235).

Small-scale farmers require training programmes to improve farm management and irrigation specific skills such as scheduling and irrigation maintenance, to improve productivity and the condition of infrastructure (Muchara et al, 2014). In many of the rural areas where these small-scale farmers are located inadequate and poor public infrastructure, especially roads, impact on market access and government coordinated maintenance of irrigation water infrastructure (Muchara et al, 2014). Access to market information is also mentioned as a missing factor, which could avoid oversupply of certain crops and improve competitiveness and profitability (Buthelezi, 2013; Sato, 2018; Ncube, 2018).

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<sup>16</sup> RRCs were planned for Eastern Cape and KwaZulu-Natal (SPAR's 2014 Integrated Report).

<sup>17</sup> See: <https://spar-international.com/keyinitiatives/the-amsterdam-initiative-against-malnutrition/>

Continuity of support programmes has been a problem, which leads to failure of projects and feelings of apathy and mistrust towards government. For example, on the Shiloh Irrigation scheme, there were several failed attempts to get fresh produce production going under both Siyazondla and the Massive Food Production Programme before landowners entered into a JV with a strategic partner. An irrigation plot owner explains: 'After Ulimocor<sup>18</sup> left everything was vandalized, so the irrigation scheme was broken, and we were just grazing. There was only one year since Ulimocor left, that we tried to plough for the potatoes and mielies when Siyazondla came. But nothing happened from it, we had no water and government didn't make a follow up' (in Bunce, 2018)

In many cases interventions to revive fresh produce production in the former homelands have failed because they are not rooted in the local context and fail to understand the underlying complexities and challenges faced by smallholders, in all their diversity (Cousins, 2015b). The resulting interventions are often highly inappropriate as they attempt to impose conventional models of commercial farming onto smallholders. This was certainly the case with the Massive Food Production Programme (Jacobson, 2013). On the other hand, besides the failed attempt in Shiloh, Siyazondla has had some notable success, especially in regards to fresh produce production in homestead gardens in the Eastern Cape (Fay, 2013).

*Smallholder in loose value chain supported by Siyazondla, Keiskammahoek E.Cape (HH No. 91). (in Bunce, 2018)*

'I am 52 years old. I live here with my husband who is 71 and our two daughters, two sons and two grandchildren. One of my sons is a security guard in East London but comes back on the weekends and the other is looking for work there so we send him money when we can. My husband and I were allocated this land in 1998 by the traditional leader... My husband has an old age grant and we have two child support grants for the grandchildren but we live from this garden. Our garden is ¼ hectare and it's full of crops and we also have 5 (dry land) fields. I've had at least 800 heads of cabbage this year, 40 bunches of carrots, 20 bunches of onions, 30 bags full of butternut in those 10Kg bags, 50 heads of cauliflower and I can't count the spinach, but it was a lot. I work in the garden with my husband and the children help sometimes but they are not always here. We use everything from the garden in the homestead and we sell some to neighbours and give to the poor and the school. The Agriculture department gives us seeds at Keiskammahoek district and supports us and some others in these villages around but we don't get fertilizer, I use the kraal manure. They started supporting us as part of Siyazondla, many people were participating then but not anymore... In those fields we plant mielies, pumpkins and sometimes potatoes. We got 30 bags of mielies in those 50 KG bags this year. We use those mielies to feed our livestock ... My husband has 32 cattle and 45 goats and he owns those together with his three brothers. They sell the cattle and goats when there is a problem, like when someone has a funeral. They made R31, 800 so far this year... I sell chickens sometimes, but I only made R900 from sales to the neighbours. We will slaughter a pig soon for the homestead'.

The above interview from a household with a very productive small household garden in Keiskammahoek in the Eastern Cape is illustrative. The household makes their living predominantly from growing vegetables and rearing livestock, supplemented by social grants and migrant labour. However, it is notable that while fresh produce is important to household reproduction and some marginal income is made, at this level of production (1/4 ha plot), sales of livestock contribute more to household income.

### 3.3 *Suggestions to improve support services for fresh produce farmers*

Khulisa's (2016: XI) evaluation report of small-scale farmer support programmes found that 'The interventions with the most potential for success include cooperative membership and support, and land reform and redistribution. Notably these interventions are not proposed for every smallholder category but rather are targeted at those particular categories that are in the best position to take advantage of the opportunity'. A

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<sup>18</sup> Ulimocor is the name of the Ciskei homeland parastatal

more detailed list of suggestions are outlined in Table 3 in Chapter 7 of this report, however, Khulisa's (2016: xii-xiii) evaluation report also suggests a number of high-level services to more effectively assist different groups of small-scale farmers:

**Subsistence-oriented smallholders:** water access; capital-related inputs; community-based extension; and village savings and loans.

**Smallholders in informal (loose) value chains:** transformation of water rights; tenure reform; a combination of subsidised cooperative membership with scaling up of Local Good Agricultural Practice (LocalGAP) standards via provincial extension services, mobile phone-based market information dissemination; microfinance and/or revolving credit; and small scale agro-processing.

**Smallholders in formal (tight) value chains:** transformation of water rights; tenure reform; off-farm infrastructure (particularly roads and ICT); subsidised user pay system for private extension<sup>19</sup> and advisory services; cash grants or access to microcredit (not both); and producer forums.

**Small-scale commercial farmers:** transformation of water rights; tenure reform; needs-based off-farm infrastructure; specialized, commodity-linked extension support, incentivising private sector specialists such as agricultural economists for market information, and veterinarians and agronomists to assist with product quality checks; a wider range of finance products; and research and development.

#### 4 The character of fresh produce value chains

A value chain includes all the activities required to bring a commodity or service from conception, through different phases of production, transformation and finally delivery to consumers (Kaplinsky and Morris, 2001). An agricultural value chain includes all those activities both up and downstream of the farm. 'Value chain analysis seeks to characterize how chain activities are organized, costs incurred, value created and benefits shared among chain participants. It also deals with the institutional arrangements governing the activities, actors, their relationships, the linkages and market prices in and out of each actor in the chain' (Senyolo et al., 2018:4).

Fresh produce value chains can be crudely divided into formal and informal value chains. However, it should be noted that the lines between them are not distinct but rather blurry (Ncube, 2017; Chikazunga, 2013; Arias et al., 2013). These value chains have also been described as 'loose' and 'tight' value chains. The former involves producers engaging in 'informal' markets such as selling produce to bakkie traders, neighbours, street traders/hawkers and at pension day markets. The latter involves selling to supermarkets, processors, restaurants and fresh produce markets (FPMs) (Cousins, 2015; Sato, 2018; Barlow and van Dijk, 2013). Market-oriented fresh produce farmers may target either of these value chains, although undoubtedly a significantly larger proportion operate within 'informal' or 'loose' value chains. In relation to fresh producers, 'informal farm-gate markets' with neighbours, street traders and bakkie traders generally characterise the first stage in commercialisation and commodification of agricultural products (Ncube, 2017).

One key differentiator of 'formal sector' agriculture is the farm enterprise's tax status (registration and payment). The vast majority of smallholders are both informal and subsistence-oriented (Cousins, 2018; Beinart & Delius 2015). However, even if a small-scale farming enterprise is informal according to this definition, it may still sell its produce in markets that are considered part of 'formal' value-chains e.g. supermarkets, processors or municipal fresh produce markets. Therefore, definitions of what constitutes formal and informal are not straightforward (Barlow and van Dijk, 2013).

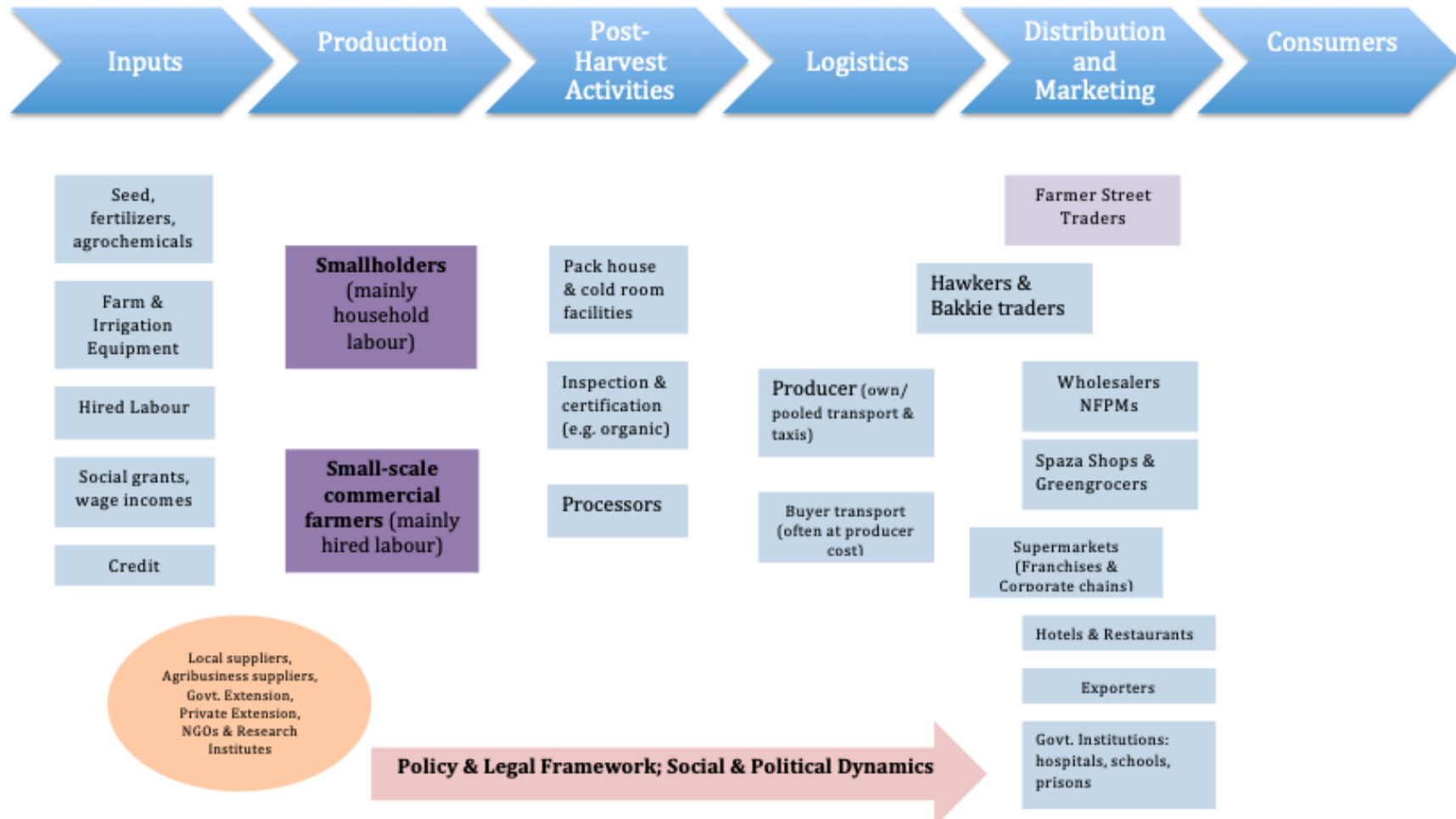
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<sup>19</sup> The report suggests that DAFF explore the possibility of contracting out commodity specific extension and advisory services with organisations such as NERPO (Khulisa, 2016: 69).

