

Series of Papers on Rural-Urban Linkages: Agro-food value chain

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EXECUTIVE SUMMARY

The study makes an assessment of agro-food value chains that occurs in South Africa's rural and urban areas in order to accentuate the interdependencies that these spaces exhibit. It uses 1-2 food items that demonstrate the existence of a full value chain that occurs in both rural and urban areas. Secondly, the study analyses the dynamics (internal and external to the selected value chains) that could impact on policy developments for either of the two spaces (rural and urban). Thirdly, it identifies entry points for interventions that can enhance innovation, address imbalances and improve profitability especially of those who operate in the lower end of the value chain.

The research team elected to study the tomato and potato value chains in Limpopo. The study was conducted over a three-month period and interviews were conducted with value chain participants in person, telephonically and over electronic mail. Through this methodology it was possible to investigate the roles played by the various value chain actors. Value chain mapping explored dynamics driving inter - linkages between the value chain actors. Value chain actors included farmers, traders, transporters, processors, wholesalers, retailers and consumers for both products.

Researchers observed that value chain activities take place along the rural-urban continuum, but most production occurs in the rural areas while processing and retailing occurs in the urban and peri-urban areas. Innovation within the value chain is also explored.

The following key observations stand out of the research:

- a) Agro-food value chains are dominated by large commercial operations with sophisticated operations such as ZZ2 and Montana;
- b) Smallholder farmers face many production and market related constraints within the value chain such as -
 - Land tenure issues determine the status quo in South African agriculture sector;
 - Access to finance;
 - While barriers to entry are in general relatively low, quality and quantity factors present strong barriers to entry in the more profitable markets;
 - Processor constraints are largely due to supply issues;
- c) Threats of cheaper imported processed products are a factor in both tomato and potato supply chains;
- d) Cold chain maintenance is an important part of the value chain; and
- e) Retailers and market agents have significant buying power.

Local government has an integral role to play within agro-food value chains in both rural and urban areas. It is seen as playing out its role of implementing existing national agricultural policy more aggressively by developing effective programmes. Stakeholder engagement and collaboration with role players will result in the realization of such programmes. Local government needs to strengthen the interface with provincial and national spheres to instigate dialogue on any policy gaps observed during the implementation of national policy within the localities.

Furthermore, create an enabling environment for the development of the agro processing sector as well as the national fresh produce markets (NFPMs). These markets represent one of the existing points of participation by local government within the value chain, while they provide an easy and accessible market for small scale and emerging producers to sell their produce. The major constraints in the NFPMs are declines in the volumes of fresh produce (fruits and vegetables) traded through these markets owing to deteriorating

infrastructure in these markets, lack of re-investment by municipalities into the capital expenditure of the markets, non-compliance to food safety and health standards, and management capacity of NFPMs (DAFF, 2014). Some of the key critical areas that cities can look at in improving the status of NFPMs would be:

- Re-examining ownership and governance structure of the market
- Location and logistics
- Services provided by the market including refuse disposal, storage, ripening.
- Efficiencies of the market such as logistics, waiting times for delivery and purchases, facilities available.
- Ensuring that food safety standards, hygiene, labelling and traceability requirements are met within the market and obtaining the requisite certification.
- Value added services: This involves looking at what other services the market can offer producers so as to remain competitive and strengthen their position as the preferred marketing channel. Such value added services could include the market acting as an aggregator for producers and developing an established fresh produce market brand or offering a transport service if this is viable.
- Costs: Producers indicated that one of the major factors affecting the choice of marketing channel is the cost since the market takes 5% and the agent take 7.5%.

The study also concludes with recommendations on how local government can together with private sector and civic society, work together in ensuring the economic and value chain development to the benefit of both rural and urban areas. As confirmed in the study that agricultural production occurs in rural / peripheral areas, local government can partner with the private sector to leverage investment in transport infrastructure such as rural access roads and trucks, storage facilities, marketing facilities and other post-harvest infrastructure within these small and medium sized market towns. This would enhance the inclusion of small producers into the system while contributing to the survival of fresh produce markets in urban areas.

It is interesting to note that in South Africa an aging smallholder farming population dominates rural areas. While, urban areas are filled with unemployed youth who either do not consider agriculture a viable source of livelihood or have no access to the resources needed to participate in the agricultural value chains. It is therefore within the interest of both local and national government to make the agricultural value chain in its entirety, attractive and to function effectively so as to attract youth into this sector. It also follows then that interventions within agricultural value chains should not occur in silos but rather as part of a broader strategy. While local governments have the responsibility to create and maintain an enabling environment for business and investment in both rural and urban areas; the importance of Public- Private Partnerships cannot be underscored.

All players within the value chain, at all levels have a role and responsibility towards the value chain and its efficiency. As such, the buy in of local communities, private sector, and civil society is important in ensuring that local government-led interventions in both rural and urban area are successful.

Acronyms and abbreviations

APAP	Agriculture Policy Action Plan
DAFF	Department of Agriculture Forestry and Fisheries
DRDLR	Department of Rural Development and Land Reform
IPAP	Industrial Policy Action Plan
LED	Local Economic Development
NPFM	National Fresh Produce Markets
NGP	New Growth Path
NIE	New Institutional Economics
NDP	National Development Plan
SACN	South African Cities Network
SALGA	South African Local Government Association
SCP	Structure Conduct Performance
SIP	Strategic Infrastructure Project
VC	Value Chain
VCA	Value Chain Analysis
VCD	Value Chain Development

1. Background and Conceptual Framework

Value chain analysis plays an important role where firms are seeking an understanding of the factors that impact the long-term profitability, as well as when developing a successful strategic plan for the business. The value chain can be thought of as a set of activities, services, and products that lead to a product or service that reaches the final consumer. Through value chain analysis, firms can better understand important factors such as economic relationships along the value chain, economies of scale, number and size of competitors, consumer trends, technological advancement, biological production risk and perishability, and economic relations governing transactions within their operating environment. Firms can apply knowledge gained from value chain analysis to differentiate themselves from competitors, become aware of the pressures most likely to affect their profitability, find new ways of integrating themselves in the value chain, and identify opportunities for innovation and growth.

Kaplinsky and Morris (2000) highlight that value chain analysis, which focuses on the dynamics of inter-linkages within the productive sector, especially the way in which firms and countries are globally integrated, takes us a great deal further in exploring global trends than traditional modes of economic and social analysis. Furthermore, global value chains concentrate on inter-linkages allowing for easy uncovering of the dynamic flow of economic, organisational and coercive activities between producers within different sectors even on a global scale. In Kaplinsky and Morris' approach, value chain analysis seeks to characterize how chain activities are performed and to understand how value is created and shared among chain participants. As such, global production value chain research has made it possible to frame and create a policy environment in which poor producers and poor countries can participate effectively in the global economy.

Development practitioners make extensive use of the value chain concept for the design of market-driven rural development projects and strategies. Most poverty reduction strategies in developing countries are predicated on improving agricultural production and promoting market access and integration of smallholder producers in formal markets. Research has shown at both conceptual and empirical levels the potential benefits of such a market-driven perspective.

Nang'ole et al 2011, make the conclusion that, there is growing recognition of the relevance of value chain analysis concepts and their application in agriculture and forestry for market-led rural development strategies. The concepts are applicable across a wide range of products in the primary sector and therefore have great potential to help in developing rural enterprises and the rural economy. The guidelines and manuals follow similar steps in carrying out value chain analysis; some deal with all of them while others deal with only one or some. These are: appraisal of value chains (choosing products, mapping of chains, networks and systems), design of interventions (identifying opportunities), implementation of interventions and monitoring and evaluation (observing, monitoring and adapting).

In Local Economic Development (LED), value chain analysis offers a simple participatory way to analyse the potentials and constraints within prominent economic sectors of a locality (Hobson, 2012). Particularly in African localities, economic production and employment tends to be concentrated in a limited number of activities so VCA is an excellent way of zooming in on those. For example, when looking at the agriculture sector in a given district, most production will be concentrated in a handful of value chains such as coffee, oilseeds, honey and dairy. In most areas in Africa, data constraints are a major issue and local stakeholder capacities for complex economic research are low.

Value chain approaches are simple to undertake and generate their own data even if local data availability is scarce. Value chain development offers a strategic way to address the opportunities and constraints facing the productive sectors of a locality and its producers and businesses. Africa's poorer regions often suffer from significant infrastructural, financial, technological and human capacity constraints, which serve as a deterrent

to potential domestic and foreign investment. By estimating value accruing to the local area versus other locations, national or international, and identifying the constraints inhibiting more value accruing to the locality, interventions can be designed to address these towards greater local competitiveness. Furthermore, in African localities, a major focus tends to be on how the poor and marginalized can also benefit from economic growth and national and international trade.

By using the value chain approach stakeholders can examine the opportunities available for introducing and integrating new or otherwise excluded value chain actors like women, youth, smallholder farmers and informal traders into the value chain. In addition, the value these actors would gain from participation, the constraints affecting their ability to better contribute to and benefit from the chain as well as the benefits or losses to the system from their participation or lack thereof can also be determined. Interventions can then be designed to alleviate these constraints (financial, socio-economic, technological,) so that those groups better able to participate and benefit from participation.

Agro-food value chains are viewed as having the potential to provide millions of women with jobs and incomes – bringing greater economic independence, social connections and agency . It is believed that with their incomes, women are more likely than men to support household welfare and children’s education. These are powerful reasons to support women and greater gender equality in Global Value Chains (GVCs).

Global value chains (GVCs) offer important opportunities for women worldwide to earn a living – garments, tourism, mobile phones and commercial horticulture are good examples. Women can play a vital role in supporting value chain upgrading – as workers, farmers, producers and consumers. Yet women’s skills are often undervalued and they are stuck in low-status jobs. Work in GVCs is potentially empowering for women. Policy and commercial strategies need to proactively support the more equitable participation of women, because this enhances value chain upgrading, improves women’s lives and promotes more inclusive development.

Finally, another benefit of using the value chain approach is that it directs the focus of stakeholders from only looking at supply and supply related matters, to also considering demand and demand related matters. Local governments could greatly benefit from using the results of VCA exercises conducted in their locality in Local Economic Assessment and LED strategy formulation. While local governments may sometimes lack the institutional capacity and mandate to undertake detailed VCA and implement the requisite Value Chain Development (VCD) interventions, they can partner with local NGOs, academic institutions and private sector.

1.1 Theoretical framework

The value chain concept has evolved over a long period of time and has been applied in various sectors. As far back as 1758, French Physiocrats' through the *Tableau économique* argued that agricultural surpluses, by flowing through the economy in the form of rent, wages, and purchases were the real economic movers. In the 1950s, Wasilly Leontief's Input-Output tables provided estimates of the relative importance of each individual link in industry-level value-chains for the U.S. economy¹. The concept of the sub-sector, first introduced by Shaffer (1970), was also an important conceptual development related to value chains. By defining a sub-sector as a set of activities and actors (interdependent organizations, resources, laws and institutions involved

¹ Porter, Michael E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance*. New York.: Simon and Schuster.
Retrieved 29 January 2014.

in producing, processing and distributing an agricultural commodity) and the rules governing those activities², it follows then that a sub-sector analysis would involve grouping economic activities linked horizontally and vertically by market relationships and studying the networks of relationships linking suppliers, processors, transporters and traders in ways that connect producers and enterprises with final consumers of goods and services. This is the essence of value chain studies today.

In 1979, Porter developed the value chain analysis as an instrument for identifying the value of each step in the production process (See Figure 1. below for a simplified linear agro-food value chain). Porter argued that firms couldn't effectively detect their sources of competitive advantage by simply looking at the firm as a whole. Rather, the firm should be disaggregated into primary and support activities with primary activities being those which directly contribute to add value to the production of goods and services and support activities being those which have an indirect effect on the final value of the product³. The value chain concept was thus borne out of business management, and was popularized by Michael Porter in his 1985 best-seller, "Competitive Advantage: Creating and Sustaining Superior Performance."

In the 1990s Gereffi and others developed a framework, called 'global commodity chains' that tied the concept of the value-added chains directly to the global organization of industries⁴. This work not only highlighted the importance of coordination across firm boundaries, but also the growing importance of new global buyers (mainly retailers and brand marketers) as key drivers in the formation of globally dispersed and organizationally fragmented production and distribution networks. Gereffi (1994) used the term 'buyer-driven global commodity chain' to denote how global buyers used explicit coordination to help create a highly competent supply-base upon which global-scale production and distribution systems could be built without direct ownership.

By highlighting explicit coordination in dis-integrated chains and contrasting them to the relationships contained within vertically integrated, or 'producer driven' chains, the global commodity chains framework drew attention to the role of networks in driving the co-evolution of cross-border industrial organization. However, the global commodity chains framework did not adequately specify the variety of network forms that more recent field research has uncovered. While, research on the horticulture industry (Dolan and Humphrey, 2000) and the footwear industry (Schmitz and Knorringer, 2000) reinforced Gereffi's notion that global buyers (retailers, marketers, and traders) can and do exert a high degree of control over spatially dispersed value chains even when they do not own production, transport or processing facilities, recent research on global production has highlighted other important forms of coordination.

In 2000, Kaplinsky and Morris described the value chain as the full range of activities that are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final

² Staatz JM. 1997. Notes on the use of sub-sector analysis as a tool for linking industry and agriculture. Michigan State University.

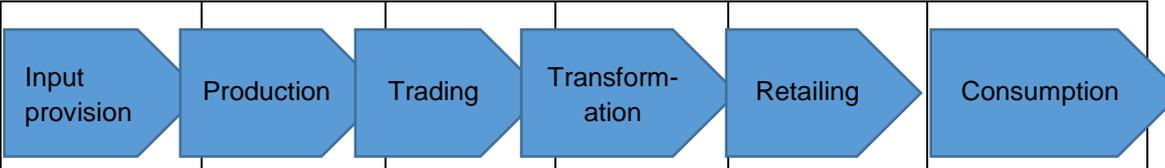
³ van den Berg M, Boomsma M, Cucco I, Cuna L, Janssen N, Moustier P, Prota L, Purcell T, Smith D and van Wijk S. 2009. Making value chains work better for the poor: a toolbook for practitioners of value chain analysis. Making markets work better for the poor (M4P). http://www.markets4poor.org/sites/default/files/file/Publications/M4P1/VC%20toolbook_eng.pdf

⁴ Gereffi, G. (1994) 'The Organization of Buyer-Driven Global Commodity Chains: How U.S. Retailers Shape Overseas Production Networks', in G. Gereffi and M. Korzeniewicz (eds), Commodity Chains and Global Capitalism, The studyport: Praeger,

pp. 95–122.

disposal after use⁵. While this definition depicts the linear value chain structure as shown below in Figure 1. In the real world, value chains tend to be more complex beyond the linear structure. They tend to have multiple linkages in the chain. Linear value chains are a rarity. In reality, value chains are often complex and characterised by interlinkages between, along and across role players both internal and external to the value chain. Value chains are as dynamic as the multiple stakeholders, partners and actors that participate in them.

Figure 1. Simple linear Agro-food Value Chain

Functions						
Actors	Agro supplier shops	– Smallholder farmers, farmer groups	Individual traders	Agro processors	- Big four supermarkets, informal traders, export market	Domestic markets, Individuals, hotels, institutions
Support Services	Local Government Authorities, Environmental Management Agencies, Agro-dealers associations	Training / Extension services, Rural district councils, Agritex, NGOs, Smallholder farmers associations, Financial services	Department of Agriculture, forestry and fisheries, National Agricultural Marketing Council	Association of Agro – processors, Standards Association,	South African Consumer Council	
Chain Context	National Government: Policies on plant production, Laws and Regulation, road and telecommunication infrastructure, fiscal and monetary policies, sanitary policies, agricultural imports regulations, public health acts, environment acts, licensing					
	Provincial Development Councils	Government:	Rural	Infrastructure- road networks, water, electricity		

⁵ Kaplinsky, R., & Morris, M., 2000, *A Handbook for Value Chain research, ID A study of the tomato and potato agro-food value chains*

1.3 Conceptual Framework⁶

For the purpose of this study, the value chain was defined as “the full range of activities and services required to bring a product or service from its conception to sale in its final markets” (microLINKS, 2012). A value chain thus encompasses the entire network of actors involved in input supply, production, processing, marketing and consumption, operating within an institutional environment, which can either facilitate or hinder its performance (Gereffi, 1995).