Chikazunga (2009) differentiates markets supplied by small-scale fresh produce farmers into three major market channels: traditional, modern and wholesale markets. 'Traditional markets' include informal market channels such as hawkers, open markets and roadside markets. 'Modern markets' include supermarkets and agro-processors. 'Wholesale' refers to the national and municipal FPMs. The diagram below presents a simplified mapping of fresh produce value chains for small-scale farmers, including the various activities, actors, processes and institutional settings, which define them. Ideally this should include arrows indicating relationships, however, the various connections are so varied that this has not been attempted. For example, many smallholders don't engage in post-harvest activities because they lack access to packhouses and cold rooms. They may sell directly to bakkie traders or hawkers from their fields (who provide their own transport). Alternatively, they may sell directly to end consumers.

Upstream of farms are input suppliers providing services and resources such as seeds, fertilisers, irrigation, agrochemicals and farm equipment. Some of these services are provided by the state through various smallholder support programmes, while most is sourced privately through local suppliers or agribusiness firms. Some local input suppliers exist and sell seeds, fertilisers and chemicals e.g. in Tugela Ferry. However, in many cases these inputs must be sourced further afield. While some farmers have access to government ploughing services, often requiring own contributions, most farmers hire these services from private businesses. The need for various inputs also depends on the crops grown. Tomatoes and cabbages, for example, require heavy use of purchased inputs at major cost to farmers. Although these crops tend to be more lucrative, high costs of production together with frequent oversupply and price instability present risks. Crops like maize and sweet potatoes involve much fewer purchased inputs and are therefore more widely grown (Cousins, 2013; Aliber, 2018).

Figure 2. Simplified fresh produce value chain for small-scale farmers



#### 4.1 Informal or 'loose' value chains for fresh produce

Spot and farm-gate transactions with neighbours and a range of other stakeholders offer great flexibility and lower transaction costs for small-scale farmers (SAFL, 2016). The most common informal markets supplied by most small-scale fresh produce producers involve bakkie traders and hawkers as the primary intermediaries (Cousins, 2018; Khulisa, 2018). Bakkie traders own pick-up trucks (referred to as 'bakkies') and generally purchase fresh produce from farmer's fields to sell them to wholesalers (including municipal FPMs), retailers in nearby towns or directly to consumers out of the back of their bakkies. Their involvement as intermediaries in fresh produce markets means that farmers can sell large volumes at once without assuming the risk and costs of transporting their produce to markets, many of whom do not own vehicles. Farmers located on irrigation schemes especially offer good supply for these traders, who can get the large volumes they require from a number of neighbouring farmers (Sato, 2018; Cousins, 2012). Street traders or hawkers also purchase fresh produce directly from farmers to sell at their mobile street stalls. In cases where lucrative town and city markets are further afield, farmers also deliver their produce to street traders by hiring transport e.g. at the Mooi River Irrigation Scheme, produce is sold as far afield as Pietermaritzburg, Greytown and Durban (150 Kms away). A few farmers may also sell the crops themselves as street traders, provided that household labour is available to do so (Sato, 2018).

The types of informal markets and intermediaries interacting with fresh produce producers depends on their location i.e. proximity to towns and cities, to fresh produce markets and local shops and supermarkets, as well as the types of crops they produce. For example, Ncube (2017) found that the New Forest irrigation farmers in Mpumalanga sold perishables, such as tomatoes, green maize and cabbages and tomatoes to 'bakkie' traders who tend to buy in much greater volumes than hawkers. Farmers tended to sell non-perishables to hawkers, except for Swiss chard, which is grown in smaller quantities and can be harvested on the spot. For fresh producers on the Dzindzi scheme direct sales to customers, supermarkets and street traders are key (Cousins, 2018; Manyelo et al. 2015). In Kwazulu-Natal on the Mooi River Irrigation Scheme, from a survey of 82 of the total 824 small-scale farmers, respondents noted that the main market for their produce was: Bakkie traders (57), Street traders/vendors (30), Neighbours (25), Pension day markets (7) and Supermarkets (6) (Sato, 2018).

Farmers engage in various forms of collective organisation in these value chains, as already described in section 2 of this report (Chikazunga, 2013). Besides farmers who collectively market their produce in cooperatives, there are more informal forms of collective organisation. For example, on the Mooi River Irrigation scheme farmers would collectively agree to set prices for important commodities like tomatoes when selling to bakkie traders, although these were generally informal verbal agreements and not enforceable (Sato, 2018)

##### **Dzindzi Irrigation Scheme (Limpopo)**

Market-oriented fresh produce producers at Dzindzi irrigation scheme sell to a variety of markets and intermediaries. Street traders are key players but farmers also sell directly to customers as well as to supermarkets. Street traders purchase produce from producers at the Dzindzi scheme, who often inform them by cellphone when produce is ready for purchase. Produce is marketed to customers in nearby townships and in the small town of Thohoyandou. Manyelo et al. (2015) documented a total of 101 street traders operating in these types of informal markets. This ratio of almost one trader per farmer (102 farmers at Dzindzi) indicates the extraordinary multiplier effect for jobs in these loose value chains. These street traders can be divided into bakkie traders (17), township pavement traders (12), door-to-door traders (18) and CBD traders (54). Generally, the CBD traders were able to make the highest incomes. Eighty-six of the 101 street traders were female and several were the main household breadwinners. Key success factors of these informal markets include the close proximity of Thohoyandou to the scheme and local government's progressive approach to encouraging street trade in the CBD and surrounds. Street traders are allowed to operate in the CBD on pavements and in parking areas, with few regulations (Manyelo et al. 2015; Cousins, 2018).



Although the informal value chain for fresh produce is clearly dynamic and has the benefit of creating a number of additional jobs along the value chain, especially downstream of the farm for actors such as bakkie traders and hawkers, studies also note that farmers complain about a lack of market demand for their produce. At the Mooi River Irrigation Scheme, 48% of interviewed farmers noted a lack of buyers for their crops as their most serious challenge (Sato, 2018). This is also linked to the lack of market information, resulting in cropping decisions not being informed by demand for different types of fresh produce. Production is thus uncoordinated resulting in frequent oversupply which depresses prices (Sato, 2018; Cousins, 2013; Mkhabela, undated; Ncube, 2018). A smallholder farmer from Mooi River emphasises that 'we need a market that is dedicated to us and will work for us' and another suggests, 'we just feel that we are let down by shops around this town, schools also should be supporting us, as well as the hospital' (in Sato, 2018:48/56).

The challenges that small-scale farmers face in marketing their produce has led several authors to suggest that preferential procurement policies for public institutions including hospitals, prisons and schools could provide a secure market for small scale fresh produce producers in particular (Manyalo et al., 2014; Khulisa, 2016; Aliber, 2013; Cousins, 2015). This is already happening on a limited scale, in various pilots, through the Zero Hunger Programme or on an ad-hoc basis (Aliber, 2013). For example, at the New Forest Irrigation Scheme there is a pilot programme implemented through the provincial Department of Education, which connects fresh produce producers to the school feeding programme. However, only a limited number of irrigation farmers are included and challenges have been recorded including low purchasing prices and delayed payments from the government (Ncube, 2017)

Studies have demonstrated that commercialization or market-orientation of small-scale farmers is more likely to occur where farmers are well connected to urban centres and towns. This is because it makes it more economical for street and bakkie traders to travel from farmers to the towns where they sell fresh produce. This is especially the case for street traders who often make use of public transport. In the case of remote irrigation schemes, commercialisation has often required outside intervention (van Averbeeke, 2012). These dynamics should be taken into account when considering well-located land for redistribution to extend fresh produce production under small-scale farmers.

#### *4.2 Formal or 'tight' value chains for fresh produce*

A key focus of small-scale farmer policy and programmes is on integrating farmers into 'corporate food retail value chains'. The idea behind this agenda is to support the emergence of a small-scale black commercial farming class, which could actively compete in the market without government support. Small-scale farmers producing sugar, cotton, poultry, tobacco and in the forestry sector have been under formal contract for some time. More recent efforts have focused on integrating small-scale farmers producing fresh vegetables and fruit into these formal value chains. Government has actively promoted this through its black economic empowerment (BEE) procurement policies but a real catalyst has been the expansion of supermarkets into remote rural areas, where previously only informal markets operated (Greenberg, 2013). Supermarkets that are franchise models (like SPAR) have allowed independent retailers to procure directly from fresh produce producers, rather than from central distribution centres (Louw et al., 2008).

The literature is polarized as to whether integrating small-scale farmers into these formal value chains is practical or indeed desirable (Du Toit & Neves 2007). The reality is that the vast majority of fresh produce small-scale farmers operate in informal or 'loose' value chains and these provide particular benefits to producers, other actors in these value chains through income and employment opportunities and for the local communities they serve (Greenberg and Paradza, 2013; Cousins, 2018/3; Chikazunga and Paradza, 2013). However, a number of authors from within the international 'development' paradigm writing on agro-food systems, argue that integrating small-

scale fresh produce producers into corporate value chains will have a positive impact on incomes and livelihoods (Brown and Sander 2007; Emongor & Kirsten, 2009; Vermeulen et al, 2010; Seville et al 2011; Louw et al, 2008). However, other research of small-scale fresh produce producers in South Africa, found that informal value chains were more profitable under certain circumstances (Chikazunga, 2009; Cousins, 2018; Ncube, 2018; Bunce and Aliber, 2019).

What is sometimes overlooked, is that in the context of South Africa, even large-scale commercial farmers struggle to remain competitive and to meet the requirements of these formal value chains. Fresh produce value chains are dominated by input suppliers, food processors and supermarkets, who often prefer to engage with large-scale commercial farmers (Seville et al., 2011; Vermeulen et al., 2008). There are serious hesitations regarding whether fresh produce value chains can be governed (i.e. regulated by the state) to promote a pro-poor agenda to the benefit of small-scale farmers. These value chains are highly concentrated, with market power largely in the hand of retailers who determine the terms of governance. However, retailers are themselves subject to competitive pressures and they tend to shift the costs of meeting quality standards onto producers, which risks squeezing small-scale farmers out of production (Buthelezi, 2013; Greenberg & Paradza, 2013; Emongor & Kirsten, 2009).

Some authors warn that 'adverse incorporation' is a risk because these value chains are 'buyer-driven' and small-scale farmers would have very little power to negotiate favourable terms (Hickey and du Toit, 2007). Small-scale farmers often struggle to meet the contract terms, quality standards and procurement practices of supermarkets (Von Broembsen, 2016; Cousins, 2018; Greenberg, 2013). Retailers require farmers to have pack houses, cold rooms, to provide full traceability and to conduct soil, water and product analysis for food safety. These present additional costs to farmers, which eat away at profit margins. Even large commercial farmers, operating at a much larger scale, struggle to meet these requirements (Barlow and van Dijk, 2013). To address this, some small-scale farmers market their produce collectively to formal markets through a cooperative. If their products fail to meet quality standards then they usually resort to selling the produce on local informal markets (Barlow and van Dijk, 2013). However, due to the perishable nature of fresh produce, this is not always possible.

There is a trend of companies moving away from the open market and instead engaging directly in contractual arrangements with producers. These contractual relationships are believed to account for almost 80% of all vegetables and fruits procured for processing (Khulisa, 2018). Retailers source 70% - 100% of all fresh produce directly from farmers, mostly through targeted growing programmes (Kirsten & Sartorius, 2008). The retail market in South Africa is dominated by four major supermarkets: Woolworths, Spar, Pick and Pay and Shoprite/Checkers, who together claim a share of around 70% (Emongor, 2008). The retail model of various retailers determines how they procure fresh produce. Boxer, Woolworths, Massmart and Shoprite Checkers operate corporate/company owned stores, whereas SPAR, Pick n Pay and Fruit and Veg City have both company owned and 'franchisee run' stores. For company owned retailers all fresh produce must be supplied to various stores via distribution centres and registered suppliers. Franchise Stores can buy outside of the retailers' centralised structure and can procure fresh produce directly from farmers and other suppliers. These retailers thus present opportunities for small-scale commercial farmers (Barlow and van Dijk, 2013). SPAR in Limpopo is probably the most well-documented success case of a retailer procuring from smallholders (Louw et al., 2008).

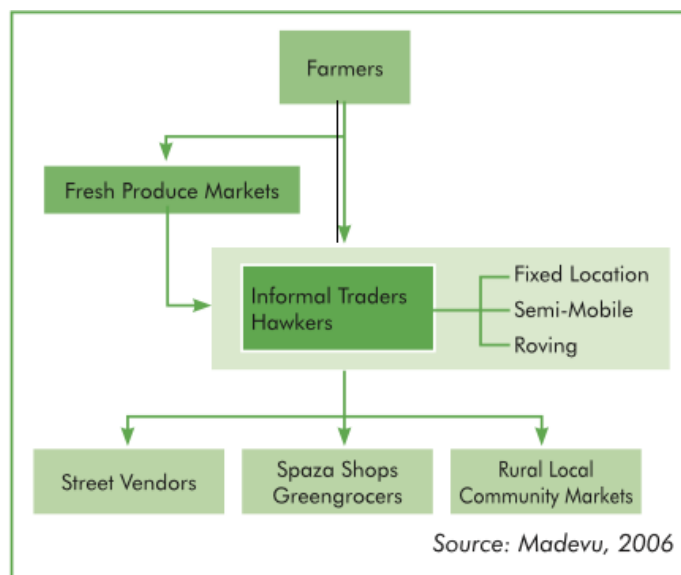
While South Africa's fresh fruit sector is export-oriented (over 50%), vegetable production is largely for domestic consumption, with only 2% exported (DAFF, 2016). Targeting export markets also presents several challenges for small-scale farmers related to stringent procurement and quality standards. However, there may be some limited opportunities for small-scale black commercial farmers producing certain fresh produce crops or targeting niche markets (e.g. organic/ fair trade) for export markets (Ortmann and King, 2010). However, it should be noted that these opportunities would reach limited numbers of farmers. DAFF (2017: 161) notes: 'Butternut squash is an important summer crop grown by smallholder irrigation farmers in South Africa and is increasing in popularity

because production and keeping quality are good and sunburn is not a major problem. The harvested fruit is hardy and can be left on the land for a month or two'. Niche markets present limited promise for small-scale farmers. The organic sector in South Africa is fragmented and lacks a strong national organisation or government policy. There is currently no official inspection and certification programme, which is left to private companies, at high costs for farmers presenting barriers for new entrants (DAFF, undated).

#### 4.2.1 National and municipal fresh produce markets

Louw et al. (2018: 2) note 'South African fresh produce markets (FPMs) started out as meeting places between producers and consumers, where they could trade under the control of a government body or official. These places were centrally located and aimed at serving a town and its hinterland'. FPMs consist of four large markets in Johannesburg, Pretoria, Durban and Cape Town; four medium markets in East London, Bloemfontein, Pietermaritzburg and Port Elizabeth; and six smaller markets in Welkom, Uitenhage, Kimberly, Klerksdorp, Springs and Vereeniging. Fourteen of these FPMs are owned and managed by local municipalities, however, the larger FPMs are essentially run as private companies. The major players in these markets can be divided into wholesalers, wholesaler-retailers and retailers. The supply relationship for NFPMs in terms of informal trade is captured in the diagram below by Madevu (2006).

**Figure 3. The supply relationship for National Fresh Produce Markets for the informal sector**



In 2010 the Produce Marketing Association reported that 46% of all vegetables were sold at Municipal Fresh Produce Markets, 10% was sent directly to processors, 2% was exported and 42% was sold directly from the farm (Barlow and van Dijk, 2013<sup>20</sup>; DAFF, 2016). However, these figures don't distinguish between small-scale farmers and large commercial farmers. The majority (80-90%) of supply to these FPMs is provided by large-scale commercial farmers (NAMC, 2000; NAMC, 2005; Louw et al., 2008). Smallholders may struggle to directly supply NFPMs due to difficulties in providing large volumes, meeting quality standards and transport costs. For many of these farmers, engaging players in the informal market provides them with more certainty. A number of fresh

<sup>20</sup> In reality a small-scale farmer could sell their produce directly at a municipal market (if one is nearby and it makes economical sense) or sell it to an intermediary 'local buyer from the district' or 'from a nearby town' (Cousins, 2018) who will sell the produce for them in a MFPM.

markets try to encourage access by offering market information and linking small-scale farmers with various service suppliers (Louw et al., 2008).

The role of fresh produce markets (FPMs) was originally conceived as allowing for equal market space for large and small-scale farmers. There has, however, been a steadily declining share of fresh produce traded in these markets (Manyalo et al., 2014; Louw et al. 2008; Senyolo et al. 2009; Van der Heijden and Vink 2013). One reason for this is that they have lost traction since many supermarkets purchase much less (or nothing at all) from NFPMs, preferring to contract farmers directly. Only around 10% of vegetables and fruit is procured from FPMs. Ongoing processes of vertical integration in the South African agro-food sector in general, and the formal value chain for fresh produce in particular, have thus undercut these markets (Manyalo et al 2014; Ramabulana 2011; Van der Heijden and Vink 2013). Improved transportation and distribution systems, along with other technological advancements<sup>21</sup> have also allowed many producers and intermediaries to directly access supermarkets (Louw et al. 2008).

Despite decreasing volumes of fresh produce traded at NFPMs, several other value chain players continue to source substantial parts of their vegetables from these markets including: Greengrocers, informal street/bakkie traders and processors. NFPMs are especially important to informal street traders who are not located nearby fresh produce producers, as they save transport costs entailed in travelling to these areas (Manyalo et al 2014; Louw et al. 2004; Madevu et al. 2009). Although these markets are accessible to small-scale farmers, in the sense that they are easier to access than the red tape involved in becoming a 'preferred supplier' for a supermarket, marketing produce to a NFPM still entails high transaction costs which can depress profit margins (Manyalo et al 2014; Senyolo et al. 2009; Ortmann and King 2010; Ramoroka 2012). As a whole these markets thus account for a fairly small proportion of the chosen distribution network for small-scale farmers. However, there is considerable regional variation in this regards. In Limpopo and Gauteng, for example, where small-scale farmers are well connected to NFPMs, they assume great importance.

#### 4.3 Case study: The tomato value chain

In 2015, tomatoes contributed approximately 18.3% to the gross value of vegetable production in the country (DAFF, 2016). There are approximately 22, 500 people employed in the tomato value chain. The number of small-scale tomato farmers is unknown. Important 'multipliers' in tomato supply chains include transport to FPMs and processing plants, packaging factories, independent traders, informal traders, supermarket groups and fast food outlets (DAFF, 2017).

Tomatoes are an especially common and lucrative crop for small-scale farmers and are also grown by resource poor subsistence-oriented smallholders (DAFF, 2017). Sato (2018:60) notes for Mooi River Irrigation scheme, for example, that 'data indicate that growing tomatoes was the most expensive activity, but it was also the crop that gave farmers the highest return'. Similar findings about the profitable returns of tomatoes for small-scale farmers are also noted by Cousins (2013) and Buthelezi (2013) for Tugela Ferry and Chikazunga (2009) in Limpopo province. However, studies also note that tomatoes suffer from frequent market gluts. Processing of tomatoes includes canning, juicing, freezing and dehydration. It has been suggested as a way to expand small-scale farmer participation in this value chain, since quality control is less stringent than NFPM (Louw et al., 2008). However, small-scale farmers also complain that prices are lower for processing and therefore efforts should rather be made to ensure a range of marketing options are available for variable quality produced (Bunce and Aliber, 2019).

Tomatoes are produced in every province, however, Limpopo accounts for 75% of the area under production (with

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<sup>21</sup> Improvements in ripening facilities and the provision of cold chain for produce, including refrigerated trucks (Louw et al, 2005).

3 590 ha<sup>22</sup>). DAFF (2017) estimates that there are around 695 producers in the 'commercial and emerging sector', of which small-scale farmers contribute only 5% of officially reported production. However, these numbers are likely to exclude the vast majority of small-scale farmers selling their produce in loose value chains, which are not captured in official data. DAFF (2012/7) reports that over around 580, 000 tons of tomatoes were produced in 2016.

Producers market their produce through four main channels: fresh produce markets (Johannesburg is the largest accounting for 49% in 2016, followed by Tshwane with 17%), processing, direct marketing and exports (DAFF, 2017). DAFF (2017:6) considers NFPMs to be the preferred market channel for tomatoes and notes that 'NFPMs prices are the benchmark used in all national tomato sales'. Small-scale tomato producers in Limpopo province, for example, hire transport to deliver to the Johannesburg or Tshwane fresh produce market, traveling distances of 400km up to three days a week. Over 200 small-scale farmers are registered and selling their produce at the ZZZ/RSA Mooketsi fresh produce market (Bunce and Aliber, 2019). However, many farmers (62%) supplying fresh produce market agents were unhappy with the prices fetched and thus some prefer to sell to hawkers or bakkie traders (Chikazunga and Paradza, 2013).

#### Tomato Value Chain for Small-Scale Farmers in Limpopo

Chikazunga (2009) found that 12 percent of respondents collectively marketed their tomatoes to reduce transport costs entailed in reaching NFPMs such as the Johannesburg Fresh Produce Market (FMP). The majority of fresh produce producers belonging to agricultural cooperatives and irrigation schemes supply 'traditional/informal market channels' such as roadside markets, open markets and to hawkers. These farmers also bulk their produce together to sell to hawkers and bakkie traders who demand greater quantities. Farmers supplying supermarkets and agro-processors, did not tend to engage in collective marketing as much since produce was procured through individual contracts. Tomato producers who belonged to commodity associations (e.g. Limpopo Tomato Growers Association) were more likely to market produce to supermarkets and were better equipped to meet their strict procurement standards. However, there was low participation in formal markets. Informal markets had less stringent quality standards and provided higher incomes (Chikazunga, 2013). However, other studies (Louw et al., 2008; Buthelezi, 2013) have emphasised that formal tomato value chains have created benefits for small-scale farmers, both in Limpopo and in Mpumalanga. Tomato processors like Tiger Brands and Giant Foods compete with Hawkers and bakkie traders for the supply of tomatoes. Tiger Brands' Musina processing facility contracts around 121 producers on growing contracts who supply approximately 25 000 tons of tomatoes (about R15 million) a year. Tiger Brands offers farmers finance and inputs and provides extension support. At Giant Food's Makhado processing plant, they procure tomatoes from small-scale farmers within a 300 km radius, who account for 60% of total supply.

## 5 Income, employment and social differentiation in small-scale fresh produce production

### 5.1 Incomes earned through fresh produce

A review of a number of case studies of fresh produce production indicates that incomes have not been widely documented. This is certainly related to the fact that many of these farmers sell produce in informal markets and this presents considerable challenges in capturing the value of these transactions. This is unlike, for example, the case of contract farming where farmers receive fixed and documented payments that can be verified (Perez Nino, 2014). Farmers who trade fresh produce in open markets, involving numerous dispersed and small transactions, would obviously struggle to accurately recall earnings. Another challenge is in calculating net incomes after costs associated with inputs, wages etc have been accounted for. Many small-scale farmers who hire in labour, pay below the minimum wage and/or make payments in kind, and this may not always be explicit or accurately accounted for. Ncube (2018: 9), for example, notes that 'Net Farm Income could not be calculated due to lack of accurate data on fixed costs'. However, based on existing estimates Cousins (2018: 371) offers a mean gross output value of R18, 000:

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<sup>22</sup> A large part of this production is likely accounted for by large commercial farmers, particularly ZZZ.