The study was based on an integrated conceptual framework which took into account not only the actors involved in moving the physical products (value chain players); from the input suppliers to the end consumers, but also includes the actors who provide the rules and regulations that have to be met (value chain influencers) by the value chain players, and the support structures (value chain supporters) that are available to support the value chain players to comply with the rules and regulations specified by the influencers (Jordaan et al, 2014).

Rather than focusing only on the processes by which inputs are transformed into the final product, all factors that influence the way the value chain players operate within the chain, and also all the support services available to allow value chain players to operate in such a way as to keep the value chain competitive were considered. By using this systematic view, which integrated the three important levels of the value chain network this allowed for the discovery of opportunities and bottlenecks within these levels, as well as in the dynamic interactions between the levels thus providing a holistic view of the selected value chains (Roduner, 2007).

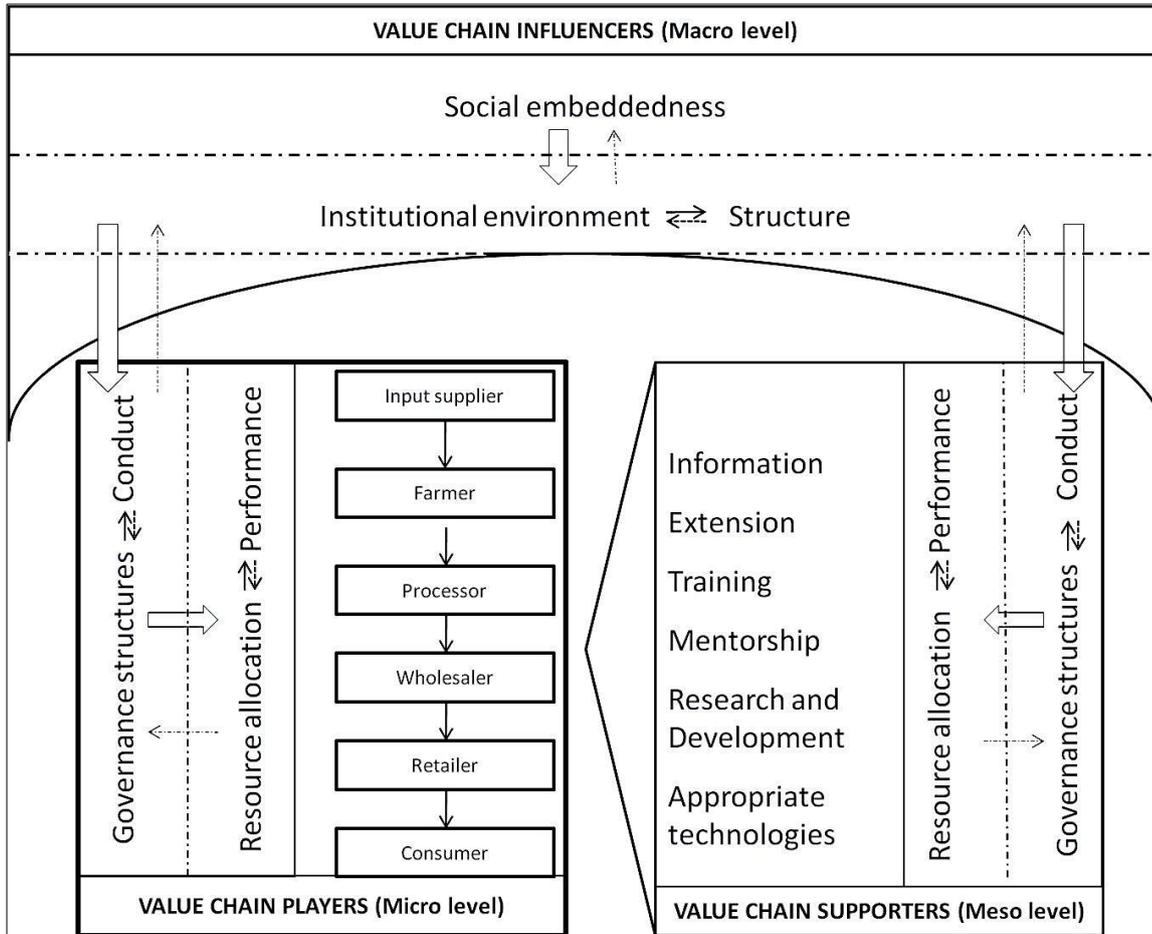
This approach explored in detail by Jordaan et al (2014), integrates the Value Chain (VC) concept with the New Institutional Economics (NIE) and Structure- Conduct-Performance (SCP) to develop a VC-NIE-SCP framework. The integrated NIE-SCP approach allows the theoretical examination of society on four interrelated levels (the social embeddedness level, institutional environment, governance structures and resource allocation), and then also the appropriate evaluation at the lower three levels using the structure-conduct-performance analysis framework, which is more of an applied approach. By integrating the NIESCP framework into the value chain framework an in-depth analysis of all three levels of the value chain is ensured. This new integrated framework is presented in Figure 2 below.

The integration of the NIE-SCP framework into the extended value chain framework extends the value chain influencers to also include the social and physical environment that influences the behaviour of the farmers, while also allowing for special attention to be awarded to the relationship between the different value chain players. Laws, rules, regulations, policies, international trade agreements, social norms and customs all contribute to this institutional environment as do public goods such as infrastructure, research, extension, price information systems and business development services. Businesses that provide crosscutting services such as finance and transport likewise contribute key elements to the institutional environment affecting the

⁶ Henry Jordaan, Bennie Grové Co-author & Gerhard R. Backeberg Co-author, Executive Manager (2014) Conceptual framework for value chain analysis for poverty alleviation among smallholder farmers, *Agrekon: Agricultural Economics Research, Policy and Practice in Southern Africa*, 53:1, 1-25, DOI: [10.1080/03031853.2014.887903](https://doi.org/10.1080/03031853.2014.887903) To link to this article: <http://dx.doi.org/10.1080/03031853.2014.887903>

value chain performance (Hagglblade et al, 2012). The integrated VC-NIE-SCP framework thus allows a researcher to consider all of the typical stumbling blocks that constrain the behaviour of value chain players, and the success factors that prove to contribute to the successful operation within the value chain. Thus, instead of focusing only on the current behaviour and performance of the value chain players under consideration, the developed framework also provides insight into the incentive structures that influence the behaviour of all role-players in the value chains under consideration.

Figure 2. VC-NIE-SCP framework



Source: Jordaan, 2014

The value chain often represents an arena of intense contestation and struggle for advantage for value chain players, rather than an arena of smooth flowing consensual action in which everyone wins; hence the need for continual innovation within the value chain. Innovation within the value chain consists of three basic elements: technological, organizational and institutional. It results in products and processes; technological innovations, institutional innovations, market innovations and policy innovations. The VC-NIE-SCP approach enables the researcher to explore these four elements of innovation within the value chain, finding evidence of innovation and making recommendations on where innovation can result in improvement in the value chain. More importantly in the context of this research, existing rural-urban linkages in the selected value chains were discovered and examined. By exploring resource allocation and governance structures in relation to the distribution and function of value chain actors and influencers, a greater understanding of the rural urban

linkages was attained. Useful information on how to further develop these linkages was discovered.

This study therefore applies the VC-NIE-SCP framework on selected case studies within South Africa's potato and tomato value chains. The nature of the South Africa's agricultural sector is such that large-scale commercial agribusinesses operate alongside smaller, emerging agribusinesses with businesses of varying size and complexity being found within the continuum. For the purposes of this study, the study looked at both ends of the value chain spectrum by selecting emerging producers and commercial producers as case studies of agribusinesses in the potato and tomato value chain network. The study then traced their actions, interactions and influencers within the value chains, examining their institutional environment, establishing social inclusion and governance structures within the value chain. The study then explored the existing as well as potential rural-urban linkages as these are exhibited within the commercial and emerging sector value chains of the selected commodities.

2. Literature Review: International Perspective

A review of literature on value chain analysis revealed that most studies conducted in Africa were in relation to; value chain inclusiveness especially in relation to smallholder farmers and smallholder market access. There are limited studies on how value chain influencers such as local governments can play a role in enhancing the structure and functioning of agricultural value chains. Research focusing on value chain interactions is also limited.

From the review, it is evident that much of the research has focused on investigating the barriers and constraints that lead to limited smallholder farmer participation in commercial agro-food chains. The challenges that were identified from such research include, among others, the supply requirements of commercial agro-food chains (quality and consistency), the small scale of operations of smallholder farmers; insecure property rights; lack of access to credit; poor or non-existent physical infrastructure; lack of trust among value chain participants; lack of market information; long distances to the market and the lack of support services. Recommendations made are to a large extent centered on the need for farmers and government to change their behavior so that allow farmers can overcome the stumbling blocks. Alarmingly, constraints identified and documented by researchers in the early 2000s are very similar to the constraints this study identified still. Jordaan et al attribute this to the possibility that the behavior of farmers and other role-players within the value chains has not changed despite the recommendations from the volumes of research.⁷

In Ethiopia, SNV conducted agro-food value chain analysis focusing on fruit products mango and apples⁸. The aim of the study was to explore the potential of these value chains in local economic development. Constraints and opportunities in the geographic area of intervention (the southern region) were identified, and ways of improving smallholder farmers operations in the value chain to allow them to engage in profitable business were also explored. Most of the constraints identified related to supply quality, institutional arrangements that are unfavorable to smallholder farmers; market access, limited market participation by

⁷ This is an observation from, Henry Jordaan, Bennie Grové & Gerhard R. Backeberg, (2014) Conceptual framework for value chain analysis for poverty alleviation among smallholder farmers, *Agrekon: Agricultural Economics Research, Policy and Practice in Southern Africa*, 53:1, 1-25,

⁸ Hobson, E. W, 2011, The potential of value chain approaches in Local Economic Development in Africa, *Local Economic Development Network in Africa*, Issue no 3. February 2012

smallholders and the monopoly power in wholesale markets.

SNV devised strategies that were applied in the locality as a way of strengthening local cooperatives to engage in profitable business relationships. Two cooperatives were targeted – the Lante Fruits and vegetables Marketing Cooperative involving 207 farmers and the Chencha Highland Fruits Marketing Cooperative with a membership of 600 farmers. Interventions included: 1) facilitating the development of business arrangements with Addis Ababa wholesalers, regional traders and processors; 2) strengthening the cooperatives' leadership capacity to develop a clear strategy and vision for operational management; 3) supporting promotional activities for the products; 4) facilitating access to other market services such as provision of quality planting material; 5) helping the cooperatives assess possible sources of finance and accessing them⁹.

Heike Hoffler and Gladys Maingi (2006) from Kenya's ministry of agriculture illustrate the case of Kenya's Irish potato value chain¹⁰. They observe that agricultural value chains link rural production to urban consumption. They note that the changes in demand in the value chain are a consequence of urbanization, and that the emergence of "modern" consumption patterns or new trends in international trade, impact on rural areas along value chains and spills over to marketing and production systems. More importantly, they state that rural-urban linkages bear challenges but also mutual benefits for producers and consumers and can be promising entry points for development interventions. The case also suggests that there is need to transform rural based agricultural economies into more urban industrial and service based economies.

Hoffler and Maingi (2006) conclude that well developed value chains provide potential benefits for both, rural producers and urban consumers. The study was conducted through discussions evolving around input quality, logistic arrangements and product standards. The case study reveals challenges of; failing input markets resulting in poor quality of the produce and unreliable availability of seed potatoes; poor market logistics and infrastructure and lack of market information. Potato wholesale is in the hands of a dozen brokers who serve large clients such as hotels, restaurants, canteens, supermarkets and traders, who retail smaller quantities to shops and kiosks. This small number of brokers ensures a cartel that realizes margins of roughly one third of the wholesale price for their brokering services only.

A growing trend worldwide is for fresh food retail chains to buy fruits and vegetables directly from farmers (independent or contracted) and distribute these to retailers in their group. They often work with larger scale commercial producers to the exclusion of small farmers (for various reasons). The operations of a fresh food retail chain named 'Easy Day' in Punjab, India and its interface with farmers in Punjab were analysed. In the case study, linking primary producers with global and national markets through fresh food retail chains is seen as a key emerging agricultural marketing practices that will help to improve small producer's livelihoods in India. The study has proposed a number of strategies to further facilitate the marketing of produce of small farmers. These include improving the infrastructure local market to reduce the post-harvest losses; and regulation of fruit and vegetable markets to reduce exploitation of these farmers and implementation of a systematic and quality-based price mechanism.

⁹ ibid

¹⁰ Conclusions from Heike Hoffler and Gladys Maingi of the ministry of Agriculture in Kenya from a 2006 publication entitled *Promoting Agricultural Value chains the case of Kenya*.

2.1 South African Perspective

Many 'development' voices in South Africa argue that incomes for producers will increase if they can meet the conditions for entry into formal value chains and this will have a positive impact on livelihoods. A review of South Africa's value chain case studies, reveals that inadequate resources, high transaction costs, biases against smallholder production in policy and in corporate procurement practices and power relations skewed in favour of large commercial farmers has made participation in formal value chains difficult for smaller farmers.

South African agro-food chains are becoming more and more complex networks in a dynamic and global environment¹¹. Efficient food value chains are critical in order to sustain an increasingly urban population. Any gains in efficiency have to come against a background of vulnerabilities such as food quality and preservation concerns, food losses, threats from climate instability, and societal concerns about the carbon footprint of food. Pressure on food value chains is compounded by other global challenges such as resource depletion, price volatility, diet changes, concentration of the food chain, increased competition via globalization, demographic transition, crop land acquisition and new forms of investment¹². The study notes that the current production, storage and distribution infrastructure is linked to existing production regions. Kirsten's study concludes South Africa's highly concentrated agricultural input and food processing industries mean that many farmers are exposed to the dominance and market power of many large agribusinesses¹³. In addition, transport and distribution are a major cost and also a contributor to carbon footprint. Packaging can also play an important role in ensuring safe and efficient transport of a product and conforming to handling requirements, uniformity recyclable material specifications, phyto-sanitary requirements, proper storage needs and even attractiveness for marketing purposes¹⁴.

Aliber (2013) outlines some policy interventions by government with regards to smallholder farmers and markets. The research recommends the Zero Hunger programme in which there is an increasing use of preferential procurement practices for food on behalf of government institutions directed towards smallholder.¹⁵ De-concentration and de-centralisation of the agro-processing sector both form part of the state-led investment strategy for the emerging agro-processing sector. The goal of the strategy is to counteract the trend towards concentration of capacity and thus of market power in the post-primary stages of agro-food value chains.

According to Greenberg on value chains in SA¹⁶, quotes Jack Armour from Agri-Free State offers a piece from a commercial farmer's viewpoint that highlights key factors required for successful integration of smallholders

¹¹ Views from Kirsten, J. 2010. Agri- food Value Chains in South Africa: Global challenges and structural changes. University of Pretoria

¹² *ibid*

¹³ *ibid*

¹⁴ Department of Agriculture, forestry and fisheries. 2011. A profile of the South African Tomatoes market value chain.

¹⁵ Adoption from Conceptualising approaches to Smallholders and markets in Greenberg, S. 2013. Smallholder Farmers and Agrifood Value chains in South Africa: Emerging practices, emerging challenges. Institute for Poverty, Land and Agrarian Studies, University of the The studystern Cape.

¹⁶ Greenburg. S. 2013. Smallholders and agro-food value chains in South Africa: Emerging practices, emerging challenges. Institute for Poverty, Land and Agrarian Studies (PLAAS), School of Government.

into corporate value chains¹⁷. These include training, 'incentivising' mentorship models, risk reduction through safety nets and marketing strategies that identify niche markets. He presents a public-private partnership model based on cell phone technology and de-centralised agro-processing hubs that is currently under development in the Free State. Armour highlights the importance of involving experienced commercial producers, the use of new technology and local agricultural associations as critical factors for a successful intervention.

Marc Lewis and Ben Cousins conclude the case studies with preliminary analyses of field research on a collective urban garden project in Johannesburg and among small-scale irrigation farmers in the Tugela Ferry/Msinga municipality in KwaZulu-Natal respectively. In Johannesburg, the urban food producers receive sporadic support from the provincial government but production is very low and even though they are oriented to selling, the producers struggle to move beyond survivalist production. These cases show the experience of the majority of subsistence producers, who do not have much market information, lack the resources for consistent production of surpluses and are not selected for participation in agribusiness smallholder programmes.

In the study of tomato value chains, Chikazunga (2013) finds that given poor yields, inferior quality and production risks, traditional market channels are more relevant to the majority of the smallholder farmers in the study area. He concludes that in order to shift the existing marketing patterns towards modern markets, adequate investments in and organisation of smallholder farmers are required. Participation in modern market channels demands a threshold investment in relevant production infrastructure such as greenhouses and irrigation technology as well as adequate production land. New ways of thinking have to be applied to successfully come up with sustainable value chain development approaches. Louw (2013) highlights the need for continued policy efforts to improve the smallholder sector¹⁸. The participation of both private and public sector is advised, thus signaling a shift from the traditional allocation of the role of development solely to government.

3. Methodology

The South African Cities Network (SACN) commissioned research on agro-food value chains in South Africa within the framework of rural-urban linkages. SACN's strategic framework for 2012 – 2016 seeks to position local government as an effective driver of local and national development. The broader objective is a better understanding of rural-urban linkages and subsequent reflection of such understanding in cities' policy frameworks.

The study's main objectives were firstly, to make an assessment of agro-food value chain that occurs in South Africa's rural and urban areas in order to accentuate the interdependencies that these spaces have, using 1-2

¹⁷ Cousins B (2007) 'Agrarian reform and the two economies: transforming South Africa's countryside' in L Ntsebeza and R Hall (eds) *The Land Question in South Africa: the Challenge of Transformation and Redistribution*. HSRC Press: Pretoria.

¹⁸Conclusions by Andre Louw in Greenberg, S. 2013. Smallholder Farmers and Agrifood Value chains in South Africa: Emerging practices, emerging challenges. Institute for Poverty, Land and Agrarian Studies, University of the Western Cape.

food items. Secondly, to analyse the dynamics that could impact on policy developments for either of the two spaces. Thirdly, to identify entry points for interventions that can enhance innovation, address imbalances and improve profitability especially of those who operate in the lower end of the value chain. Through assessing the role players to the food value chains, the study aimed to draw out opportunities and challenges as the product moves along the value chain as well as to explore the interlinkages between urban and rural spaces.

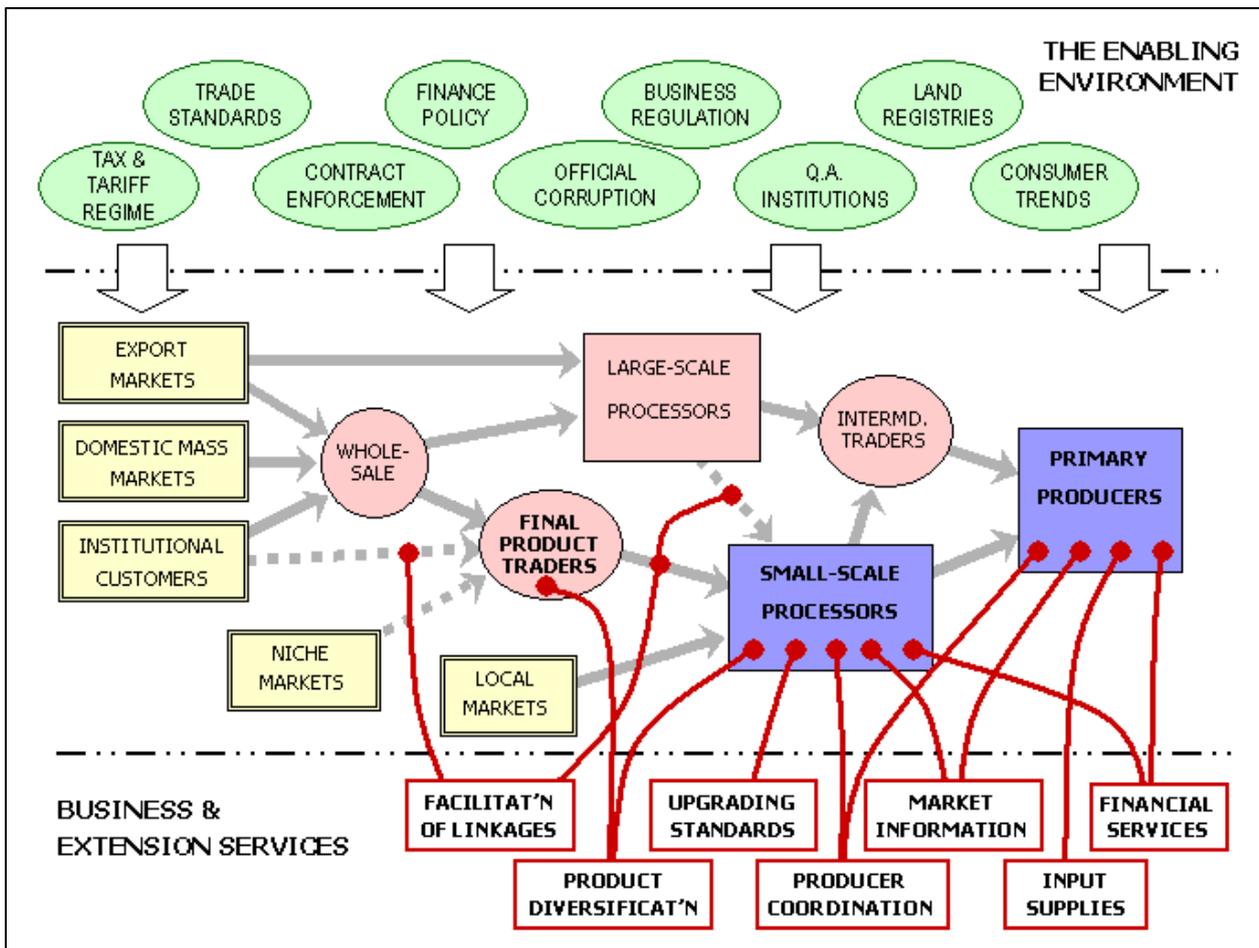
The study follows a value chain analysis approach. As a product moves from the producer to the consumer, several transformations and transactions take place along the chain of interrelated activities and value is added at each stage of the chain, hence the term value chain is used to describe the product's movement and interaction along this chain. Value chains adapt and respond to among other factors, local conditions, policy and institutional environment, market power and consumer preferences. The aim of a value chain analysis, therefore, is to assess these factors influencing the value chain.

3.1 Mapping the Value Chain

Value chain analysis often starts with linear mapping of activities in the chain from the initial input suppliers at the very beginning of the production process to the final consumption of products¹⁹. There is need to investigate all the role players along the agro – food value chain continuum in relation to their spatial locality. Market mapping was used to map actors along the potato and tomato value chains. A market map such as one illustrated in Figure 3 below, consists of three inter-linked components – value chain, service providers and the enabling environment. Value chain actors are individuals and/or institutions that conduct transactions with the product as it moves along the value chain; these include farmers, traders, transporters, processors, wholesalers, retailers and consumers. Throughout the chain, value chain actors are supported by market and technical extension services such as seed suppliers and microfinance – these constitute the second component of the market map, the service providers. Mapping these service providers could potentially support the value chain's overall efficiency. The enabling environment is the operating conditions together with the critical factors and trends that shape the value chain's operating environment. This environment consists of structures and institutions such as policies, practices and regulations. Mapping the environment will shed light on the trends/dynamics influencing the value chain.

¹⁹ Ibid

Figure 3 below shows a market map with the inter-linked components.



Source: Hellin and Meijer, 2006

In reality, it is rare to have linear value chains. The assumption is that from the producers the chain goes in all the directions for instance producer to consumer, producer to processor, producer to trader. Investigating the products value chains in a multi-linkage scenario widens the enquiry of our assessment as a way to uncovering new linkages and realities about the chain. This also led to a revelation of new realities on empowerment and strengthening of smallholder farmers.

Market mapping assists in identifying and categorizing key market players and policy issues that hinder or enhance the functioning of the value chain (Hellin and Meijer, 2006). Mapping the market before conducting a value chain analysis will ensure that relevant spheres/domains and actors that influence the value chain are taken into consideration and not omitted.

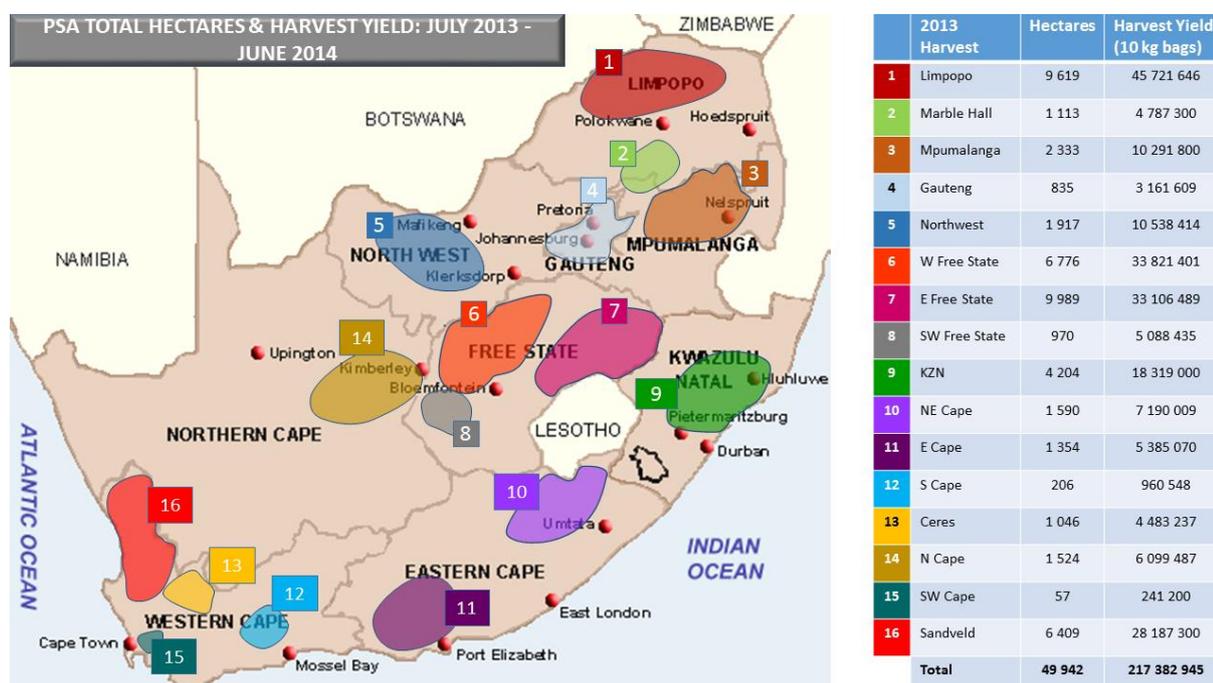
The first step in mapping the market was to identify the important actors and their roles in the value chain. This is a dynamic and iterative process that began with identifying the obvious actors and compiling them. The initial exercise identified potato and tomato farming areas in Limpopo, small and large-scale producers, the main input and service providers, small and large processors and the main markets. Actors were grouped according to their function in the value chain as illustrated in Figure 3 above. At this point, an exhaustive list of the actors was not needed, but rather an idea of key actors for each functional category. Along the course of

the study, as new interactions were revealed, players involved in those interactions were added to the value chain map.

3.2 Area and Scope of Study

The potato and tomato value chains were identified as two food products that would have its footprint on both rural and urban areas. Potatoes are the most popular vegetable in South Africa, while consumption and consumer spending on potatoes has increased in South African households over time. The total gross human consumption of potatoes increased by 1,8% to 1 909 million tons during 2012, and the per capita consumption increased slightly by 0,8% to about 36,51 kg.

Figure 3. Potato production in South Africa (July 2013-June 2014)



Source: Potatoes South Africa, 2014

After potatoes, the tomato is the second most important and popular vegetable in South Africa. In the metropolitan areas of the country, per capita consumption for tomatoes is 12kg per annum. Population growth, urbanization, per capita income and the income elasticity of demand for tomatoes are important factors influencing the demand for tomatoes. The average household in South Africa consumes between five and ten tomatoes per week.

The study was conducted in the Limpopo Province of South Africa. Limpopo Province, by both hectare and harvested yield is a top producer of potatoes in the country. While Limpopo's production is mainly for the fresh table potato market, the province also contributes significantly to the potato processing industry. Of its 42 526 130mil/10kg bags total crop production for the 2012 season, 17% went to direct sales, 16% to processing, 4% to exports, 59% to the Fresh Produce Markets and 4% for uncertified seeds (Potatoes South Africa, 2014).

3.3 Sampling

A combination of stratified random sampling and purposive snowball sampling was employed in the selection of value chain actors. The point of entry in the value chains was at the producer level. Lists of potato and tomato producers – small, medium and large scale producers – were obtained from the department of Agriculture and from the Poverty, Land and Agrarian Studies Centre (PLAAS), University of the Western Cape, who previously conducted a study of tomato and potato production in Limpopo. Stratified random sampling was employed to select 5 producers at each production scale – small, medium and large scale – for both value chains. Stratifying the producers enabled us to capture different nuances experienced by the different categories of producers. The sample size at each producer level was 2 tomato farmers and 2 potato farmers. Upon entry at the production level, the product was followed as it moves along the value chain. Snowball sampling was also applied to identify input and service providers.

3.4 Data Collection and Analysis

Primary and secondary data was collected using a combination of questionnaires, observations, semi-structured interviews, focus group discussions and secondary data review. A cross section of interviews was conducted across the value chain including value chain players, value chain influencers and value chain supporters. The data collection process was conducted rigorously, taking into account both value chains' internal and external environments. Data was collected from respondents randomly selected from 5 districts (Capricorn, Mopani, Sekhukhune, Tshipise and Vhembe districts) in Limpopo and from Pretoria and Johannesburg in Gauteng. A focus group discussion was held with the potato farmers in Limpopo. The majority of the respondents are full time farmers, for whom crop production is the main source of livelihood. On average the educational level of the farmers was considerably low. Most of the participants in the study were elderly people as the participation in farming by youths in the province is very negligible. Data was collected from a cross section of farmers that included both smallholder and commercial farmers. Pack house representatives, market agents and retailers were also interviewed.

Key informants who are not direct value chain participants were interviewed to provide insight on the rural-urban interactions that occur within these value chains. Key informants included officials from the Department of Land and Rural Development, the Department of Agriculture, Forestry and Fisheries, Potato SA, Tomato Growers Association. Secondary data was collected from relevant documents such as policies and reports and papers on studies on rural-urban agro-food value chains in Limpopo. This data informed the preliminary mapping of value chain actors.