*Both profits earned and wages paid in these informal farming enterprises are significantly higher than for dryland cropping. However, they are still very low when compared to the formal sector... If half of the estimated 100 000 hectares of irrigated land (in schemes and other plots) is cultivated by black farmers to produce fresh produce for sale, at a mean gross output value of R18 000 per hectare per annum, this would amount to an aggregate value of R900 million per annum.*

We can have a look at a number of case studies that give a general idea of the diversity of annual incomes in different contexts. Some cases also quantify the range of incomes across differentiated small-scale farmers. It is notable that the incomes reported at Tugela Ferry in KwaZulu-Natal and Dzindzi in Limpopo are comparable. Research conducted in Greater Tzaneen municipality in Limpopo found an estimate of around R20, 000 per hectare for market-oriented smallholders in loose value chains (Bunce and Aliber, 2019). This gives us an indication of incomes with active informal markets involving hawkers and bakkie traders in particular and NFPMs.

#### *Tugela Ferry Irrigation Scheme, KwaZulu-Natal*

Cousins (2018) estimates that there is an aggregate annual gross value of production by all farmers of around R10 million. Since there is a mean of 0.46 hectares, this amounts to a mean annual gross margin per farmer of R6 270 (or R13 544 per hectare). There are a number of farmers cultivating larger plots and lucrative but risky crops, who earn annual incomes of R18 000, (or R25 920 per hectare per annum). Cousins (2013) found that 'of these 90 individual crops, over 70 per cent were profitable, and in the case of some tomato and cabbage crops, highly profitable (with average gross margins of over R3 000 per crop)'. However, they are highly perishable and necessitate a reliable market. 71% of surveyed farmers obtained positive gross margins.

Buthelezi (2013:58) compares fresh produce incomes to old pensioner's grants and farm worker's salaries in 2013. The analysis is illuminating in regard to the relative contribution of fresh produce to overall household incomes. In most cases social grants and wages continue to be important to livelihoods and are unlikely to be replaced even by expanded fresh produce production.

*For a plot farmer to make an income that is close to an old pensioner's grant of R1140 per month, she would have to work on 9 plots to earn R1175 per month and 10 plots to earn an income close to a farm worker's salary (R1305 [12] , not to mention a meagre R30 per day paid for labour locally) to the value of R1375 per month... All these are based on the assumptions of two crops per plot per annum at a mean gross margin of R783.80 per crop.*

#### *Dzindzi Irrigation Scheme, Limpopo*

A mean annual gross margin per farmer was estimated at R12 062 per annum per hectare at the Dzindzi scheme, with successful larger producers earning annual incomes comparable to Tugela Ferry of between R18 000 and R25 920 per hectare per annum (Cousins, 2018: 372). The Dzindzi irrigation scheme is considered in many ways to be a typical example of smallholder irrigation. In 2008, Van Averbek & Khosa (2011: 158) reported that profits ranged from -R244 (i.e. a loss) to R28 244 per annum, with a mean of R10 368 per farmer. Averbek (2008: 77) indicated how farmers were able to obtain positive gross margins for green maize, in particular. Manyalo et al (2014:17) describe how different income sources contribute to overall livelihoods:

'Thirty-six of the 97 plot holders obtained at least half of their income from social grants, 21 through being employed, 11 from informal sector activities (other than farming), and nine from a combination of these

sources. **There were also 20 plot holders (21 per cent) who generated at least half of their homestead income from farming.** Fifteen of them were labelled 'market-oriented farmers', who generated more than half of their gross farm income through sales, whilst the other five were labelled 'subsistence farmers', as they allocated more than half of the value of their crops to self-consumption'.

#### *New Forest Irrigation Scheme, Mpumalanga*

Ncube's (2018: 8) survey of 94 irrigators (of a total 531 irrigators) indicated that more farmers made a profit (61.3%) than a loss 38.7%. 'The profit margins are R5283.56 on average while the loss is -R2932.46 on average. The range of profits made shows that for some the margins are low (R12), while for others it is quite high (R24 915).' The most profitable crops included sales of subsistence crops like groundnuts, sweet potato, Bambara nuts and cassava and cash crops like green mealies and Swiss chard. The main costs associated with 'cash crops' are seeds and fertilisers and for 'subsistence crops', labour and tillage. Although subsistence crops were overall more profitable for the majority of farmers, the positive gross margins of cash crops tended to be higher. The majority of farmers making losses grew risky crops such as cabbages, tomatoes and sugar beans and were hiring labour but struggling to cover their high production costs. The most successful farmers were categorised as 'profit makers' and managed to obtain a mean gross margin per farmer of R8723.65 or R25 473.06 per household. Only 34.8% hire casual labour and 26.7% hire full-time labour and they grow an equal proportion of cash and subsistence crops. Overtime it was suggested that these farmers could develop into small-scale commercial farmers through accumulation from below.

#### *5.2 Employment and self-employment in fresh produce production*

The number of potential jobs depends on how production is organised (level of mechanisation, scale of production etc) and also which crops are produced e.g. tomatoes require much more labour than green maize. A general analysis of the labour-intensity of fresh produce, based on fieldwork in Greater Tzaneen Municipality in Limpopo and informed by other studies is: 1 - 5 workers per hectare, depending on the crop. Notably, even a conservative estimate of 1 job per hectare for vegetables, produces almost three times as many regular jobs as avocados and more than twice as many jobs as mangos and macadamias (also considered promising labour-intensive crops in the NDP). The job potential in the vegetable sector is clearly worth taking note of. 'Take your tomatoes, it could be even 50 worker per hectare seasonal and at least 5 per hectare permanent. It depends on the crops, maybe cabbage is less but for the rest- it's a lot of workers that you need!' (Lombard, 2019 in Bunce and Aliber, 2019).

Estimates of employment and self-employment on informal-sector farms is difficult to officially quantify since large-scale surveys do not capture this information. As Cousins (2018: 368) notes: 'Since there are no GHS or no reliable QLFS data on informal-sector farm employees, total employment numbers cannot be calculated from these official surveys'. Cousins (2018) suggests an informed estimate of employment numbers for 'market-oriented informal-sector farmers' based on the 'Survey of Employers and the Self-Employed' from Statistics South Africa. In relation to the 100, 000 hectares of land under irrigation, of which at least half is used to produce fresh produce, an educated guess can be made for employment figures.

*The number of employment opportunities generated from this land can be approximated as follows: 100 000 producers on an average of 0.5 hectares each, 100 000 temporary employees and 10 000 permanent employees, amounting to a total of around 210 000 jobs. (Bakkie traders and hawkers may constitute another 50 000 indirect jobs from informal irrigated cropping) (Cousins, 2018: 370).*

Many of the individual case studies reviewed did not record exact figures for employment and self-employment

and wages paid, however, some general findings can be discussed. In certain cases, labour-hiring risks making farming enterprises unprofitable by raising production costs. This is especially the case for highly perishable crops like cabbages and tomatoes that fail to find buyers in informal markets or due to market slumps (Ncube, 2018; Buthelezi, 2013). Providing stable markets for these types of (risky but profitable) crops through preferential procurement schemes could address this risk and help stimulate employment. Labour shortages, particularly during peak periods, are noted to be a constraint for fresh produce producers who rely predominantly on family labour (Barlow and van Dijk, 2013).

On Mooi River Irrigation Scheme, Sato (2018:159) notes:

*One-third of the farmers employed additional workers on a part-time basis or during peak periods, especially for weeding and harvesting. Workers were often paid in kind, but cash payments also took place. The amount paid varied depending on the task, the relationship between the plot owner and the worker, and whether the workers were paid monthly or daily. For example, workers received between R150 and R250 per plot for weeding... The amount of wages black farmers paid to their workers in Msinga were not dissimilar from those of casual workers on white-owned farms.*

For Middle Letaba Irrigation Project Laker (2012) distinguishes tomato growers as the key hirers of labour and notes:

*Farmers who are not growing tomatoes employ about 3 labourers on a 5-ha plot. In addition, casual labourers are employed to assist during weeding, top dressing and harvesting. Tomato farmers are the main employers at the scheme. Depending on the size of the allocated plot and the hectareage planted at a time, about 10 to 20 labourers are employed on a 5-ha plot. For larger plots and plantings up to 30 labourers could be employed.*

Informal fresh produce value chains have a particular powerful multiplier effect since various case studies indicate that it promotes the establishment of local enterprises upstream and downstream, for example hawkers, bakkie traders and local input suppliers. Chikazunga and Paradza, (2013) for example noted that at the Tshakuma informal market in Limpopo there were over 50 small fresh produce businesses operating. Similarly it has been estimated that the Tshwane FPM creates around 5 000 jobs through opportunities for hawkers and spaza shops (Tshwane Market, 2010 in Chikazunga and Paradza, 2013). In Tugela Ferry, 30-40 female hawkers and 200 bakkie traders operate locally (Cousins, 2013; Buthelezi, 2013). Manyelo et al. (2015) documented a total of 101 street traders operating around Dzindzi Irrigation scheme, representing a ratio of almost one trader per farmer.

### 5.3 Social differentiation among small-scale fresh produce producers

Research indicates that small-scale farmers in the 'former homelands' and land reform contexts constitute a highly differentiated sector (Bunce, 2018; Mtero, 2015; Davis, 2014; Hornby, 2014). For the purpose of this report the sector has been distinguished according to *smallholders* who rely mainly (but not exclusively) on household labour in their production systems and *small-scale black commercial farmers* who rely mainly on hired labour in their production systems. The degree to which the latter are capitalised falls into the bottom third of all commercial farming enterprises producing fresh produce. However, many studies reviewed, either don't explicitly distinguish different groups of small-scale farmers according to dynamics of social differentiation or they use very different typologies, which limits comparison. Cousins (2013) provides a useful typology to differentiate small-scale farmers that considers the types of value-chains producers target. This includes subsistence-oriented smallholders, market-oriented smallholders in loose value chains, market-oriented smallholders in tight value chains, and small-



scale black capitalist farmers. An evaluation of smallholder policy support suggested DAFF's typology be adapted to Cousins (2013) to bring more clarity to policy (Khulisa, 2018).

**Table 1. Typology of small-scale farmers**

	<b>Small-scale black commercial farmers</b>	<b>Market-oriented black smallholder farmers supplying tight value chains</b>	<b>Market- oriented black smallholder farmers, supplying loose value chains</b>	<b>Subsistence-oriented black smallholder farmers</b>
<b>Numbers</b>	5000-10 000	5000-10 000	200 000	2-2.5 million
<b>Key features</b>	Are able to farm independently. Can choose to supply formal and/or informal markets. Many farmers earn income from off-farm incomes and businesses in addition to farming	Many grow fresh produce under irrigation with contracts for supermarkets. Others are livestock, sugarcane or cotton producers and a few engage in dry land cropping.	Many grow fresh produce under irrigation, selling to bakkie traders, hawkers, neighbours & other farm gate sales. Others are livestock producers. Few depend wholly on farming.	Most crop production takes place in homestead gardens, some of which are quite large. Occasional livestock sales by some.
<b>Objective of production</b>	Profit	Cash income & some household consumption	Household consumption & Cash income	Household consumption
<b>Proportion of marketed input</b>	100%	75% or more	50% or more	None or insignificant
<b>Labour</b>	Hired	Household & Significant numbers hired	Household & some hired labour	Household
<b>Capital intensity</b>	High	Medium to high	Low	Very Low
<b>Access to finance</b>	Very significant	Significant	Some	Absent
<b>Agricultures contribution to household income</b>	Very significant	Significant	Variable: small to significant	Reduces expenditure on food

(Sources: Cousins, 2015; Cousins & Chikazunga, 2013; Khulisa, 2018).