A total of 26 respondents were interviewed – 9 producers; 8 traders; 2 input suppliers; 3 technical experts; 3 fresh produce market agents and 2 agro-processors. The interview sessions involved translating interview questions into Venda for the non-English speaking farmers. A list of respondents is available in Annex 1. All data collection methods took cognisance of language considerations, sensitivity to different community groupings, cultural norms and values and the need for disaggregation of data among other issues.

4. Research Findings

4.1 Potato Value Chain – Background²⁰

South Africa ranks 28th in the world in terms of total potato production (tons per country) and contributes about 0.3% to the global potato production. In terms of the African continent, the area under production is only 3.5 % of the total area, but South Africa contributes 11% of the total potato production. Potatoes make up about 45% of the gross value of vegetables in South Africa, and 3% of the total value of all agricultural products. There are a total of about 650 active commercial and 1 000 emerging small potato growers in the country²¹.

Approximately 10 000 hectares are annually registered for seed potato production in terms of the South African Seed Potato Certification Scheme. Approximately 220 registered seed potato growers under the supervision and administration of Potato Certification Service annually produce certified seed potatoes. The bulk of seed potato production occurs in the Sandveld region of the Western Cape; where production can take place throughout the year.

The largest part of the processing industry is made up of processing potatoes into French fries, frozen and chilled products and crisps. Besides these processing categories, the industry also produces mixed vegetables (canned and frozen), baby food, reconstructed potato products and a small quantity of potato starch. During 2012, approximately 16,5% of the total potato production was taken in for processing. About 91,0% of these potatoes were processed into potato chips, both fresh and frozen. The remaining 9,0% was used for canning, mixed vegetables and other purposes. A substantial quantity of the potatoes bought by individuals also ends up in restaurants, cafés and other fast food outlets in the form of French fries. The South African potato processing industry has grown over the past ten years at a rapid pace. This industry now represents 19% of the total potato crop, although this figure reflects only formal business.

The bulk of the processing industry's fresh potato supply comes from contracted producers and the balance is purchased from the fresh produce markets (See Figure 5 below). As can be seen in Figure 5 below, approximately 4,2% of total local potato production (more than 69 090 tons), was exported during 2012. The quantities of potatoes exported increased by 33,0% from 2011. During 2012, 98,2% of total potato exports went to Eastern, Southern and Western Africa. Exports showed an average annual increase of 21,3% from 2008 to 2012.

During 2012, approximately 106 million x 10-kg pockets of potatoes were sold on the major fresh produce markets, as against 101 million in 2011—an increase of 5,0%. The Johannesburg fresh produce market remains the biggest outlet, followed by the Tshwane, Cape Town and Durban markets. During the 5 years from 2008 to 2012, potato sales on the major fresh produce markets on average showed an increase of approximately 2,9% per annum.

²⁰ Potatoes SA. www.potatoes.co.za

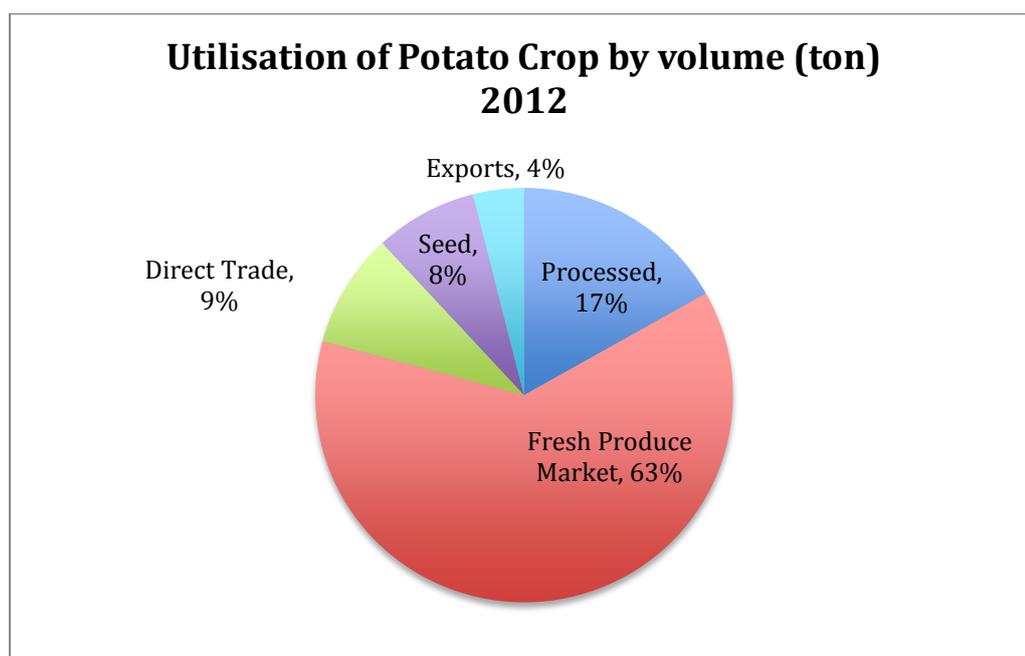
²¹ Steyn, Martin. 2013. Multimedia Guide to Potato production in South Africa

<http://nbsystems.co.za/potato/index.htm>

Although the SA processing industry is growing fast, it is still behind in size when it's compared with the potato processing industries in developed countries. The growth in the industry can be ascribed to the following factors:

- The expansion of the fast food industry;
- The higher average income of the population;
- The enlargement of processing facilities;
- The rapid rate of urbanization.

Figure 4. Utilisation of Potato Crop by Volume



4.1.1 Potatoes Value Chain Findings

Small –Scale Potato Production

The potato-growing season in Limpopo starts from April to August each year. Farmers obtain potato seed from potatoes stored from the last season as well as from input suppliers. Land preparation was done using hired tractors or free tractors provided as a service to the community. Smallholder farming in the province is characterised by landholdings of less than 2 ha and the land under cultivation is very small. Land tenure varied among the smallholder respondents took several forms; communal ownership; where farmers were granted permission to occupy by the chief, family land and full ownership.

Yields were also low, with the interviewees measuring their output by the number of bags and or number of crates. Harvests from the last season ranged from 10 bags to 20 crates. Such quantities, especially when marketed individually are too small to effectively access formal markets directly. The harvest produced by these farmers is insignificant and insufficient to even initiate a business arrangement with large agro-processors who require a large quantity of supply. Consequently, while farmers sold most of their produce

(with the exception of damaged potatoes that were reserved for household consumption), they relied on local traders and hawkers for a market. Traders procured directly from the farm, often selling the produce on the roadside markets and in spaza shops within the province.

There was no evidence of collective marketing among the small-scale producers interviewed, traders approached them individually and the farmers were largely price takers with limited power to negotiate with traders regarding price. There was no direct link observed between the small-scale rural producers and the urban market both within the province and elsewhere.

The farmers' access to information such as price information was solely from the local markets and their peers. With the exception of the farmers from Tshipise who received inputs (fertilizer) and equipment from the Department of Agriculture most respondents had little or no access to extension services and support from government, agricultural non - profit organisations and private extension service providers operating in the area.

But this is not a full reflection of the smallholder potato production in the province. Box 1 below shows a Case study of Malukele Agricultural Cooperative. This is an example of the benefits that can accrue from farmer collective action and mentoring.

Producer Level Challenges

The following are some of the challenges faced by small scale and commercial producers along the potato value chain:

- Small scale farmers indicated that potato farming for them is costly due to the amount of investments that has to be spent on improving the land and installing high infrastructure costs of potato production serve as a barrier to entry into the industry. Access to tractors during the ploughing phase is very expensive for the farmers;
- Farmers require skills and knowledge to improve their productivity and access to markets;

Box 1: Makuleke Agricultural Cooperative Case Study

The Makuleke community is found in the far north eastern side of the Limpopo Province next to the Kruger National Park Punda Maria gate. They are one of the successful land claimants in the Kruger Park. When the Department of Agriculture in Limpopo went on the Irrigation Schemes Revitalization Program, the Makuleke Irrigation Scheme was one of the earmarked ones. A the studyll-known potatoes commercial farmer became a strategic partner to the community, expanding his operations by utilizing their land while the community benefits from the skills of planting the crops. Potatoes South Africa (PSA) also helped with training the committee members and the community members at large to make the operation sustainable even after the commercial farmer left. Community members were also taken to colleges of agriculture by PSA to study agronomy so that they can come back and add value to the partnership. The partnership agreement was signed between the community and the farmer and planting commenced in 2008. The commercial farmer helps with inputs as well as mechanization and market and shares the profit with the farming community on an agreed basis. In good years, the partnership will plant in excess of 250ha at a time, rotating between potatoes and maize. However, this year, due to drought and the low level of dam that feeds their irrigation, only 67ha in total has been planted.

- The continual increases in input costs impact negatively on the profitability of farmers located far away from suppliers;
- Distances to the main markets serve as a barrier to entry into the market and further reduce marketing margins;
- Timely availability of chemicals is also regarded as a major challenge by the small scale farmers;
- Production is heavily dependent on the use of fertilizer, and the volatility in prices and availability has a negative impact on profitability;
- Urbanization has resulted in the farming being practiced by mostly older people in the province as the youth move to the cities in search of employment and 'greener pastures'.
- The area where these farmers are practicing agriculture is very dry. Farmers have access to irrigation canals. However, they state that for the greater part of the year the canals are dry.
- High costs of production including labour costs
- The threat of land reform
- Increased production for the supply of international markets while at the same time to decrease production cost and to make profit.
- Protection of the local potato industry against dumping practices and protection against imports from subsidized countries.
- Phyto-sanitary requirements for the European markets.
- Climatic conditions that affect production.
- Packaging paper price on the world market.
- Rapid escalation in production costs especially fuel.
- Lack of infrastructure in remote rural areas in accessing markets, especially for small-scale producers.
- Water for agriculture. South Africa is located in semi arid part of the world with an average rainfall of 450mm per annum – well below the world average of approximately 860mm per year. As a result, South Africa's water resources are, in global terms, extremely limited. This is of special importance to the potato sector, which is heavily dependent on water for irrigation given that 70% to 80% of all potatoes are produced under irrigation.
- Cheap imports have the potential to jeopardize domestic processing industry.

Pack house and Distribution Centre

After production, while some small-scale farmers sell their potatoes in bulk to traders, some potatoes go through the pack house first before reaching the consumer. The manager of FreshMark in Polokwane was interviewed. The FreshMark pack house and Distribution centre is an exclusive fruit and vegetables purchasing and distributing unit of Shoprite Checkers group (Shoprite, Checkers, Friendly 7/11 and OK stores.) The centre in Futura, Polokwane deals with the delivery, packaging and storage operations of up 800 lines of fruits and vegetables. FreshMark purchases potatoes from various farms depending on the season, purchasing up to 20 000 of the 10kg packets of potatoes per week. Small-scale farmers deliver their own products, while they can collect from the large-scale commercial farmers. Potatoes are then distributed to the various retail shops within the group. Packaging is regulated and reflects information such as the supplier code, sell by dates, delivery/purchase dates; making the product traceable. The centre in Polokwane handles relatively smaller volumes (20000 pockets/week) in comparison to other distribution centres in the same group across the country. Some of these centres reportedly handle 150,000 pockets per week.

Market Agents

Market agents were interviewed in both Limpopo and Gauteng. Gauteng was selected by virtue of it being the home of being two of the country's largest fresh produce markets and Limpopo as the area under primary study. The fresh produce markets in Gauteng are supplied by largely commercial farmers. None of the market agents interviewed were supplied by emerging or small scale farmers. Agents attributed this to consistency of supply volumes and the quality of produce required being an issue face by most emerging and smallholder farmers.

The produce comes from different areas depending on the time of the year. Potatoes are produced in different parts of the country at different times during the year, allowing for the availability of fresh potatoes throughout the year. Eastern Free State, Western Free State, Limpopo, Highveld and Sandveld were identified as some of the areas where potatoes were coming from. There are numerous varieties of potatoes including but not limited to mundials, sifra, valor and lanorma. Information on volumes traded and price is available on the website for the fresh produce markets. One of the respondents indicated that in the peak season he sold 60 000 to 80 000 of 10kg potato bags per week. In the low season, he sold 30 000 to 50000 of 10 kg potato bags per week.

Supply and demand factors are used to determine the price, but farmers are price takers. Prices fluctuate on the market depending on these supply and demand factors. For one parcel/load sent, the farmer can receive different prices depending on what was sold on a particular day. Upon delivery and completion of the parcel which was sent to the agent, the farmer is then paid. Agents conduct shop visits and phoning buyers to get orders on the next day's sales as well as sourcing some sales promotions.

The market agents identified competition from the other agents as the biggest threat to their activities. They also identified quality of produce, land claims and direct sales as factors that affect their operations. They indicated that about 5% of the product is lost between procurement and selling due to theft, damage. Market agents charged farmers 7.5% for facilitating transactions with the buyers, while the market took 5%.

According to the agents, they emphasised that to become a supplier one only needs a farm and to build the relationship between supplier and agent. Market agents also incur costs related to establishing and maintaining their relationship with various suppliers through visits to farmers. There is no special certification was required by agents in order to become a supplier. The minimum requirement is to ensure that quality standards are upheld as suppliers must send produce that is fit for human consumption. The market agents act as middleman, and do not own the produce in the market. Consequently, if the produce is not bought, the farmer still needs to find an alternative market for this produce hence any losses are at the farmers cost.

Choppies and Fruit & Veg City were the biggest buyers of the agents interviewed. The biggest buyers bought daily and the volumes were between 400 and 2000 bags of potatoes each. Two systems of purchasing from the market agents emerged from the interview. The first was for some retail groups. In this system, individual stores within the group placed an order onto their centralized system, following which an order for the retail group was placed with the market agent. Each store then sent its truck to the market and trucks from each store were then loaded following purchase from market by the head office. For these transactions, each store paid 5% to head office. On the other hand, store buyers could interact directly with the market agents and place their individual orders.

Processor Constraints and Challenges

Interviews with processors, together with information from secondary data sources revealed the following as the major challenges faced by potato processors:

- Lack of consistency in the quality and quantity of supply from some developing farmers.

- The weather and climate: Unfavourable conditions such as frost, drought, extreme heat and cold as well as hail tend to affect supply. When these occur, farmers either cannot supply altogether or they may not have the quantities required.
- Price vs. location: Where processors service the rural areas, their customers are often unable to pay what urban consumers may pay.
- Electricity supply: Electricity supply affects both storage and processing activities so challenges with electricity supply have resulted in a need for generator use. This is unsustainable especially in the face of fuel price increases and given the capacity of some of the processors. For example a processor in Centurion has to use a generator that uses 600l/hour of diesel.
- Supply vs. Demand: Even when farmers fail to supply adequate raw materials, the customer still expects the processor to deliver good quality and on time. Processors sometimes found themselves unable to meet the demand.
- The lack of a Fresh Produce Market in Polokwane: when farmers fail to meet supply requirements, it would be easier for the processors if there was a central point from which they could get an alternative supply. The markets would also serve as a central point for farmers to bring their supply. At the moment, the processor has to go to Goseame market at a significant addition cost if an alternative supply is needed.

Retailers

Five retailers (Spar, Woolworths, Fruit & Veg City, Choppies, Pick & Pay) were interviewed in Limpopo and Gauteng. None of the individual retailers procured directly from the farmers, but either used the centralized procurement system of the retail group, or went directly to the Gauteng fresh produce markets. However, retail groups procured directly from farmers having special supplier agreements directly with farmers. In Gauteng, some retail shops in the Spar group indicated that they only had one supplier for tomatoes, which was ZZ2, and 2-3 suppliers for potatoes. The individual supermarkets did not have formal supply arrangements with the market agents but procured through them on a needs basis, and negotiated prices weekly at the market. Retailers had a monthly account with the fresh produce market, and went to procure directly. The most common tomato varieties purchased and sold in that group were from ZZ2. Customers to retailers include schools, crèches, restaurants as well as families and individuals who buy daily, and weekly.

The Retail Sector has developed and evolved over the years. While traditionally, retailers procured largely from the fresh produce market, most often than not, it can be observed that larger retail groups have moved towards more exclusive arrangements with farmers producing for them directly. Retail groups also largely still buy from fresh produce markets as a group. In some retail groups, each store had its own trucks which went to the markets to procure potatoes. Farmers directly supply distribution centres of retailers, in bulk and stores procure from these distribution centres.

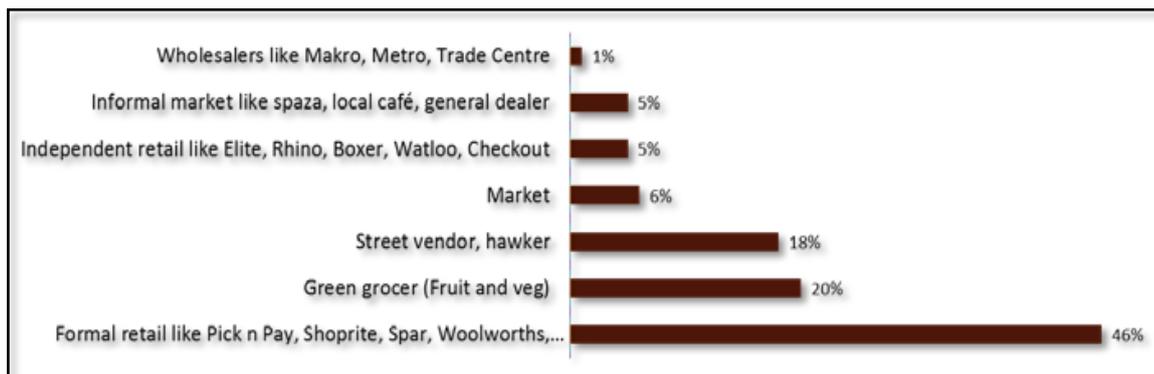
Retailer constraints

Individual retail stores could not always buy directly from the farmers as these shops' quantities were considered too small by some commercial producers. None of the Gauteng retail stores interviewed procured directly from small-scale farmers. This can be attributed to their location in relation to most farmers and the transaction costs involved in procuring from individual small farmers. From the perspective of some retailers within retail groups, in some instances it would be easier to go directly to the market without having to pay the 5% charged by the head office for administration.

Consumers

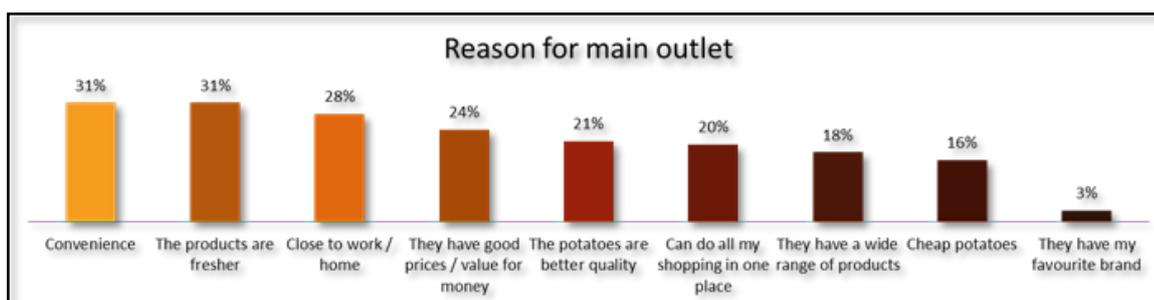
A study commissioned by Potato SA shows that consumers consider potatoes a good value for money product and they like to eat potatoes because potatoes taste great, are filling and are easy to prepare. When asked where they purchase their potatoes the majority of interviewees indicated that they purchase their potatoes from the traditional formal retails, but it also shows that a substantial portion is bought through the informal and green grocer channels (CHIPS: July/August 2014).

Figure 5. Consumer choice of outlet for purchasing potatoes



The study further showed that the most common factors determining where consumers purchased potatoes were convenience, location in relation to home or work and product quality. Questions with regards to purchase frequency and quantity indicated that 58% of consumers purchase potatoes at least once in two weeks and that the majority of potato sales still take place in 10 kg and 7kg packaging (CHIPS: July/August 2014).

Figure 6. Reason for main outlet



The findings of this Potato SA study corroborate the findings of a study by the University of Pretoria in 2010 on the food purchasing behavior and perceptions of the South African middle class and wealthy consumers. As Table 1 below shows, consumers consider convenient location, affordable prices and good quality as the dominant factors when selecting a purchasing outlet for vegetables.

Table 1. Consumer Purchasing Decisions

Retailer:	Share of Overall sample preferring retail outlet when purchasing vegetables	Reasons for choosing
Pick n Pay	29%	Good quality, convenient location and affordable prices
Fruit & Veg City	28%	Affordable prices, good quality and wide selection
Shoprite / Checkers	14%	Affordable prices, convenient location and good quality
Local greengrocers	12%	Convenient location and affordable prices

Source: University of Pretoria & NAMC, Food Quality Project 2010

According to household-level data of the South African Income and Expenditure Survey 2010 / 2011 the middle class have a dominant contribution to estimated expenditure on fresh potatoes, while expenditure on potato crisps and frozen chips are dominated by wealthier consumer segment followed by the middle class. Less affluent consumers became relatively more important within this expenditure on potato crisps / chips overtime.

4.2 Tomato Value Chain - Background²²

The country's approximately 695 tomato producers produce approximately 40 000 tonnes of tomato annually. Of this, 95% is commercial production while 5% constitutes emerging sector production. The industry employs approximately 22 500 people with at least 135 000 dependents. Multipliers in the supply chain are the transport of the tomatoes to the fresh produce markets and processing plants, processing factories, fresh produce markets, independent traders, supermarket groups, packaging factories, informal traders and fast food outlets. A significant proportion of this total workforce is composed of low skilled, minimum wage labourers.

The industry uses four main existing channels for the marketing of their product. The channels are as follows: local fresh produce markets, exports, processing and direct marketing. Sales on fresh produce markets and direct sales constitute approximately 69,2% of the total volume of tomato sales. Figure 4 below shows tomato share by fresh produce market in South Africa in 2012/2013 when Joburg market was the biggest market for tomatoes. Tomatoes are mainly produced for the local market, with limited exports to the Seychelles,

²² Department of Agriculture Forestry and Fisheries. 2013. A Profile of the South African Tomato Value Chain.

Zimbabwe, Zambia and Mozambique. Fresh Produce Markets represent the dominant player for tomato marketing as with potatoes, often emerging as price setters. Other marketing channels include direct sales to retailers and consumers, both formal and informal markets such as with hawkers and spaza shops, independent wholesalers, supermarket wholesalers, as well as contract buyers. Market agents play a major role in tomato marketing in South Africa. They form part of a large network of intermediaries occurring throughout the tomato value chain and performing the important function of facilitating transactions. Prominent examples include export agents, van buyers and contract buyers. Owing to the geographic distribution and production of tomatoes, a sufficient volume of good-quality tomatoes is normally being produced almost throughout the year to meet the daily demand. The quantity of tomatoes sold on the 19 major fresh produce markets decreased by 4,6%, from 278 242 tons in 2011/12 to 263 969 tons in 2012/13.

Processing of tomatoes consists of canning, freezing, dehydration and juice production. Tomatoes are processed into whole peeled, tomato and onion bruises, paste, shredded, puree and paste concentrate. According to DAFF, the leading players in the tomato processing industry are Tiger Brands, Nestle and Giants Canning. A significant portion of tomato processing also occurs via entities that use tomatoes (and tomato products) in food preparations. This includes caterers, hospitality and other institutions such as corporate, government institutions like hospitals and prisons (DAFF, 2013).

Despite production outstripping demand, South Africa still imports processed tomato and potato products. A report by ITAC shows that although South Africa has a very strong agricultural sector; in most cases it is self-sufficient in fresh fruits and vegetables as well as in inputs for its food-processing sector. Imports are concentrated in certain product types and reflect the areas where South Africa has limited capacity to meet local demand. In 2009, some 70% of the volume of imports took place across 10 tariff headings with dried kidney beans being by far the most important in the category and prepared potatoes and prepared tomatoes being a part of that category as well.

4.2.1 Tomato Value Chain Research Findings

Tomato Input Suppliers

Both smallholder and large-scale producers make use of fertilizers, pesticides, herbicides, seeds and seedlings. The main role players are NTK, Sasol, Sataka seedlings, Martindale seedlings, W-D seedlings, Starke Ayres, P&A and Marlo. Due to lack of credit smallholder producers are not able to afford modern and mechanized inputs such as greenhouses and tunnels. Two input suppliers were interviewed (tomato seed and a tomato seedling supplier). The interviewed tomato seedling supplier (Martin Dale) operates from Tarantaal,

Tzaneen has customers around Limpopo (Tzaneen, Giyani, Mooketsi). Mostly servicing the small emerging farmers who buy 1000 – 30,000 plants at a time, this supplier buys seeds from Sakata and takes six weeks to produce seedlings, which are then sold to the farmer. Larger commercial producers such as the ZZ2 farms produced their own seedlings.

Tomato Producers

Tomatoes are produced in all five districts in Limpopo and producers include emerging, smallholder and large-scale producers. Tomato producers interviewed were smallholder farmers in Capricorn, Mopani and Sekhukhune districts and one large-scale producer in Mopani district.

Box 2: Case Study of Sandquest Tomatoes

Mike Henning formed Sandquest in 1995 and today it's a multi-million rand company and the biggest supplier of the Saladette tomato in South Africa. The business employs an estimated 960 people from in and around Limpopo and currently produces and distributes 14 000 tons of tomatoes per year. The business produces saladette and round tomatoes. This Global GAP accredited businesses' product range includes 1kg packets, 6kg Boxes and 9kg Boxes. Packaging materials are made of polypropylene plastic, to maximise freshness and cartons are made from corrugated packaging specially designed to allow efficient stacking. The produce is transported using Sandquest's own fleet of trucks and refrigerated trucks to deliver and distribute throughout the country, supplying various retailers. Owning their own refrigerated transport trucks; they cover a large distribution area. Sandquest employs an estimated 960 people from in and around Limpopo. Sandquest supplies partners such as FreshMark retailers, which in turn supply to retail chains such as Checkers. They were the Shoprite/Checkers 2010 "Supplier of the Year". Their main markets of distribution are fresh produce markets and include Johannesburg, Durban, Pretoria, Pietermaritzburg, Bloemfontein, Witbank, Vereeniging, Benoni to Cape Town with a bulk of their crops going to Johannesburg and Durban. Along with creating employment opportunities through Sandquest, Mike trains and mentors young farmers in the surrounding rural areas. Sandquest has subsidized a clinic located on the farm which benefits the whole area, working in conjunction with the organisation "Doctors Without Borders"; a large International French NGO. They also see the value of investing in the youth, and the positive impact of sport, as a result, formed a local soccer team hosting soccer matches in the area.

Producer Challenges and constraints

From the interviews with the commercial and small scale producers, the following emerged as challenges and constraints:

1. Lack of Resources – land, inputs, finance: Many smallholder producers indicated that the largest constraint and limiting factor in their growth as commercial producers was the lack of resources, namely material inputs, adequate land to expand and capital. Annual production for each producer was dependent on available funds to purchase inputs such as seeds/seedlings, fertilizers and chemicals.

One producer in particular, indicated that in some years he planted three hectares and in other years he planted five hectares depending on how much seedlings and fertilizers he could afford. Unlike large-scale producers, smallholders do not have access to credit from financial institutions as they require collateral which smallholders are not able to provide, in addition, smallholders and emerging farmers are considered high risk by financial institutions as they often do not diversify their farming activities and are relatively new to commercial production with no stable track record.

Market role players in the value chain repeatedly pointed out that smallholder producers fail to meet consistency and quantity requirements, this is largely due to poor access to land for large-scale production – for smallholders with sufficient resources. Successful producers who are ready to expand their production are limited to their 2-6 hectare production as they are not able to access or afford additional land.

2. Climate Change: Due to lack of adequate resources to adapt and mitigate the effects of climate change, smallholder producers risk losing an entire yield to floods, hail, storms and droughts. Large-scale producers such as ZZ2 and Montina are better able to manage the adverse effects of climate change as they have adaptation strategies such as multiple production sites, greenhouse tunnels, and modern irrigation technologies.

3. Distance to Markets and Lack of Transport: Smallholder farmers are limited in participating in markets such as the Mooketsi, Johannesburg and Tshwane Fresh Produce Markets due to their distance from the farms. Producers located closer to Polokwane were able to supply to Goseame market and to supermarkets in Polokwane, but producers located in Modjadjiskloof and Giyani in Mopane district found it to be too costly to supply markets in Gauteng. For producers, the further the market the higher the transaction costs which means reduced margins, thus many producers indicated they preferred selling at farm gate level to local

Box 3: ZZ2 Case Study

ZZ2 is a farming conglomerate operating in Mooketsi, Politsi, Polokwane and Musina in the Limpopo Province, Ceres and Riebeeck-The studys in the The studystern Cape and Langkloof in the Eastern Cape of South Africa. Bertie van Zyl founded the business in 1949. He began producing tomatoes successfully in 1953. Today, ZZ2's product range includes tomatoes, onions, avocados, apples, pears and cattle. A world leader in tomato production and large-scale biological farming practices; ZZ2 produces the region of 160 000 tonnes of tomatoes annually. ZZ2 utilises an ecologically balanced nature farming approach called Natuurboerdery® in which nutrient adjustments are based on plant growth stage, soil chemistry and regular tissue sap analysis. All the ZZ2 farms are GlobalGap accredited. The tomatoes are produced mainly for the local market with limited exports to Reunion, Seychelles, Dubai and Oman. ZZ2 farmers produce the following tomatoes varieties throughout the year:

- *Long Shelf Life (LSL) tomatoes, which are the normal, round tomatoes used for salads and cooking.*
- *Roma type tomatoes also known as saladette or jam tomatoes. ZZ2 has branded these tomatoes their "Italian Roma tomatoes".*
- *Cocktails - ZZ2's flagship here is the Romanita but they also produce Santé type tomatoes branded ZZ2's "Spanish Santé".*

ZZ2 products are available at National Fresh Produce Markets located in all the main centres and most major towns (Johannesburg, Pretoria, Cape Town, Durban, East London, Port Elizabeth, Bloemfontein, Welkom, Vereeniging, Kimberley, Klerksdorp, Nelspruit, and Pietermaritzburg). ZZ2 also has four markets that sell fruit and vegetables to the local communities in Mooketsi, Polokwane, Waterpoort and Roedtan. ZZ2 produces and packs for all the major supermarkets including, Pick 'n Pay, Spar, Shoprite/Checkers (FreshMark) and Woolworths.

hawkers and shops. Thus, proximity to the market is a crucial factor in market participation for smallholder producers.

4. Low Quality and Quantities: Lack of adequate storage facilities greatly affects the quality of tomatoes. Majority of producers reflected that they did not have cold rooms, pack houses and refrigerated transport for

post-harvest handling which greatly denigrates the quality and value of their produce. Some producers indicated that they only harvested their tomatoes when there was a buyer or the day before taking their produce to the market.

5. Inconsistency: Modern markets (supermarkets, wholesalers and agro-processors) prefer making larger and fewer transactions i.e. FreshMark prefer purchasing eight tons of tomatoes from two suppliers over purchasing same tons from nine suppliers, as smallholders seldom able to provide eight tons of tomatoes per day. Each transaction has 7-8 control checks when delivered at the FreshMark distribution centre/pack house, thus receiving nine deliveries of tomatoes alone can be chaotic and labour-intensive.