A class-analytics perspective helps explain why fresh produce production is so prevalent among small-scale farmers. Unlike in other commodity sectors, where it is common to see them supplanted by large-scale capitalist farmers, small-scale farmers manage to persist. One explanation is the unpredictability of natural conditions and ecological processes, which cannot be as easily manipulated or mechanised as factors of production. Because fresh produce production is confined by the natural growth time of plants and the unpredictability of their environment, labour time is often exceeded by production time. Capital is unable to realize its profits during this extended production time. Capitalist farming thus tries to speed up this natural production time through technological innovations, which is possibly in some sectors e.g. poultry, dairy, grain. However, where it is unable to do so, it leaves production to small-scale farmers (Mann and Dickinson, 1978; Bernstein, 2010; Bunce, 2018). Since fresh produce is resistant to capital penetration this also means that in general social differentiation in the sector is not as extreme as in other sectors, although clearly still present and important. A number of reports on fresh produce production explore dynamics of social differentiation, two examples will be discussed briefly below as indications of broader trends.

***Tugela Ferry Irrigation scheme***

Cousins (2013) notes that 'class stratification' of farmers is limited. The following factors act as a constraint on accumulation: unreliable water supply, limited availability of land through the informal land rental market, the undifferentiated fresh produce market, limited access to wage employment in the area, constraints posed to small business as potential sources of additional capital, and structural constraints linked to the scheme's location and continued dynamics of the settlement as an apartheid-era labour reserve. Where accumulation from below has occurred the following factors were important: the plentiful availability of cheap labour, the informal land rental market, access to fresh produce markets and the fertile soils.

### ***Dzindzi Irrigation Scheme***

At Dzindzi Van Averbeke & Khosa (2011: 158) identified three distinct 'farming styles', indicating both subsistence and market-oriented approaches to informal agriculture:

*(1) food farmers (45% of the total), who produced low-cost food, concentrating on maize grain for own consumption and using social grants to purchase inputs; (2) employers (17%), who hired farm workers to undertake cropping, recovering the costs of such labour through the sale of produce, but with household food security as their main objective; (3) 'profit makers' (17%), who farmed to earn cash income and focused on producing high-value crops such as cabbages and green maize. The latter relied mainly on family labour but hired casual labour in peak labour periods. (The remaining 21% of farmers fell outside these three main categories and were categorised as 'Other'.)*

This typology has been used elsewhere for fresh produce production on irrigation schemes, for example, by Ncube (2018) on the New Forest Irrigation Scheme in Mpumalanga. In a sample of 87 farmers, he found that 36 farmers (41%) could be categorised as *employers*, 28 farmers (32%) were *food farmers* and 23 farmers (27%) were *profit makers*.

## **6 The potential for expanding small-scale fresh produce production**

This section explores the potential for increasing the scale of fresh produce production under small-scale farmers through land reform, as well as evaluating what constraints may exist. Overall, the evaluation of fresh produce production in the preceding chapters indicates that there are a number of existing market-oriented small-scale farmers already producing on irrigation schemes and in homestead gardens that could benefit from access to well-located and productive land, contributing to the expansion of the sector. However, limited success to date regarding the approach of smallholder irrigation development requires that we rethink the types of institutional and social arrangements and technologies that underpin these systems. Research from elsewhere in Africa and some limited South African experiences suggest that considering farmer-led irrigation systems hold promise as an alternative (Scoones et al., 2019; Woodhouse et al., 2017; Backeberg, 2009).

An evaluation of South Africa's agro-ecological conditions, political economy and trajectory of agrarian relations indicates that a focus on fresh produce is achievable and could contribute to a more '*labour-intensive*' approach to small-scale land redistribution. As discussed in sections one and two of this report, production of vegetables is particularly labour-intensive and would contribute to a large number of employment and self-employment opportunities (Cousins, 2015; BFAP, 2011). However, in cases where access to household labour is constrained, which is the case for many 'worker farmers', other commodities may be preferred by households such as livestock production (Bunce, 2018).

The evaluation of the extended value-chain in Chapter 4 indicated that informal fresh produce value chains create

a number of jobs downstream of farms for hawkers and bakkie traders in particular, and some local suppliers of inputs also exist upstream. Two existing government initiatives show good potential to support fresh produce production: the Zero Hunger Programme's focus on preferential procurement from smallholders for public institutions (hospitals and schools) and the decentralisation of agro-processing (Greenberg, 2013; Aliber, 2013). There are some successful examples to build on in the tomato value chain in relation to connecting small-scale farmers with processors of fresh produce (Louw et al., 2008; Buthelezi, 2013; Aliber, 2013). Small-scale black commercial farmers in particular would benefit from access to formal value chains (like supermarkets). The AgriBEE act could be enforced to ensure retailers source at least 30% of fresh produce from them. However, overall the research suggests that the job multipliers are more promising in the informal sector. More conducive conditions could be created by providing market information, improving extension support, improving roads to lower transport costs and ensuring more progressive municipal policies towards street traders e.g. allowing them to sell in CBDs.

Despite the general optimism around extending fresh produce production, there is still a need to be realistic about the plausible livelihood benefits. Pathways of accumulation for smallholders are clearly limited by the particularities of agrarian change in South Africa. Especially important factors to consider are the competitive agricultural sector, which is dominated by large-scale producers, processes of deagrarianisation, and the history of land expropriation. This means there is more widespread dependence on wage labour, off-farm incomes and social grants in South Africa's rural areas (and particularly in the former homelands), than in other parts of the continent (Cousins, 2015; Bernstein, 1996/ 2011b). Illusions of creating a full-time class of farmers should be abandoned, as diverse livelihoods are likely to continue to characterize small-scale farming households (Cousins, 2018). South Africa has limited access to water and quality agricultural land (only 10.3% of its surface area is considered arable<sup>23</sup>.) These factors, coupled with wider concerns for food security for poor and working class South Africans, means that a careful selection of beneficiaries for redistributive land reform must be a critical component of policy.

Since black South Africans have been historically marginalised in the agriculture sector, concerns have abounded regarding the 'viability' of supporting a differentiated small-scale sector of black farmers. This has led to the belief that promoting equity ownership of existing farms and other agricultural enterprises in various 'strategic partnership' arrangements, alongside secure employment, is more pragmatic (Cousins and Scoones 2010; Davis 2014; Bunce, 2018). At a policy level the powerful discourse supporting the 'strategic partnership model' of agrarian reform (Pieterse et al., 2017) poses threats to implementing a more small-scale farmer centered approach. There is, however, a lot of evidence that suggests that smallholders are succeeding in spite of all of these challenges (Aliber and Hall, 2012; Cousins, 2013). Providing a supportive system for these smallholders, who are already targeting both formal and informal markets, could allow for an expanded system of fresh production and increase employment and self-employment across the value-chain. Alongside programmes to support these market-oriented smallholders, the state should also support households to produce fresh produce for food security in home gardens, through support with inputs, extension support and rainwater harvesting (Backeberg, 2009). This can be built on programmes that have already shown success, such as Siyazondla (Fay, 2013; de Klerk, 2013) and the Zero Hunger Programme (Aliber, 2013).

### 6.1 *Constraints to expanding fresh produce production*

It is necessary to briefly take stock of the current trajectory of agrarian change in South Africa to be realistic about how small-scale farmers might fit into this and to be clear about the extent to which policy support can create a

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<sup>23</sup> World Bank (2016), see: <https://data.worldbank.org/indicator/AG.LND.ARBL.ZS?locations=ZA&view=map>

conducive environment for a labour-intensive smallholder sector. Concentration of farming units in South Africa has proceeded in the context of a number of processes including: integration of the agricultural sector into global markets, decreased protection, growing competition, the growth of prosperous enterprises achieving economies of scale and scope, and the success of some enterprises supplying lucrative niche markets (Cousins, 2015). Those farming enterprises that manage to survive and prosper, in spite of severe competitive pressures, do so through the increasing management of farms as businesses, mechanisation, technological innovation, adoption of farming techniques that are less labour-intensive, and a focus on understanding markets (Genis, 2012).

Cousins (2015) estimates that around 10, 000 black farmers have entered the commercial farming sector, and between 100, 000 and 250, 000 rural households have benefited from land transfers<sup>24</sup>. Genis (2012), however, warns that the new realities of the commercial farming sector pose daunting challenges for these new entrants into agriculture as well as the existing 200, 000- 250, 000 smallholders who show promise for growing their farming enterprises through accumulation from below. Declining profit margins, concentration and extreme competition, allow only the most competitive farming enterprises to survive.

Although it has been noted that small-scale fresh produce producers enjoy a competitive edge under certain circumstances, there are also a number of very large corporate farming entities, like ZZZ, with who they need to compete. A small-scale fresh produce producer in Limpopo notes, 'Anyone can access it (the ZZZ/RSA FPM) but it doesn't benefit black farmer because you have to compete with ZZZ'. The report has noted that some small-scale farmers do well producing more lucrative crops like tomatoes and cabbages. However, in areas where large-commercial enterprises are also doing so, this creates risks for smaller farmers. 'You try to compete with ZZZ's tomatoes and you're dead before you start. The problem with small-scale farmers is you are all going to grow cabbages and tomatoes, but you have the large farmers producing with economies of scale ... So you need to produce a unique product' (Key informant from ZZZ).

Another risk to an expanded small-scale fresh produce sector is the troubling trajectory to date of post-apartheid land and agrarian reform. There is widespread agreement that it has made a minimal impact on addressing systemic poverty and unemployment (Cousins, 2015; Cochet et al., 2015; Greenberg, 2013). Empirical evidence indicates that around half of rural land reform projects have improved the livelihoods of beneficiaries; although impacts are often marginal and very few cases involve successful production by the new enterprises (Hebinck and Cousins, 2013; Cousins and Dubb, 2013). The few success stories (Hornby, 2012) usually involve significant capital investment by government, but are sadly the exception and have thus done little to alter the agrarian structure. Cousins (2015: 255) concludes that 'overall, the major beneficiaries of processes of agrarian change have been the owners of large-scale commercial farming and agribusiness enterprises'. There is therefore very little successful experience to build on from South Africa's current land reform programme, which many would conclude has failed to create conducive conditions for small-scale farming or to improve the livelihoods and incomes of the rural poor (Cousins, 2013; Aliber and Hall 2010; Greenberg 2010; Hall 2009).

Land and agrarian reform related to the small-scale farming sector has suffered from a conceptual bias which promotes scaled down version of large-scale farming which are often inappropriate for small-scale farmers. Many of the evaluations of key programmes and policies meant to support the sector also commonly note coordination problems between DAFF and DRDLR. In this regard it is hoped that the newly reconstituted Department of Agriculture, Land Reform and Rural Development (DALRRD) will alleviate this.<sup>25</sup>

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<sup>24</sup> Although existing data sources don't distinguish clearly between those who nominally received land and those actually residing on land and using it.

<sup>25</sup> This new department arises from a merger between the Department of Agriculture, Forestry and Fisheries (DAFF) and the Department of Rural Development and Land Reform (DRDLR), as announced by President Ramaphosa on 14 June 2019. See: <http://www.thepresidency.gov.za/press-statements/president-ramaphosa-announces-reconfigured-departments>

Another key limitation to redistributive land reform to support small-scale farmers is that statistics on land ownership in South Africa, as well as data on the numbers of existing small-scale farmers are notoriously poorly kept. StatsSA does not distinguish farms by either their value of output or size (Cousins, 2018). The state land audit<sup>26</sup> claims that 79% of land in South Africa is privately owned, 14% is state land (including communal areas of the former homelands), and the status of the remaining 7% of the land is unclear (DRDLR, 2017; Merten, 2017). However, the accuracy and usefulness of the land audit has been questioned. Cousins (2018) notes that 'it can't identify the racial, gender and national identity of the 320 000 companies, trust and community based organisations that own 61% of all privately owned land'. Furthermore, it does not enable government to 'identify zones of need and opportunity for land reform' (Cousins, 2018), which would be critical to inform a more effective land and agrarian reform policy.

The absence of comprehensive national data posed a limitation to this report and moving forward it would be central that the gathering of comprehensive data to support land reform is given up most priority by government. As suggested by Khulisa (2016), a survey should be conducted which differentiates smallholder farmers according to Cousins and Chikazunga's (2013) typology in order to allow for a comprehensive 'needs assessment' of these different categories. This should be conducted at a local municipality level and could enable the identification of candidates for land redistribution. This survey should provide information on where they are farming, what commodities they produce, which markets they supply, their level of productivity and their land, water and other resource needs (Okunlola et al., 2016; Aliber et al. 2011).

In almost every report reviewed on case studies of fresh produce under irrigation there is lack of clarity, not only of the number of active small-scale farmers, but also the area under cultivation versus the total potential area (including inactive plots) and the area cultivated by different commodities. For example, Laker (2012) notes 'it was impossible to get facts about the present situation regarding areas under irrigation at Makhathini and areas for which water had been allocated so that they can be developed... What is the situation regarding the substantial areas under irrigated vegetable production?' Without clarity on the current situation, it will be very challenging for government to undertake land redistribution targeted at expanding production.

The expansion of irrigated land faces constraints from South Africa's limited water resources. South Africa's annual rainfall amounts to only 470 mm – 80% of which is limited to only five months of the year. 'With the added pressures of climate change, population growth and the decline in water quality, the need for improved assessments of the current water resources and land uses are critical' (WRC, 2018). Land redistribution will need to go hand in hand with an equitable division of water rights and improving the current functioning of water management on schemes and other plots (Cele and Wale, 2018). Alternatives to irrigation schemes and considering a variety of irrigation approaches including farmer-led systems and rain-water harvesting could provide a much more sustainable use of scarce water resources.

## 6.2 *The potential of expanding irrigation under 'farmer-led systems'*

In designing interventions to support smallholders it is crucial to focus on promoting technologies, which are relevant to small-scale production rather than transplanting technologies from commercial farms. These should be low-input technologies that are environmentally acceptable and provided at the right scale (Bunce and Cousins, 2015). Experience in the preceding chapters has indicated that small-scale fresh produce development under irrigation has largely been equated with formal irrigation schemes involving expensive and technology-intensive irrigation systems, which has largely struggled to be sustainable (Laker, 2000).

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<sup>26</sup> The first of which surveyed state land and the second privately owned land, published in November 2017.

See: <http://www.ruraldevelopment.gov.za/publications/land-audit-report/file/6126> and

<http://www.ruraldevelopment.gov.za/phocadownload/Cadastral-Survey-management/Booklet/land%20audit%20booklet.pdf>

Emerging research in South Africa and elsewhere on the African continent indicate that there are promising alternatives in the form of 'farmer-led irrigation' which can be successful in revitalizing agriculture in land reform contexts. Evidence from Scoones et al (2019: 102), indicate that these approaches 'offer opportunities for some to commercialise production through irrigation, generating surpluses, raising income, employing labour, investing and accumulating'. Farmer-led irrigation development is 'a process where farmers assume a driving role in improving their water-use for agriculture by bringing about changes in knowledge production, technology use, investment patterns and market linkages, and the governance of land and water' (Woodhouse et al. (2017: 225). Although, farmers generally play a leading role in these systems, it also involves critical collaboration and initial investments by the state and/or civil society and private-sector actors.

Farmer-led irrigation is used at a range of scales from small homestead gardens to collective and individual field plots. It makes use of a variety of water sources and water harvesting methods, including dams, rivers, streams, wells, using a diversity of technologies in various combinations- such as water cans, buckets, pipes, canals, small-scale pumps and contour ridges and run-off strips for rainwater harvesting (Scoones et al., 2019; Woodhouse et al., 2017; Backeberg, 2009). These systems also entail various social arrangements (hired and/or family labour, gendered divisions of labour and forms of collective and individual management) different types of markets (informal and formal) and different institutional arrangements (unregulated, state directed and community/cooperative managed). The various appropriate combinations would need to be context specific but the framework allows for a wide range of flexibility. Depending on the diversity of potential 'socio-technical assemblages' of these factors in different contexts, these farmer-led systems have produced various dynamics of social differentiation among small-scale farmers (Scoones et al., 2019).

Scoones et al., (2019) note that an important catalyst in Zimbabwe underpinning this system is the availability of cheap, Chinese-made pumps (US\$250). This has been the primary water extraction method for aspiring and commercial irrigators. These can be used with ease to extract surface water and in other cases submersible pumps are installed to extract water from wells. These technologies are often combined with 'hand-irrigation' using buckets, useful in cases where they break down. A local market has emerged for pump repair in nearby towns and villages, creating job multipliers, and the technology is cheap enough that pumps can be replaced in some cases.

Woodhouse et al., (2017: 219) describe a number of examples of dynamic farmer-led irrigation across sub-Saharan Africa, including various example of: furrow irrigation in mountainous areas; the use of shallow groundwater in valley bottoms; (peri-)urban agriculture using waste water; and petrol pump irrigation from open water bodies and shallow groundwater. There are numerous successful examples of the last, one of which is explored by Bosma (2015) who researched horticultural production along the shores of Lake Victoria in Western Kenya, which has provided a viable alternative and complement to the declining fisheries sector. The availability of cheap Japanese (and cheaper Chinese) petrol pumps (US\$ 180– 570) over the past 20 years, along with growing demand for fresh vegetables, have been key driving forces behind the boom in horticulture production. It has also led to a supply channel of local agro-dealer networks in nearby towns. Woodhouse et al., (2017) note:

*The development of irrigation using motorised pumps in SSA is primarily driven by farmers' own initiatives and their ability to tap into a supporting network of small retailers and agricultural merchants. In some countries, such as Malawi, however, it has also been significantly facilitated by national trade policies, such as duty-free imports of irrigation equipment.*

There are also some examples of local technologies, which have been developed and adopted with success in South Africa by dynamic household gardeners. These also show promise to be scaled up to crop fields in communal areas, which have been largely abandoned. Backeberg (2009) and the Water Research Commission have been experimenting with infield rainwater harvesting and conservation (IRWH&C) technologies over fifteen years of on-station and on-farm research. This technology has been adopted with alleged success to over 1 000 households in 42 rural villages in the Free State around Thaba Nchu. The technique involves the use of a '2m run-off strip with a 1m conservation basin'. Innovative and more cost-effective procedures have also been developed to conduct soil suitability surveys to identify where this technology could be potentially expanded.

Backeberg (2009) notes that the productivity gains<sup>27</sup> of adopting IRWH and organic mulching have made cropping less risky. Given appropriate implementation and support, households should be able to produce surpluses for the market, as well as for household consumption, thus assisting with commercialization of small-scale fresh produce gardeners. In this study area, a survey was conducted on the interest of local residents in cultivating abandoned croplands. It found that 73,4% of respondents were interested in cultivating fields while 26,6% were not (Manona and Baipthethi, 2008). However, Backeberg (2009) notes that most households still associate cropland production with conventional soil tillage rather than IRWH&C and thus there is a need for demonstration plots.

The mounting evidence of the failure of many rehabilitation efforts on formal irrigation schemes to generate sustainable livelihoods for subsistence and market-oriented small-scale farmers, begs the question of whether policy should be refocused to emphasise farmer-led alternatives. In South Africa and elsewhere on the continent smallholder irrigation schemes struggle due to reliance on costly technologies, failure to maintain the costs of maintaining this infrastructure and a lack of effective governance arrangements to effectively and equitably manage water resources (Scoones et al., 2019; Averbeek, 2011; Laker, 2000; Denison & Manona, 2007; Cousins, 2013). Unfortunately, farmer-led systems are poorly understood and don't often feature in policy, as a result they are under researched and the extent of their current status and uptake is commonly under-estimated (Scoones et al., 2019; IWMI, 2016; Beekman et al., 2014). However, Koppen et al. (2017) found that in the Mopani District, the area under 'informal irrigation is three to four times as large as the area equipped in public irrigation schemes'. This suggests a refocus of support for informal, self-financed irrigation or 'farmer-led' irrigation systems.

While the costs involved in establishing and maintaining formal irrigation systems often require substantial and consistent state and donor funding, 'farmer-led systems connect to a wide network of actors, including other farmers, traders, market buyers and pump suppliers and repairers' (Scoones et al., 2019: 102). This approach fits into a labour-intensive land reform framework due to the multiplier effects it would have on the local economy up and downstream of the farm. Another potential benefit is that the flexible technologies often create adaptive solutions that result in productive use of land 'not normally regarded as irrigable' according to principles of 'scheme' development (Scoones et al., 2019).

## 7 Implications for land reform policy

The legal basis for South Africa's land reform programme was first laid out in Chapter Two of the 'South African Constitution, 1996', in Section 25 of the Bill of Rights (RSA, 1996). The Land Reform Programme was later formalised in detail in the 1997 'White Paper on South African Land Policy'. It stipulated a three-pronged strategy to achieve equitable redress of land rights based on land restitution, redistribution and tenure reform (DLA, 1997; Lahiff et al., 2012; Bunce, 2013). Each aspect of the programme can be explained as follows:

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<sup>27</sup> Studies conducted at the Glen research station of the Department of Agriculture in the Free State, indicate that for maize and sunflower IRWH techniques improved yields by around 50% on the ecotopes tested, compared to the conventional tillage systems used in this area. Households in the study area also started producing a variety of fresh vegetables as well as maize and sunflower.

*...A land redistribution programme, aimed at broadening access to land among the country's black majority; a land restitution programme to restore land or provide alternative compensation to those dispossessed as a result of racially discriminatory laws and practices since 1913; and a tenure reform programme to secure the rights of people living under insecure arrangements on land owned by others, including the state (in communal areas and the former 'Coloured' rural reserves) and private landowners (farmworkers, farm dwellers and labour tenants). A less high profile programme to improve systems of land administration was also proposed (PLAAS, 2016).*

This report explores the potential to expand fresh produce by small-scale farmers through the first aspect of South Africa's land reform programme focused on land redistribution. Government's initial target for redistribution of agricultural land to black South Africans was 30% or 86 million hectares by 1999. DPME's (2017) mid-term view report indicated that as of 31 March 2017, 8.7 million hectares, or 10.6% of all privately owned farmland had been transferred to black South Africans. This has cost government R62 billion. In line with the National Development Plan, government now hopes to reach the original target of 30% by 2030. However, it has been estimated that the state would need to settle claims and redistribute land five times as fast as it has to date (Manenzhe 2018; Seleballo, 2018).

A more 'cost-effective' and faster approach could be adopted if the government is successful in advancing expropriation with below-market compensation, or without compensation (Hall, 2018). In the former case, this could be done by making full use of the 'just and equitable compensation'<sup>28</sup> clause in section 25(3) of the constitution (Aliber, 2015). In the latter case, there has been on-going debate about possibly amending the constitution. However, not everyone agrees that it is necessary or wise to amend the constitution. Many suggest that it would be prudent to instead increase the budget for land reform and make full use of the 'just and equitable principle'. This would allow the state to pay compensation below market rates and in certain cases, where deemed 'just', to not pay anything at all (Aliber, 2019; Hall, 2018; Cousins, 2018b; Claassens, 2018; Seleballo, 2018).