6. Land tenure: For both commercial and small scale farmers, land tenure issues presented a threat to the business. Commercial farmers expressed some anxiety over how land claims would be resolved.

Pack house and Distribution Centres

FreshMark Polokwane, the Shoprite Checkers Fresh produce distribution centre, is the largest procurer purchasing eight tons of tomatoes per day supplying 50 stores across Limpopo and Northern Botswana. The distribution centre purchases five varieties of tomatoes – round, jam, romanita, on the truss and cocktail tomatoes. This is relatively small compared to other centres in the group such as FreshMark Centurion, which supplies 360 stores.

FreshMark has growing programmes with producers, both large and small-scale, where supply quantities per week per year are agreed upon prior to planting guaranteeing FreshMark consistent supply throughout the year. These growing programmes require high levels of planning and organization by the producers – including plans to minimize risks, which is often a challenge for small producers.

ZZ2 is FreshMark's largest supplier as they have a competitive advantage over all producers – they are able to supply tomatoes all year round in the right quantities and with top quality. Due to scale and the fact that they have their own refrigerated trucks for transportation, FreshMark is better able to bargain with suppliers such as ZZ2 on price. In addition to transport costs, packaging represents a major input for the business as all packaging is regulated, uniform across the group and must meet traceability requirements. FreshMark requires that all its suppliers be Eurogap certified.

It is difficult for smallholder producers to penetrate this market due to poor product quality, inconsistency in supply, low volumes, inability to meet market requirements i.e. food and safety certification, packaging and traceability labelling. Smallholder producers are not able supply tomatoes consistently throughout the year, with the required quality and quantities. Retailers such as FreshMark indicate that during peak production seasons they purchase from smallholder producers, however unlike large scale producers like ZZ2 and Montina, these smallholder producers are not able to supply during the off season.

Once the product arrives and passes through all the checks and controls it goes into the cold room, where it is stored for a day at temperatures ranging from 0-2°C. Farmers are paid two weeks after delivery. Stores place orders on a daily basis and come and collect from the FreshMark depot.

The company highlighted that it does not have any major challenges with its operations. It pointed out that access to finance is a major problem, due to the high risk nature of their business. Collateral required by most financial institutions is too high for most borrowers. Secondly, water problem in Limpopo due to the hot and dryness of the area. The local dams do not have the ability to store more water. It is vital that the capacity of the dams be increased.

Box 4. Smallholder farmers in vertical integration of the supply chain: Nojax

Nojax is a broad-based economically empowered tomato processing plant owned by Agro-Processors of Limpopo (APOL). APOL was formed by the Limpopo Tomato Growers Association (LTGA) to address market challenges faced by smallholder tomato farmers. LTGA is an association (membership organization) of smallholder tomato farmers in Limpopo that was formed in 2000 in response to the huge losses experienced by tomato producers in Limpopo in 2000 when there was overproduction of tomatoes and limited markets. With the help of funding from the Department of Agriculture, APOL was able to purchase 51% shares from Neotech Industries (an agro-processor in Politis) and together they established Nojax.

Members of LTGA supply Nojax with ripe tomatoes used to produce tomato paste, puree, powder, tomato and onion mix, whole and half canned tomatoes. The factory has trucks that collect tomatoes from the farmers. The tomatoes are processed into tomato paste, puree, powder, whole & half peeled canned tomatoes and also tomato and onion mix. These products are supplied to restaurants, fish canning and spaghetti manufactures and supermarkets nationwide. APOL also supplies other agro-processors namely All Joy, Unilever and Pretleys. Their customers place orders thereafter they come and collect the products.

Processors

There are few rural-based tomato agro-processors in Limpopo. Processors identified were Tiger Brands, Montana, Indenex, Giant Foods and Nojax/ Agro-Processors of Limpopo (APOL). Tiger Brands buys mostly tomatoes from local farmers in Limpopo, both commercial and small scale. The company prefers to work with individual farmers then with farmers' cooperatives/ farmer groups / market agents. The company has a farmer development programme which manages the tomato suppliers. Farmers approach Tiger Brands to initiate the deals. The company has 107 regular suppliers in its database. Developing farmers provides 30 percent of the product. These farmers are issued with formal contract arrangements in order to supply the company. These suppliers work very hard in supplying the company with the product annually at harvesting. Most farmers supply when the crop ripens between April and October each year.

Issuing of the next season contract is determined by the performance of the farmer. This is determined by produce quality and quantity. Most developing farmers have landholdings of 5 – 10 ha. The Company provides (10%) soft loans as an advance of the payment to the developing farmers for sustaining operations during the growing period.

Price is largely determined by the international price of tomato paste. If local prices are higher than international prices, it will be cheaper to import tomato paste. The company via the depots, which are close to various farm areas, manages the distribution of the product. The company absorbs the cost of collecting the produce from these depots. There is no need to store the produce as it is immediately converted into tomato paste for the manufacturer of All Gold tomato sauce. Tiger Brands provides tomato sauce to the whole population of South Africa and the region.

Processor Constraints and Challenges

Value Chain Actors are increasingly vertically integrated in the supply. But vertical integration is not without its own challenges. For Norjax these include:

- Shortage of tomatoes: Norjax frequently runs out of tomatoes as the smallholder farmers are not able to produce at the capacity that the factory requires, thus as a result the factory purchases tomatoes from larger commercial farmers such as Montana and ZZ2. The irony is that the factory was formed to service the smallholder farmers; members of LTGA but they are failing to produce enough quantities so now Norjax purchases from any farmer.
- Competition: Dumping of cheap tomato products by countries that can produce at a lower price such as China. This prompted Norjax along with other Agro-processors to fight back through the DTI and ITECH who have now protected the domestic market by increasing tariffs. This is however only for a limited time.
- Climate Change: Drought and flooding have had disastrous effects on smallholder farmers, leading to supply problems.
- Lack of finance: Many smallholder farmers do not have access to finance as banks require collateral, which they do not have. The Government supports them through various programs such as CASP, MAFISA and Lejima. The amounts provided by these initiatives are too small and inadequate to support farming activities to boost productivity.

Fresh Produce Markets

Since the closing down of the Pietersburg/Polokwane Fresh Produce Market Limpopo does not have sufficient Fresh Produce Markets to cater for the producers and retailers. Existing markets include the newly established RSA Mooketsi Market in Mopani district and Goseame market in Polokwane; a second RSA market is being established in Polokwane. However, these markets are relatively small in size and as a result, value chain actors are serviced by the Gauteng markets. Larger and more stable smallholder producers indicated that their main market was the Johannesburg Fresh Produce Market. This is the same market that local traders such as Choppies, Fruit and Veg City and other supermarkets source their tomatoes.

Gauteng receives a huge influx of tomatoes from Limpopo yet sending large quantities back to Limpopo. As a result of this movement, one would expect the average supermarket tomato in Limpopo to be inflated as it includes double transport costs. Producers indicated that they preferred sending their produce to the markets in Gauteng than sell locally to retailers who offered lower prices, yet retailers noted that the prices in Gauteng were much better than purchasing directly from the producer.

This contradiction can be attributed to the fact that for larger producers, Gauteng fresh produce markets represent a market where they can supply all their produce at once and not incur the transaction costs related to supplying smaller quantities of produce to various smaller markets. The demand at the Gauteng market also ensured that their produce is actually bought. On the other hand, retailers benefited from the collective bargaining power during the marketing process as they were able to procure large quantities as retail groups and benefit from discounts.

In the Gauteng Fresh Produce Markets tomatoes were coming overwhelmingly from Limpopo province and supplied by largely a single supplier (ZZ2). Market agents dealt with individual retail stores and retail groups, together with processors and individual consumers.

Retailing

Due to the barriers to entry for tomato production and marketing being generally low, tomato sales and marketing activities take place in many places within the Limpopo province. While tomatoes are sold in retail stores, fresh produce markets, hawkers and farm stalls also represent places in which tomatoes are sold. It is also not uncommon to find bakkies parked by the roadside, filled with tomatoes for sale. Hawker and traders within townships also buy and repack tomatoes for sale to the community.

The main retail actors in the tomato value chain include the four retail giants – Checkers Shoprite, Pick n Pay, Spar and Woolworths. Other actors the studyre Boxer stores, Choppies, Fruit and Veg City and Goseame Open Market. These retailers have two markets, the producers and the Gauteng Fresh Produce Markets. Boxer stores and FreshMark (Checkers and Shoprite) procure directly from producers, mostly from ZZ2 and Montina. Majority of the retailers however, indicated that they mainly sourced tomatoes from Johannesburg and Pretoria, largely due to centralization of operations i.e. the head offices and distribution centres for most of these supermarkets are located in Gauteng and are responsible for procurement and distribution of products. In such cases, retailers made use of a centralised system to order their tomatoes and they would have either have them delivered from the retail group’s central distribution centres or individual shops within the group would send their trucks to collect the produce depending on the policy within the retails group. Some retailers have a central distribution system in place for tomatoes where all stores within the group get their tomatoes from the head office.

In some instances, the retailers may spontaneously diversify their source markets due to unforeseen requirements of large quantities on a daily basis. Traders indicated that such an event is due to smallholder producers not being able to supply these quantities consistently and with the right quality.

With regards to information sharing, some smallholder producers indicated that they accessed market information such as prices, potential markets and their dynamics from other producers, cooperatives, market agents and the Limpopo Tomato Growers Association (LTGA). Farmers shared information amongst each other on how to access markets. RSA market agents from Mooketsi Fresh Produce Market also provided information and linkage to markets for some smallholder producers. Markets used by the small-holder producers were individuals in the community, hawkers/vendors, small local retailers, the Johannesburg and Tshwane Fresh Produce Markets and local agro-processors.

Farm Gate

Most producers, particularly the small producers indicated that they sell their produce at farm gate level to individuals and hawkers for various reasons:

- i. Farmers are not aware of viable local markets to take their produce to.
- ii. The available viable markets are located in Gauteng – the Johannesburg and Pretoria markets, however the transport costs are too high for these farmers and the market prices fluctuate thus it becomes too much of a risk for the farmer to take his/her produce to these markets.
- iii. Some smallholder farmers feel that markets such as Johannesburg, Tshwane and Mooketsi Markets are favourable towards large-scale producers and market agents do not act in the best interest of smallholder producers.
- iv. Farmers prefer selling at farm gate level as this cuts down on costs of transport, as well as market agent commission and VAT charges.

Market Agents however observed that trading at farm gate level has several disadvantages for smallholder producers; firstly farmers are short changed by hawkers who offer low and below market value prices.

Furthermore, trading at market level makes producers vulnerable to robberies as they are in possession of cash.

Consumption

A study by the University of Pretoria investigating the food purchase behavior and perceptions of the South African middle class and wealth consumers showed the results below. Also, more perishable vegetable such as tomatoes were purchased more regularly. The nature of the perishability of tomatoes is determined by the quantity to be purchased by consumers. Furthermore, the perceived importance of purchase considerations for tomatoes were as follows:

The most popular tomato types were medium tomatoes (regularly purchased by 70% of purchasers) and large tomatoes (26% of purchasers). The five most important considerations for consumers when purchasing tomatoes were:

- Freshness (most important factor for 30% of total sample);
- Price (most important factor for 14% of total sample);
- Expiry date (most important factor for 10% of total sample);
- Firmness (most important factor for 8% of total sample);
- Quality guarantee (most important factor for 8% of total sample).

4.3 Value Chain Supporters

Financial Institutions

Financial systems are in place across the value chain. Through government, farmers are able to access finance through CASP and MAFISA. In addition there traditional financial institutions such as the Land Bank are there to service the needs of the farmers.

An official from the Land Bank based in Polokwane was interviewed. He gave a brief account of the lending products they offer to farmers. The bank offers short to long-term loans to the farming community in South Africa. The size and tenor of the loan varies with each product. First, the bank offers long term loans which are fixed instalment loans for capital expenditure. The bank clients use these to purchase land and installations of machinery and equipment, farm improvements, water project schemes and other agricultural related capital expenditures. The tenure of these loans is 5 to 15 years. Security for this type of loans includes covering bonds, on moveable and fixed assets. Second, the bank offers medium term loans; these are in the form of cash credit account such as production credit facilities. It was indicated that the farmers over the years have used these loans for supplementing working capital. Finally, short-term loans are used for seasonal finance requirements in the agricultural cycle. The tenor is usually a maximum of 18 years.

The bank also offers the Retail Emerging Market facility focusing on supporting historically disadvantaged South Africans (HDSA) farmers' graduation into bigger farm operations and access to markets. The bank is however, not lending to agro-processors.

The interviewee emphasised that collateral/security remains the main obstacle to accessing finances by farmers. It was highlighted that the status quo remains, as the majority of small-scale farmers do not have the security to offer against the loans. It was noted that only the few high end farmers (large scale farmers have enough security to acquire the loans. Most farmers do not have title deeds for their land hence they cannot put up the land as collateral. When providing a loan in most instances, the bank provides 90% of the loan amount with the respective farmer paying a deposit of 10%. In most cases, the required deposit is very high that not all farmers can afford to raise this amount.

The bank representative highlighted that most farmers and or agro-processors have no access to viable markets. This negatively affects their ability to sustain the farming operations. Also, installment payments are dependent on the ability of the role players to acquire sustainable incomes from viable markets. It is therefore important to develop an agro-based business model that ensures access to viable markets. Commercial entities have access to loans offered by the bank as they have access to viable markets.

Government

The government was seen as playing a critical role in the value chain. From a regulatory perspective, government officials/inspectors inspect the quality of the products and sell by date for agricultural produce. The Department of Agriculture also arranged a tour bus to bring farmers to the market so that they can know more about fresh produce markets such as the Mooketsi Fresh Produce Market. The Department of Agriculture organizes farm days for the smallholder farmers and invite other players like input suppliers to speak to the farmers about pests and pest control, and to demonstrate skills like how to do land preparation.

Industry Bodies and Associations

Limpopo Tomato Growers Association

Limpopo Tomato Growers Association (LTGA) is an association of smallholder black tomato farmers that started in 2000. The association was formed as a result of overproduction and huge tomato losses in 2000 after many smallholder farmers produced tomatoes and could not find a market for them. The Association identifies potential markets and links farmers to these markets to avoid the disaster/huge losses that took place in 2000. LTGA has branches in all 25 municipalities in Limpopo.

Potato SA

Potatoes South Africa is an association incorporated under the South African Companies, whose main objective is to serve, protect and promote the interests of the South African potato industry. In terms of its role in the potato industry, Potatoes South Africa operates as a non-profit organisation and its structure represents a network of participating role players and individuals who have the development and competitiveness of the industry at heart. Potatoes South Africa's primary interest is therefore to build a viable South African potato industry through the: gathering, processing and compiling of relevant information and market statistics, the timely dissemination thereof as well as rendering an extension service to producers; management of basic as well as applied research, including cultivar development and evaluation, and the timely dissemination of all relevant technical information; development and implementation of a marketing plan to promote the consumption of potatoes in the Republic of South Africa and abroad; and assisting in transformation by developing emerging farmers with the objective of them becoming commercial potato farmers as well as creating market access for these farmers.

5. Analysis of Findings

This section looks at the external environment in which the agro-food value chains are operating. It further provides research team analysis of the various value chain levels as brought up by the data collection stage of the study. Through the extensive consultations, it was possible to identify the constraints and opportunities of each role player along the value chain.

5.1 External Value Chain Dynamics

A critical component of value chain is the value chain influencer component, which is made up in part by the institutional environment in which the value chain operates. There are external value chains dynamics which influence and affect the way in which the value chain operates. Some of these are reflected in the PESTLE analysis of the agriculture sector reflected in Table 2 below. These external value chain dynamics constitute the operating environment for the agricultural value chains. As seen in Table 2 below overall, there is a conducive environment for agricultural value chains in operation in South Africa.