The questions of whether to proceed with 'expropriation without compensation' (EWOC), whether the amendment to Section 25 of the Constitution should move ahead, and what the likely effects will be on land redistribution, remain unanswered questions. Aliber (2019:11) argues that 'it is unlikely that EWOC will accomplish a great deal in terms of accelerating redistribution, and still less in making it perform better. Therefore, faster and better redistribution will require more funding, which is not saying a great deal since at present it accounts for so little'. Proposals to extend small-scale fresh produce production under irrigation through land redistribution thus also hinge on wider efforts to improve and accelerate the land redistribution process.

Besides the slow pace and costs of the redistribution programme, it has also suffered from various other programmatic and indeed 'conceptual' challenges. There is an unclear vision around what agrarian reform should look like and what role the small-scale farming sector should play. A key shortcoming is that although the most dominant type of land need is for small plots for tenure and food security, land redistribution to date has instead predominantly targeted large plots for relatively few beneficiaries (Aliber, 2019; Hall, 2013). This is particularly relevant for fresh produce production, given that a much larger number of livelihoods and jobs could be created if sub-division were seriously undertaken on plots ranging from 1- 50 hectares.

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<sup>28</sup> This clause in the *Constitution of the Republic of South Africa* states that, 'the amount of the compensation and the time and manner of payment (for an expropriated property) must be just and equitable, reflecting an equitable balance between the public interest and the interests of those affected, having regard to all relevant circumstances' (Republic of South Africa, 1996).



A key reason for the limited success, or some would say failure, of land redistribution to date is that it has not been clear on *who* the beneficiaries should be. Aliber and Hall (2012) identify three viable strategies. Firstly, focusing on promoting food security for a large number of poor households. Secondly, providing opportunities for a select few better-off farmers to graduate to commercial farmers, which they refer to as 'accumulation for the few'. Finally, a much more radical programme of 'accumulation from below', whereby a large number of the existing population of subsistence and smallholders are supported to maximise and diversify their production to develop into 'sustainable commercial smallholders'. It is the latter proposal, which they promote. Cousins (2015) has suggested that the existing 200, 000 - 250, 000 'market-oriented smallholder farmers' should be considered as key beneficiaries for redistributive land reform, many of whom could produce 'labour-intensive fresh produce' under irrigation.

Aliber (2019) has recently suggested that land redistribution can indeed simultaneously support a range of livelihood opportunities and land needs. He argues that with an increased budget and a variety of policy mechanisms, land reform could cater to the differentiated demands for small-scale farms: for commercially-oriented smallholders, subsistence producers primarily concerned with food security and in need of tenure reform and smallholders looking to expand into large-scale farming. This approach suggests that it may not be necessary, after all, to choose the primary beneficiaries of land reform but that rather there is a route by which diverse needs can be met. Aliber (2019: 5-6) provides for three main types of beneficiaries of land redistribution<sup>29</sup>:

- Settlement-oriented beneficiaries – roughly 0.1 to 1 hectare per household;
- Small-scale farmers – roughly 1 to 50 hectares per household of arable land, but for grazing allowing for up to 40 large-stock units, including on commonage projects;
- Large-scale farmers – roughly 50 to 500 hectares per household of arable land, but for grazing allowing for over 40 large-stock units.

A number of qualifying criteria are provided for each beneficiary type as follows:

- For settlement-oriented projects, there should be an application of a household income ceiling, as was the case with the Settlement Land Acquisition Grant (SLAG). The purpose is to not permit the dilution of the process by allowing middle-class people to acquire free land for settlement.
- For small-scale farmer beneficiaries, some experience in agriculture is a requirement.
- For large-scale farmer beneficiaries, a business plan, relevant experience, and own contribution are necessary. Something like the own-contribution formula from LRAD should be re-introduced. And by extension, this also implies that, unlike the Proactive Land Acquisition Strategy (PLAS), there must be a clear upper limit to the value of government's contribution, whether this is in the form of land, grants, or both (Aliber, 2019: 7).

Drawing on the successes and failure's of land redistribution Aliber (2019: 9) suggestions a pragmatic mixed-approach moving forward: 'In a nutshell, a genuinely pro-active, pro-poor, *state-led* approach should apply to the many people needing small plots (settlement-oriented and small-scale farmers), whereas for large-scale farmers a demand-led, LRAD-esque approach should apply'. This approach aims to direct the limited capacity of the state to beneficiaries who need it the most and where livelihood and job opportunities are the greatest i.e. small-scale farmers. Whereas, experience with LRAD and PLAS has shown that those interested in large-scale farming opportunities have been proactive both in providing own-financial contributions and in identifying land for distribution. Therefore, state support can be reduced for this sector (Aliber, 2019).

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<sup>29</sup> Although Aliber (2019) notes that this is a necessary simplification for implementation purposes as needs will in reality be more diverse and subject to change over time.

Aliber (2019) provides a suggested budget of 13.5 billion per year over a 20-year period, which would mean that 11, 700 smallholders could be resettled annually, and over 50, 000 households from across the three target groups. Given the current slow pace of redistribution, this would be a vast improvement. In 2011/12, for example, PLAS was only able to target around 1000-2000 households (unclear due to limited data) (Aliber, 2019). After a 20 year period Aliber's (2019) approach could conceivably succeed in settling 233, 000 small-scale farmers at a total cost of R87.4 billion. The total number of households benefiting from this approach, across the three groups would amount to 1 059 000. The new scenario over the next 20 years would involve quite a radical overhaul of the agrarian landscape. Currently the size of the market-oriented smallholder sector is estimated at between 170 000-200, 000, therefore 233 000 would involve an increase to the sector. Supporting 32, 000 large-scale black farmers would also contribute to de-racializing this sector since currently there are estimated to be 25 000 to 30 000 large-scale white commercial farmers (Aliber, 2019).

All of the categories listed below could be potential fresh produce producers. Exact numbers will need to be identified through area-based assessments at municipal level. Settlement-oriented households could benefit from support programmes to cultivate homestead gardens, mostly for household food security with some also selling surpluses in informal markets. Small-scale farmers should be the primary focus of government efforts to expand fresh produce production under market-oriented producers, targeting mostly informal markets but also programmes focused on decentralisation of agro-processing, access to retail chains for some, and preferential procurement for government institutions. Some of the existing small-scale black commercial fresh produce producers and market-oriented smallholders may be candidates for redistribution of large-scale farms, who would likely target formal value chains and export markets.

**Table 2. Budget for land redistribution and differentiated small-scale farmer beneficiaries**

<b>Beneficiary type</b>	<b>Number of beneficiary households</b>	<b>Number of hectares</b>	<b>Expenditure (R billion)</b>
<b>Settlement-oriented</b>	794 000	397 000	39.7
<b>Small-scale farmers</b>	233 000	3 494 000	87.4
<b>Large-scale farmers</b>	32 000	9 529 000	142.9
<b>All</b>	<b>1 059 000</b>	<b>13 420 000</b>	<b>270.0</b>

(Source: Aliber, 2019)

The extreme concentration of South Africa's agrarian structure under a few highly productive white capitalist farmers production does provide some opportunities for redistributive land reform. It has been estimated that 80% of total agricultural turnover is produced by the top 20% of farmers - around 7000 *white* farm owners (Cousins, 2015). The remaining 80% of white farmers who are not particularly productive or central to maintaining food security in the country could be the focus of land redistribution. Land with existing irrigation infrastructure could be used to extend fresh produce production under smallholders. The 2012 Quarterly Labour Force Survey reported that only 34 905 white farming units remain (in Liebenberg and Kirsten, 2013). This would mean that if 20% of the most productive farms are exempt in the meantime from land redistribution, around 27 924 farming units could be redistributed and sub-divided for the purpose of resettling the 233, 000 market-oriented small-scale farmers and 32 000 'large-scale farmers'.

Redistributing land and resettling these producers outside of the former homelands, might also free up plots on existing irrigation schemes. Market-oriented smallholders in the former homelands should be key beneficiaries of a redistribution programme. This would go some way towards depopulating available agricultural land in these

areas (Cousins and Walker, 2015; Aliber and Hall, 2012). However, given how these 'communal' land rights are socially embedded, in most cases land would remain within kin networks or become available for rent in informal exchanges, or what has been termed 'vernacular land markets' (Chimhowu and Woodhouse, 2010).

In cases, like that documented by Cousins (2013) in Tugela Ferry, where accumulation from below was in certain cases prevented by the limited availability of land but where there is an active informal rental market of irrigation plots, this might provide new opportunities for some of these fresh produce producers to expand production, even if they are not direct beneficiaries of land redistribution. For those who remain on irrigation schemes in the former homelands, where there are a large number of households owning small plots (between a  $1/4$  to 1 ha), predominantly promoting food security, alongside some opportunities for selling a small surplus, may be what is viable. Opportunities for accumulation in farming might be greater in livestock farming, due to the limited land available on irrigation schemes for fresh produce.

As evidenced in this report, households are socially differentiated. Therefore, devising suitable models for organizing land rights and use would need to be crafted to the specific reproductive needs of households in different contexts. This would require area-based planning at municipal level and Rapid Rural Appraisal focused on identifying land-use potential and matching this with differentiated land and livelihood needs. The HSRC's 'Land Use and Needs Assessment Framework' could be used for this (Bank et al., 2017). This could identify whether land is required primarily for settlement and to substitute reproduction (through food plots), or whether access to larger plots is required to allow for a surplus to be sold and for farming to play a major part in a household's livelihood and potentially allow for accumulation.

A central question to match household livelihoods needs with land redistribution is asking 'land for what purpose?' i.e. land for grazing or crop production or both? Research has indicated that a number of households, which rely substantially on wage employment, i.e. *worker farmer* households, are engaging extensively in livestock production rather than crop production (Bunce, 2018). For many, this is easier to combine with wage employment because household members may be absent for long periods or have little time to dedicate to farming or to supervise labour. In cases where households fall into the category of subsistence-oriented producers or *supplementary food producers* (Bunce, 2018; Cousins, 2013) what strategies are viable? South Africa has limited agriculturally productive land and water rights, and thus we must ask the difficult question of who the beneficiaries of land and agrarian reform should be, and how we can best support differentiated producers. These producers would likely be better candidates for Aliber's (2019) 'settlement-oriented' land reform, where well-located land can provide improved access to towns and cities and thus wage employment opportunities.

Averbeke et al. (1998) advise the following regarding the size of plots for fresh produce production, (although this would need to be qualified by the type of crops being produced and the agricultural potential of land):

*Whereas food plot schemes appear to be a suitable model of introducing irrigation on land held under communal tenure, it is not recommended for settlement schemes. The size of standard food plots (0, 25ha or less) is just too small to make irrigated agriculture a viable livelihood option. From the study it appeared that a minimum plot size of 2 ha is required in order for agriculture to become the main source of income for farming households.*

Those households that demonstrate potential for expanded production, should be candidates to receive larger plots (2-50 hectares) through the land redistribution programme. In certain cases, small-scale farmers indicate a preference not to be relocated far from their current homesteads. Land bordering or nearby former homelands areas should be evaluated for its suitability. For example, in Mpumalanga (near Hazyview) irrigated white farmland

is located near fresh produce producers of the former KaNgwane homeland and the irrigated area of New Forest in former Gazankulu, 60 kms north of Hazyview (Regourd, 2015). In Greater Tzaneen Municipality, parts of the former Gazankulu homeland border existing croplands, which could be redistributed to expand areas currently farmed by subsistence and market-oriented smallholders and to meet growing land demand in the southern section of the municipality (Bunce and Aliber, 2019). Similar examples can be found elsewhere, which present opportunities to redistribute land with existing irrigation infrastructure and water rights.