Table 2. PESTLE Analysis of the Agricultural Sector²³

POLITICAL	<ul style="list-style-type: none"> • National focus on agrarian transformation, rural development, sustainable rural communities through National Development Plan (NDP). • IPAP2 policy focus on agro-processing, biofuels, forestry, paper and furniture • Backlogs in land restitution and lack of support to new land-owners • Focus on agriculture and rural development in the Provincial Growth and Development Strategies • Nationally food-secure but 14% of South Africa's population is vulnerable to food insecurity
ECONOMIC	<ul style="list-style-type: none"> • Rising input costs particularly with seeds, animal feed, fertilisers and farming equipment • Increasing cost of electricity and inconsistent supply to remote rural areas • Seasonal nature of employment • Rising labour costs • Volatility in exchange rates • IPAP2 financial support to high-priority sectors • Lack of transport infrastructure in rural areas • Increased demand for food

²³ <http://www.seda.org.za/Publications/Publications/Research%20on%20the%20Performance%20of%20the%20Agriculture%20Sector.pdf>

	<ul style="list-style-type: none"> • Food inflation • Marginalisation of poor rural communities • Farming debt and lack of access to credit for small farmers
SOCIAL	<ul style="list-style-type: none"> • Migration out of rural areas reducing the agricultural workforce • Perception of agriculture as an unattractive sector • Consumption and buying patterns, e.g. the increased demand for organically grown foods • Levels of development in rural areas • Crime • HIV/AIDS • Availability of basic services such as health, education • Low levels of skill and skills development in the agricultural sector • Growing demand for holidays on game farms and lodges • Limited earning potential in rural areas
TECHNOLOGICAL	<ul style="list-style-type: none"> • Commercial farms opting for more high-tech equipment that is less labour intensive • Equipment hire is prohibitively high for small-scale farmers
LEGAL	<ul style="list-style-type: none"> • Stringent phyto-sanitary regulations imposed by the United States and European Union on imports of agricultural products
ENVIRONMENTAL	<ul style="list-style-type: none"> • Limited water supply in South Africa • Semi-arid conditions and effects of climate change increase vulnerability of agriculture • Historically unsustainable farming practices have caused environmental degradation • Interest in ecologically sustainable farming methods and use of alternative energy sources

5.2 Internal Value Chain Dynamics

Internal value chain dynamics are those factors within the value chain that affect the structure and functioning of the value chain. In Table 3 below, a summary of these is given. The internal value chain dynamics are discussed further at each chain level.

Table 3 SWOT analysis of South African Agricultural sector

STRENGTHS	THE STUDYAKNESSES
<ul style="list-style-type: none"> • A well-established commercial agriculture • Economic growth • Presence of institutions to support the value chain (finance, research, regulatory bodies) • The presence of strong institutions and systems designed to assist emerging farmers and agribusiness • Good seed systems and strong varieties 	<ul style="list-style-type: none"> • Limited supply to processor • Inadequate extension services • Perceived attitudes towards black farmers • Lack of/Limited access to market • Information and accessibility for smallholder farmers • Literacy and lack of exposure; lack of understanding as to the structure and function of the value chain and the role which players play within the value chain.
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • A growing middle class with more disposable income • Urbanisation • Multiple marketing channels • BEE procurement policy • Access to planting programs • Many young unemployed people 	<ul style="list-style-type: none"> • Socio –economic inequality • Retail buyer power • Market agents buyer power • An ageing farmer population • Rapid urbanisation and rural to urban migration • Increasing labour and transportation costs • Electricity Supply • Cheaper Imports

5.3 Production Level Analysis

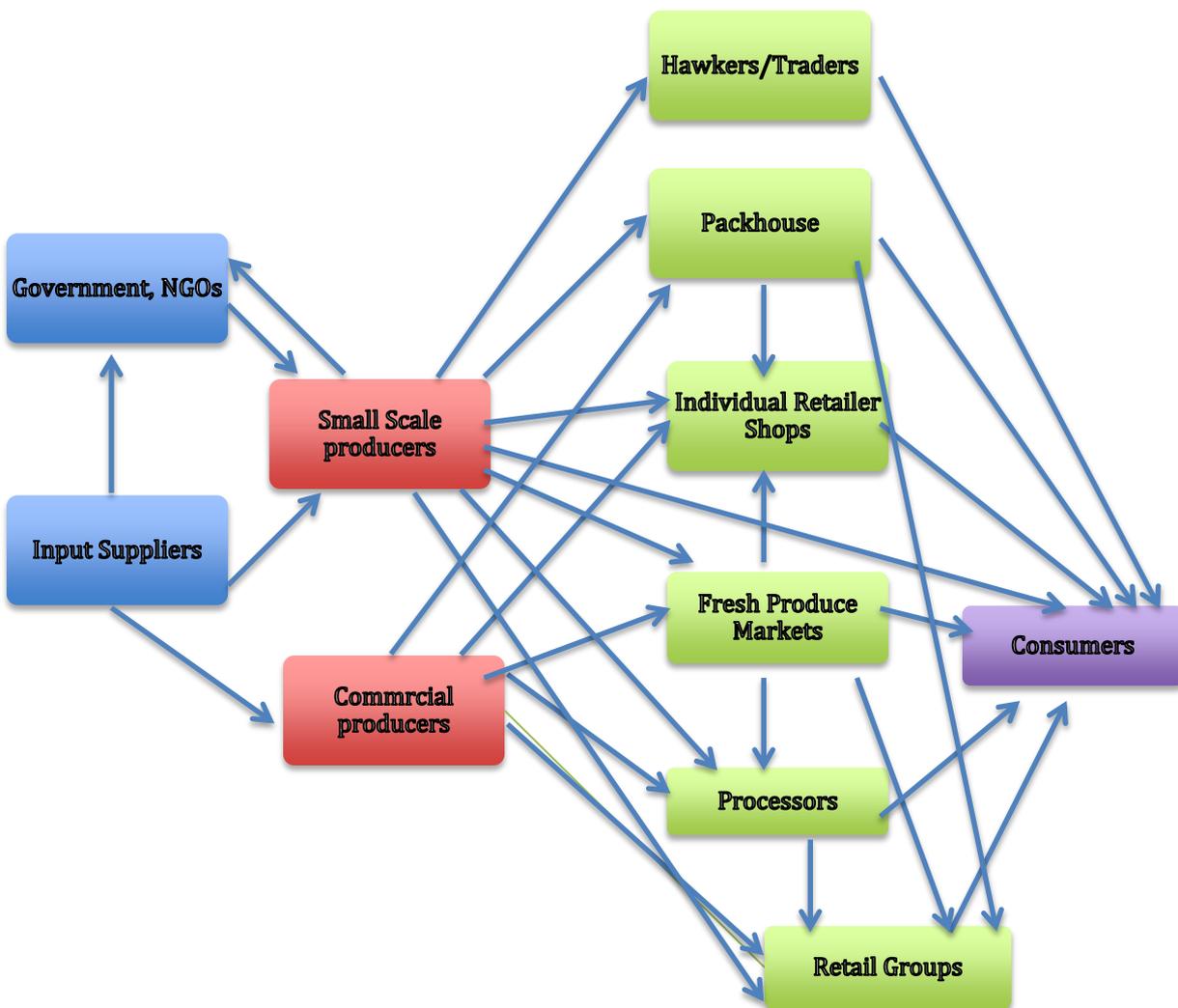
As this study has shown, agricultural value chains are complex, with interlinkages, relationships and interactions characterising all levels of the value chain. This confirms the knowledge that exists on the complexity and non-linearity of agricultural value chains. Figure 8 below illustrates the flow of products within studied agricultural value chains.

For smallholder producers, input supply can be directly from the input suppliers or it can come through the government and NGOs. At the same time, these smallholder producers can be involved in supplying the government and NGOs through initiatives such as the School Feeding schemes. With commercial producers, while some bought all their inputs including seedlings, others had integrated their operations to include seedling production.

This study has shown that beyond production, smallholder farmers have various marketing channels they can explore. This is however dependent on the quality and quantity of their product. It was observed that smallholder farmers supplied hawkers and traders directly, sold in their community and interfaced with the consumers, and could supply pack-houses, fresh produce markets, processors and independent retailers.

Various marketing channels exist for farmers as illustrated below. For each channel, barriers to entry and transaction costs are the major factors considered by farmers. For smaller emerging producers, factors such as quality, quantity, internal procurement preferences and certification requirements were seen to present barriers to entry into the formal value chain. The government has however through BEE policy, placed a requirement on businesses to procure a percentage of their produce from emerging farmers. This is of benefit to those farmers who meet the certification and quality standards prescribed and this still presents a barrier to entry into that market.

Figure 7 Illustration of the agricultural value chain



Distance from the market, transportation costs and whether or not the farmer had his own truck were also factors determining the farmer's marketing channel. Lack of adequate infrastructure such as cold chain

transport and storage facilities also affects participation and profitability in the value chain. It was also seen that transport and logistics play a major role in the value chain and can affect access to markets. Farmers who owned their own trucks were at an advantage as the costs of regularly hiring a truck are high.



Figure 8 Producer Marketing Channels

The difference between the commercial and smallholder value chains lies in the following:

1. Input supply: While smallholder farmers were buying seedlings, commercial producers were sometimes so well integrated into the supply chain that they produced some of their own inputs such as tomato seedlings.

2. Understanding of market forces and how the value chains operates: Some smallholder producers do not fully understand the way the value chain operates and often think that the low prices they get at the fresh produce market are due to some kind of discrimination.

3. Productivity – the inability to produce in large quantities exclude most developing farmers from participating in the viable markets. Processors, retailers, restaurant, hotels need consistent suppliers to fulfil their orders. Inability to do so excludes most developing farmers. It can be noted that large-scale farmers dominate the value chains.

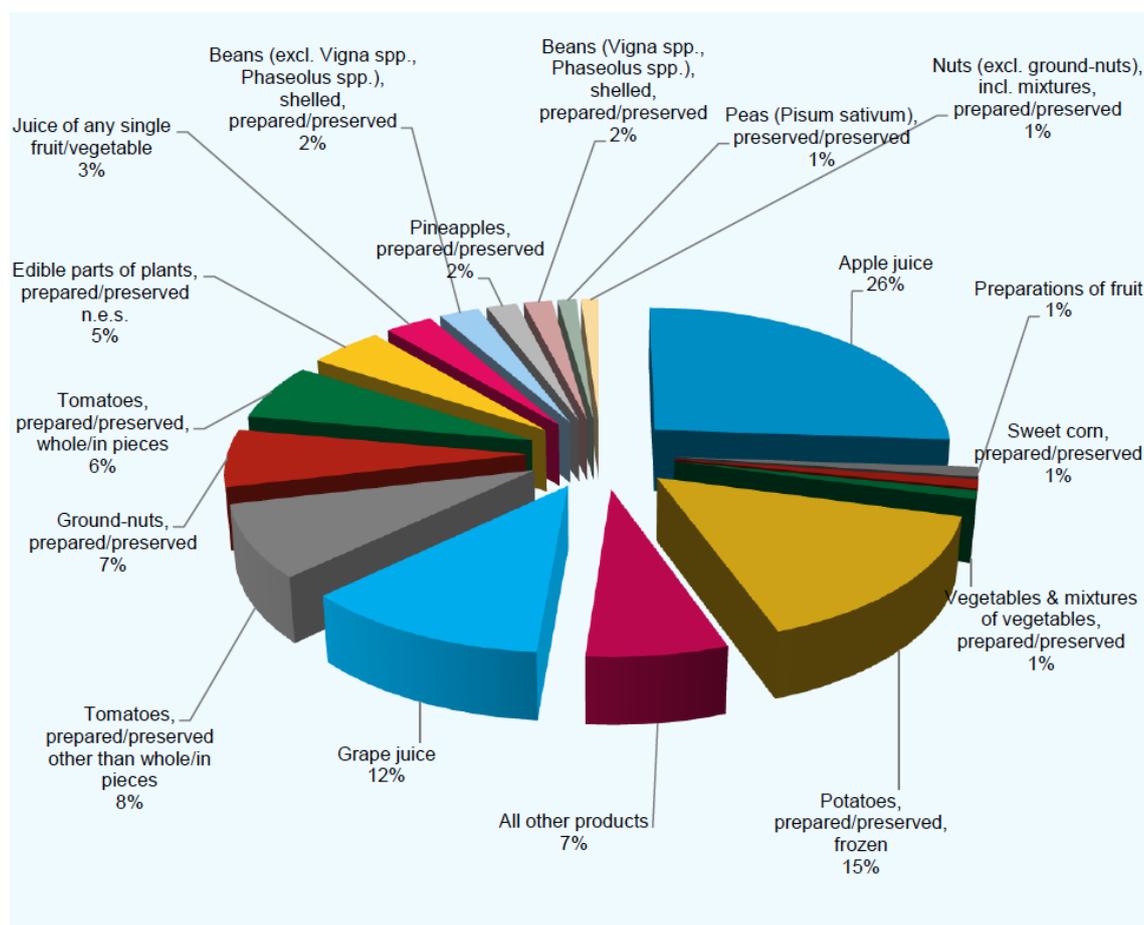
4. Business model applied – most commercial farmers are into farming for business and profits hence they are always seeking viable markets. Most developing farmers interviewed reflected that their main objective is for farming to uphold their livelihoods.

5.4 Processor level analysis

Processors play a critical role within the value chain. Within the tomato value chain processors presented a good market for smallholder farmers. There are however many challenges at the processor level. From this study, challenges are mainly supply related. Processors depend on farmers to function efficiently and effectively. Consistent supply both in quality and quantity terms is required to ensure that the operations of the processor continue. It is therefore important to ensure that the pipeline of supply is supported by farmer development programmes.

For both tomatoes and potatoes, the threat of imports presents a challenge for the processing sector.