### *7.1 Summary of key land reform proposals*

Aliber's (2019) approach could conceivably succeed in settling 233, 000 small-scale farmers at a total cost of R87.4 billion, and a number of settlement-oriented smallholders, many of which could be supported to produce fresh produce for informal markets. There are at least 100, 000 market-oriented smallholders in loose value chains, 5000 market-oriented smallholders in tight value chains and 5000 small-scale black commercial farmers, producing fresh produce, who are obvious candidates for redistribution (Cousins, 2013; Khulisa, 2016). It should be noted that these are not static categories e.g. through processes of accumulation, including through land reform, a market-oriented smallholder in a loose value chain may become a small-scale black commercial farmer over time.

More precise numbers of potential small-scale fresh produce farmers and the linked job creation that could be created, requires area-based planning at municipality level, however, some estimates have been provided in Table 3 below. Municipal area-based assessments should identify the need for land for fresh produce production and identify potential beneficiaries. A Geographic Information System (GIS) based approach can be used to target suitable arable land for sub-division. This should be accompanied by in-depth research to ensure that the identified land doesn't risk losing existing jobs if productive farms are redistributed.

Expanding irrigation, especially through farmer-led systems, could create many new opportunities for small-scale farmers. However, land is often redistributed without water rights, which sets land reform beneficiaries up for failure (Bunce and Aliber, 2019). Access to enough quality arable land and water are key for the success of small-scale farmers, particularly in dry and unreliable agro-ecological zones, and agrarian reform must ensure both of these resources are provided. The amount of land redistributed for fresh produce production needs to be linked to the availability of water. The National Development Plan suggests extending the current 1.5 million hectares under irrigation by 500, 000 (NPC, 2012). Redistribution of existing water rights should also be undertaken to fill gaps.

Access to off-farm income is central to allow for successful accumulation from below. Land redistribution should take into account targeting well-located land to support diverse livelihoods because ideas of establishing 'full-time' farmers are not realistic (Cousins, 2013). Although fresh produce production illustrates impressive job creation potential, incomes tend to be low. To remedy this, where possible, mixed-farming systems should be encouraged based on the agricultural zone e.g. vegetables together with livestock, subtropical fruit and nuts and/or sugar.

**Table 3 Land redistribution recommendations for small-scale fresh produce producers<sup>30</sup>**

Farmer Category	Total number of Farming Households supported	Jobs Created <sup>31</sup>	Land, Soil and Water	Farmer Support Required
<b>Market-oriented smallholders in loose value chains</b>	100, 000 households  (2 ha – 15 ha plots)	+ - 2, 500, 000 on-farm jobs (Assuming 2,5 jobs per ha)  + - 1 million on-farm jobs (Assuming 1 job per ha e.g. in mixed-farm system with livestock &/or fruit or less labour intensive veg crops )  + - 50, 000 jobs in extended value chain	+ - 1,000, 000 hectares redistributed  Access to medium potential arable land suitable for vegetables near communal areas and/ or urban areas or on sub-divided rural farms (where suitable). Secure water rights and supply Facilitate water harvesting and storage Conduct soil suitability surveys to identify where infield rainwater harvesting (IRWH) could be implemented Duty-free imports of irrigation equipment e.g. Cheap Chinese/ Japanese pumps Promote household-based micro-irrigation/ farmer-led systems	Improve provincial and district extension services or pay government grants to trainers/ commodity associations (NGO) Technical and management training Mobile phone-based market information system & information dissemination Microfinance and/or revolving credit Grant for inputs Small scale agro-processing Zero Hunger Programme to procure food for govt markets Support for local farmers' associations/unions/ cooperatives Support SME-based tractor services Local farmers' markets Joint marketing through cooperatives
<b>Market-oriented smallholders in tight value chains</b>	5000 households  (5 ha – 30 ha plots)	+ - 218, 750 on-farm jobs (Assuming 2,5 jobs per ha) + - 87, 500 on- farm jobs (Assuming 1 job per ha)  + - 2000 jobs in extended value chain	+ - 87, 500 hectares redistributed Access to high-medium potential arable land suitable for vegetables near communal areas and/ or urban areas or on sub-divided rural farms (where suitable)	Government should part-fund private extension services Support for local farmers' associations/unions/cooperatives Technical and management training Off-farm infrastructure (particularly roads and ICT) Cash grants or access to microcredit

<sup>30</sup> Based on author's research and suggestions from Khulisa (2016), Genis (2019), Aliber (2019) and others documented in this report.

<sup>31</sup> Estimates of labour intensity for vegetables are 1-5 jobs per hectare, depending on the commodity produced. A mean of 2, 5 jobs per hectare and 1 job per hectare have been used for these calculations, to provide different options. The former assumes the land is used exclusively and intensively for vegetable production and the latter assumes a mixed-farming system is used (See Bunce and Aliber, 2019).

Farmer Category	Total number of Farming Households supported	Jobs Created <sup>31</sup>	Land, Soil and Water	Farmer Support Required
			Secure water rights and supply Facilitate water harvesting and storage Duty-free imports of irrigation equipment e.g. Cheap Chinese/ Japanese pumps Promote household-based micro-irrigation/ farmer-led systems	SME-based tractor services Enforce AgriBEE procurement quotas Small scale agro-processing Support for GlobalGAP or organic certification Producer forums Joint marketing through cooperatives
<b>Small-scale black commercial farmers</b>	5000 households (30 ha – 50 ha plots)	+- 500, 000 on-farm jobs (Assuming 2,5 jobs per ha)  +- 200, 000 on farm jobs (Assuming 1 job per ha)  +- 2000 jobs in extended value chain	+- 200, 000 hectares redistributed  Access to high -medium potential arable land suitable for vegetables Secure water rights and supply Install bulk irrigation Promote household-based micro-irrigation/ farmer-led systems	Encourage commercial services sector to provide support Agricultural economists for market information Commodity-linked extension support Needs-based off-farm infrastructure Enforce AgriBEE procurement quotas Encourage membership in commodity/ farmer associations Support for GlobalGAP or organic certification Joint marketing with other small-scale commercial farmers Wide range of finance options Research and development

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## Annex 1

**Table 4. Key features of small-scale fresh produce producers**

Case (Fresh Produce under Irrigation)	Province	Bulk water supply	Infield irrigation	Number of Small-scale farmers	Institutional arrangement	Land Tenure	Irrigated Area	Mean size of plots	Value chain/ Markets	Mean annual incomes (gross unless indicated)	Major crops
<b>Zanyokwe Irrigation Scheme</b>	Eastern Cape	NA	Sprinkler Irrigation	61	Cooperative	communal land	439 ha	4.2 ha	Informal (mostly hawkers) & Umthiza for maize	R1000 for a ton of maize to Umthiza through the Massive Food Production Programme	Vegetables and maize
<b>Foundation Community Project</b>	Eastern Cape	Pumped		188	NA	NA	66ha	0.35 ha	Some informal	only 7.5% of households sell produce, mostly subsistence	Vegetables and maize
<b>Chata Irrigation Scheme</b>	Eastern Cape	Gravity-fed system via cement furrows	flood irrigation system	16	management committee composed of NGO (Border Rural Committee (BRC)/community CPA	CPA (Settled restitution claim)	22.75 ha	NA	Mostly informal	NA	Vegetables (10 hectares), Fruit & nut trees, tomatoes, wheat
<b>Tugela Ferry Irrigation Scheme</b>	KwaZulu-Natal	NA	Canal irrigation	800 - 1,000 producers (Cousins, 2013)	Scheme committee	Communal (Ingonyama Trust)	540ha	0.4 ha	Mostly informal (hawkers & bakkie traders)	R13 544 per hectare (mean annual gross margin per farmer of R6 270 for mean plot of 0.46 hectares).	Wide range of Vegetables

Case (Fresh Produce under Irrigation)	Province	Bulk water supply	Infield irrigation	Number of Small-scale farmers	Institutional arrangement	Land Tenure	Irrigated Area	Mean size of plots	Value chain/ Markets	Mean annual incomes (gross unless indicated)	Major crops
										Larger / successful producers: R18 000- R25 920/ ha	
<b>Bululwane Irrigation Scheme</b>	KwaZulu-Natal	NA	NA	136 smallholders	Scheme committee	communal land	184ha (62ha allocated to chief)	0.9ha	NA	NA	Wide range of Vegetables
<b>Mooi River Irrigation Scheme</b>	KwaZulu-Natal	Combination : Pumped and Gravity	Canal irrigation	824	NA	communal land	NA	0.268ha	NA	Tomato farmers (small survey of 12): profits ranging from R700 to over R30,000 for 18 month period	Wide range of Vegetables
<b>Dzindzi irrigation scheme</b>	Limpopo	gravity- fed	NA	102 farmers	NA	communal land	135.6 hectares	1.3 hectares	NA	R12 062 per annum per hectare (Profit's ranged from -R244 (i.e. a loss) to R28 244 per annum, with a mean of R10 368 per farmer)	Mainly maize and cabbages, tomatoes, green peppers, sweet potatoes and 'African leafy vegetables'
<b>Nwanedzi River Catchment area</b>	Limpopo	Systems organised by individual farmers	Mixed: Rainfed, manual (private boreholes/ta	2000	NA	2000 households (of which 82 have private	NA	1-10has field plots & 2000m2 household plots	local hawkers, FPMs, supermarkets,	Mean annual incomes per family worker: 'Micro-	Fruit (mostly mango) and annual veg crops grown between



Case (Fresh Produce under Irrigation)	Province	Bulk water supply	Infield irrigation	Number of Small-scale farmers	Institutional arrangement	Land Tenure	Irrigated Area	Mean size of plots	Value chain/ Markets	Mean annual incomes (gross unless indicated)	Major crops
			ps/bucket etc), various irrigation systems			titles and the rest communal tenure)			processors, restaurants (nearby Tzaneen)	farmers' R0-R5000; Small-scale staple, fruit & veg producers R13, 000; Medium-scale veg producers R21, 500-R120, 000	orchards (maize, beans, pumpkin, peanuts, groundnuts) & homestead gardens
<b>Middle Letaba Irrigation Project</b>	Limpopo	Gravity-fed	Overhead irrigation systems	621	NA	Farmers pay R200/ha per annum for land rent, water and electricity. Foodplot farmers pay R36	2 276 ha	3ha- greater than 10 ha	Local informal markets & National Fresh Produce Markets		Fruit and vegetable crops
<b>New Forest Irrigation Scheme</b>	Mpumalanga	Gravity-fed	NA	531 farmers	Cooperative committee	65% PTOs; 5% self-allocated plot holders; 30% informal rental	622-1000 ha (160 ha utilised)	1 ha	Bakkie traders, hawkers, neighbours	Mean annual profit margin of R5283.56 (range of profits from R12 - R24 915)	Cash crops: green maize, tomatoes, spinach (Swiss chard), cabbage, and sugar beans. Subsistence crops: groundnuts, cassava,

Case (Fresh Produce under Irrigation)	Province	Bulk water supply	Infield irrigation	Number of Small-scale farmers	Institutional arrangement	Land Tenure	Irrigated Area	Mean size of plots	Value chain/ Markets	Mean annual incomes (gross unless indicated)	Major crops
											sweet potato and Bambara groundnuts.
<b>The Philippi Horticultural Area (Abalimi)</b>	Western Cape	NA	NA	2000 people are (self-) employed in the PHA	NA	NA	3074 hectares (1800 hectares used for vegetables)	NA	NA	Target was R600/month (R7200/year) but only 'half way there'. Growers receive 50% of price of veg box.	Wide range of Vegetables
<b>IRWH Project: Six rural vilages around Thaba Nchu</b>	Free State	rainwater harvesting and conservation technologies	infield rainwater harvesting	1033 household gardeners & 1 trust farm	Municipal-based water-harvesting interest group: Tswelelopele Small Farmers Cooperative (TSFC).	PTOs	NA	NA	NA	NA	Maize & a diversity of vegetables.