Figure 9. Composition of South Africa's imports of processed fruits, vegetables and other products, percentage shares by volume, 2009

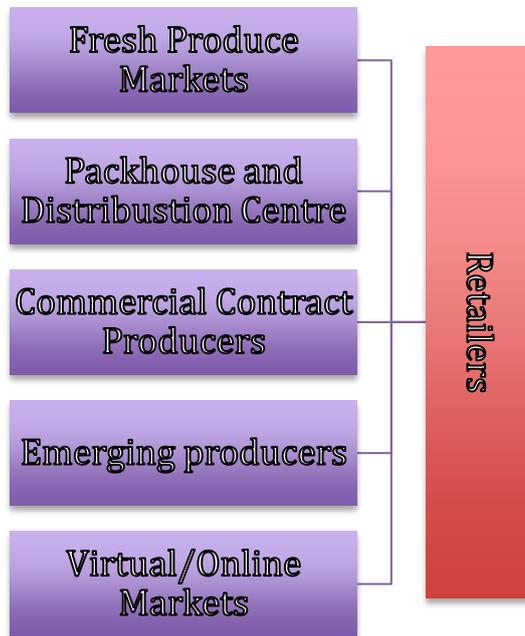


Source: ITAC, 2010

5.5 Retail Level Analysis

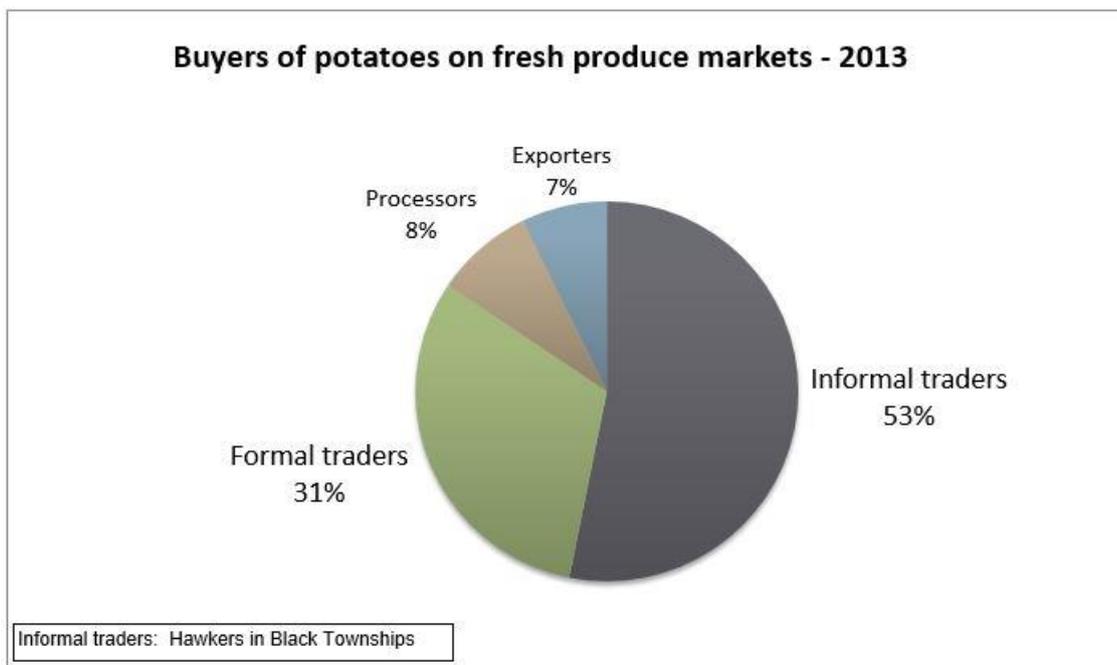
Retailers also have various marketing channels. The choice of marketing channel is dependent on a variety of factors such as; where demand is, the product type, transportation costs, whether the retailer belongs to a larger group or not, what the procurement policy is for that product, product quality and quantities required by the customer. The study shows that in certain retail groups like Fruit and Veg City, each branch could order its own varieties of potatoes from different farms through the fresh produce market, but all tomatoes came from ZZ2. Figure below illustrates some of the procurement channels utilised by retailers as revealed in this study:

Figure 10. Retailer product procurement channels



Research shows how significant the informal market is in the value chain. According to Potato SA the bulk of potato purchases from the Fresh Produce Market were taken up by informal traders. As illustrated in Figure 12 below, informal traders constituted 53% of buyers of potatoes at fresh produce markets in 2013.

Figure 11. Buyers of potatoes on fresh produce markets in 2013



5.6 Innovation within the value chain

Role of ICT in agricultural value chains in South Africa

ICT is increasingly playing a major role within the agricultural value chains. This is as the value chains become more complex and evolved and with the emergence of powerful retail groups, whereby systems are in place and even the stores do not physically have to place any orders but the systems are such that as produce is received by the store from head office, placed in the shop floor and bought by the customer, the system updates and places orders automatically based on the current stock levels in the shop as well as historical trends.

ICT also plays a role in availability and accessibility of information within the value chain. Prices and quantities of produce sold on the Gauteng markets is available online daily and farmers can follow these trends and have an idea of supply and demand levels as well as price information. However, for most small-scale farmers this information is not always easily accessible as they may face constraints such as the lack of access to the Internet.

Online trading²⁴ - Farm Gate Exchange

Farm Gate Exchange (FGX) is an innovation in the South African agricultural value chain. Farm Gate Exchange's online fresh Produce Trade, Farm Gate Exchange, with offices in Meyersdal, near Alberton, was formed in 2013. It was prompted by the high costs of selling produce through the markets as well as the changing nature of fresh produce trading in SA. The FGX trading platform utilises the latest technology to enable producers, service providers and buyers of fresh produce to interact and trade on the web. FGX is therefore a virtual trading platform that aims to facilitate transaction of fresh produce through a service provider. As an alternative fresh produce marketing channel, FGX aims to introduce a dynamic new alternative for the marketers of fresh produce in South Africa. Using the FGX trading platform will ultimately lead to reduced transaction costs, more transparent transactions, differentiated service offering and improved efficiency in the fresh produce value chain.

Online trading – Consumers

With online shopping on the increase in South Africa, consumers are able to order fresh produce including tomatoes and potatoes online and have it delivered at their homes. Consumers can do this through online shopping channels established by traditional retailers such as Woolworths and Pick n Pay. They can also do their shopping through specialized online fresh produce distributors.

²⁴ <http://www.fgxplatform.co.za>

6. Recommendations

6.1 The role of Local government in Agro-food Value Chain

Local Government and Agricultural Policy

Given the SACN's strategic objective to position local government in cities as an effective driver of local and national development, it is therefore imperative that the role of local government within the agro-food value chains be examined in order to ensure that a better understanding of rural-urban linkages is reflected in cities' policy frameworks. Local government in South Africa is an autonomous sphere of government with the right to govern, on its own initiative, the local government affairs of its community. The mandate of local government is to work with citizens and groups within the community to find sustainable ways to meet their social, economic and material needs and improve the quality of their lives. This developmental mandate is effected through the 8 metropolitan municipalities and 228 local municipalities grouped into 44 district municipalities across the country (SALGA).

In 2010, the South African government adopted an "Outcomes Approach" to help frame public service delivery priorities and targets through the three spheres of government. Under this approach 12 Outcomes were agreed upon and are being used to guide planning strategies at various levels of government. In line with this outcomes approach, in 2013 the Cabinet (July 2013) resolved for Agriculture to develop a plan that addresses the vision of the National Development Plan and New Growth Path. As identified within the National Development Plan and New Growth Path, Agriculture, remains critical for employment and food security. Agriculture delivers more jobs per Rand invested than any other sector, and NDP estimates that Agriculture could potentially create, 1mill jobs by 2030. The Integrated Growth and Development Policy (IGDP) serves as the sector policy, and the Agricultural Policy Action Plan (APAP) as a programmatic response to key policy documents including:

- National Development Plan (NDP); New Growth Path (NGP) as a job driver
- Medium Term Strategic Framework -Outcomes 4, 7 and 10.

APAP identifies some priority value chains on the basis of; contribution to food security, job creation, growth potential, and potential contribution to trade balance (incl. via import substitution). These priority value chains namely; Red meat, Poultry, Fruit and vegetables, Wine, Wheat, Forestry and Fisheries. APAP seeks to provide both a long-term vision, and focused interventions in a 5-year rolling schedule, to be updated annually. APAP is based on Sectorial Key Action Programmes (commodities) and Transversal Key Action Programmes (e.g. research and innovation). It furthermore presents institutional arrangements and processes for achieving this objective –more especially to integrate planning, M&E between DRDLR and DAFF across 3 spheres of government (National, Provincial and Local Government).

Local government has been identified as a partner in the implementation of these key action policies and programmes. Local government therefore does not create policy that is independent of existing national policy, but the role of local government is

- To align local policy and implementation with the existing national agricultural policy
- To raise awareness of any policy gaps as experienced/observed in their implementation of national policy within the localities.
- To act as an implementing partner for national policies and programmes

Therefore, as a key stakeholder in the implementation of the Outcomes and outputs, local government should align its strategy with the strategic objectives of NGP, NDP, IPAP, and APAP.

Local Government and Agricultural Production

According to the NDP, agriculture has the potential to create close to 1million new jobs by 2030. This target would be achieved through the following:

- Expansion of irrigated agriculture: Evidence shows that the 1.5 million hectares under irrigation (which produce virtually all South Africa's horticultural harvest and some field crops) can be expanded by at least 145 000 hectares through the better use of existing water resources and developing new water schemes.
- Better land use of underutilised land in communal areas and land-reform projects for commercial production. In communal areas, this could improve the livelihoods of at least 370 000 people, and create around 600 000 potential jobs in communal areas.
- Support to selected commercial agriculture sectors and regions that have the highest potential for growth and employment—300 000 potential jobs in commercial agriculture.
- Find creative combinations between opportunities. For example, emphasis should be placed on land that has the potential to benefit from irrigation infrastructure, and priority should be given to successful farmers in communal areas, which would support further improvement of the area; and industries and areas with high potential to create jobs should receive the most support. All these will increase collaboration between existing farmers and the beneficiaries of land reform.
- Develop strategies that give new entrants access to product value chains and support from better-resourced players.

With agricultural production being largely concentrated in the rural areas, local government can play a role in ensuring proper demarcation of land so that competing land uses can be better managed. Local government can also play a role in creating an environment to support agro-food value chain development.

Local Government and Agricultural Processing

"South Africa's agro-processing sector has the potential to become an industrial impetus that can create jobs and answer some of the macroeconomic questions such as trade deficit generated by too much imports against low export volumes. An analysis of our imports points to glaring opportunities in articles such as wheat, soy bean, vegetable oils, read meat, tomato concentrates and industrial starch. Government will safeguard, intervene and support the sector where is necessary to remain competitive and stable," Rob Davies. 2014. Minister of Trade and Industry

The agro processing sector is one of the country's largest manufacturing sectors by employment, with an estimated 207 893 jobs in the third quarter of 2013, and makes a significant contribution to total manufacturing value-add. Agro-processing has been identified as a segment with the potential to actualise macro-economic objectives as pronounced in the New Growth Path (NGP) and National Development Plan (NDP). A key characteristic of the agro-processing sector is its strong up- and downstream linkages. Upstream, the sector links to primary agriculture across a variety of farming models and products. Downstream, agro-processing outputs are both intermediate products to which further value is added and final goods, which are marketed through wholesale and retail chains as well as a diverse array of restaurants, pubs, shebeens and fast-food franchises. This link with agriculture makes it critical for employment creation and poverty eradication (DTI, 2014).

Agro-processing presents a viable frontier for sustainable rural-urban partnerships due to the strong up-and downstream linkages. For example, potatoes and tomatoes are major ingredients used within the food industry. Many fast food outlets and restaurant chains procure from the fresh produce market in bulk, or contract farmers. Most produce is sourced from the rural areas, and transported to the fresh produce markets in the urban areas, as well as the distribution centres. The same produce finds its way back to the rural space

where it was produced, when it is delivered to the various supermarkets, restaurants and fast foods chains and the bulk of this remains within the urban communities where the consumers can be found.

Agro-processing is a relatively highly concentrated sector. Though large enterprises in the agro-processing industry contributed a significant share of income and employment, the relative share of SMEs to the total employment is higher, compared to their share of the total income in the industry. Therefore, SMEs have greater potential of generating jobs in the agro-processing industry. Though few of the challenges facing the SMEs are unique for each division, it can be asserted that lack of access to finance, inadequate skills and inaccessible government support are the foremost challenges facing most SMEs across the divisions. Since the potential for generating more employment is higher for SMEs, a policy intervention to alleviate some of these challenges is critical to realise their full potential and lessen the market concentration (DAFF). Local government can play an integral role in agro processing by positioning themselves as a key partner in developing and implementing policies and strategies that create an enabling environment for agro-processing development for both large-scale commercial processors and SMEs.

Local Government and Markets

National Fresh Produce Markets

Fresh produce markets represent one of the existing points of participation by local government within the value chain. Local government is responsible for the establishment; conduct and control of fresh produce markets. The role of the produce markets in South Africa includes: providing the necessary facilities to commercial, growing and emerging markets. Provide equal opportunities of trade between large scale, commercial and small scale producers, through initiatives that allow trade without discrimination on size or origin. In addition to the meeting place and price formation function the market also provides; modern infrastructure and technologies as well as ripening facilities. Fresh produce markets provide an easily and accessible market for small scale and emerging producers to sell their produce (Business Enterprises, 2013). NFPMs generally make a 5% non-negotiable commission, from all fresh produce sold and the market agents make an approximate 7.5% negotiable commission, (Johannesburg Fresh Produce Market, 2013). Market prices are predominantly determined by supply and demand factors. The factors that influence supply include: climate, seasonal production, transport cost, other marketing channels, perishability of products, and the reaction of producers to prices realised in previous periods. Demand factors include consumer preferences, substitution between products and per capita income.

The fresh produce market represents one of several marketing channels with the agro-food value chain. It is critical to determine how efficient these markets are currently, how they can remain competitive in relation to developments within the supply chain. The major constraints in the NFPMs are declines in the volumes of fresh produce (fruits and vegetables) traded through these markets owing to deteriorating infrastructure in these markets, lack of re-investment by municipalities into the capital expenditure of the markets, non-compliance to food safety and health standards, and management capacity of NFPMs (DAFF, 2014). In response to these constraints, one of APAP's objectives is to improve investment in NFPM infrastructure. On the other hand, local government in its capacity as owners and administrators of markets need to examine fresh produce markets and ensure that they remain viable and competitive in line with the needs of the market. Some of the key critical areas to look at would be:

- Re-examining ownership and governance structure of the market
- Location
- Logistics
- Services provided by the market including refuse disposal, storage, ripening.
- Efficiencies of the market such as logistics, waiting times for delivery and purchases, facilities

available.

- Ensuring that food safety standards, hygiene, labelling and traceability requirements are met within the market and obtaining the requisite certification.
- Value added services: This involves looking at what other services the market can offer producers so as to remain competitive and strengthen their position as the preferred marketing channel. Such value added services could include the market acting as an aggregator for producers and developing an established fresh produce market brand or offering a transport service if this is viable.
- Costs: Producers indicated that one of the major factors affecting the choice of marketing channel is the cost since the market takes 5% and the agent take 7.5%.

Farmers Markets

Local governments can play an important role by assisting and facilitating the establishment of Farm shops and farmers' markets to allow farmers the opportunity to directly sell food and other produce to the general public. This direct form of selling is beneficial to both the farmer and the consumer as it increases profit margins while offering locally produced fresh foods.

Farmers markets can play an integral role in enhancing urban/farm linkage and can rise in popularity, mostly if consumer interest in obtaining fresh products directly from the farm increases. Farmers markets can allow consumers to have access to locally grown, farm fresh produce, enables farmers the opportunity to develop a personal relationship with their customers, and cultivate consumer loyalty with the farmers who grows the produce. Direct marketing of farm products through farmers markets can be an important sales outlet for agricultural producers in South Africa.

Informal Trade

Local government plays a role in the regulation of informal trade through demarcation of zones for trade. In 2013, 53% of potato buyers at the Fresh Produce Market were informal traders, it follows that the informal traders represent a significant channel for consumers. Local government policy towards informal trade of agro-food products should be reflective of the integral role of informal traders play within the value chain.

Local Government as an aggregator

Local governments can play a role in bringing together value chain actors and supporters in their efforts to enhance the rural-urban linkages in agro-food value chains. A strong Public- Private Sector platform must be established based on common goals such as economic development within the urban and rural spaces. Through this platform, a strategy which has the following three main components should be formulated: (i) assistance in the area of business environment and industrial policy; (ii) support to institutions whose actions have a positive impact on the structure and growth of value chains; and (iii) specific direct interventions at one or more stages of the value chain. The interventions will rely on a wide range of support assistance to be rendered by the various specialized departments of local government. It is important to distinguish among the roles and responsibilities of all chain actors, including government entities, support institutions, and chain operators.

Promoting rural-urban partnership

The linkages between the rural and urban space are complex and characterized by interdependencies and complementarities. 62% of South Africa's population lives in urban areas, and the rate of urbanization in South Africa is currently 1.21% (Central Intelligence Agency). South Africa currently has an unemployment rate of about 26%.

Urbanisation has consequences on food security. These include:

- Increased competition between urban land uses and agriculture land on the urban perimeter;
- Increased food supplies required, leading to greater traffic congestion and pollution, and to stress being placed on overloaded food distribution systems;
- Changing food consumption habits, with increased demand for convenience and processed foods, increasing food quality and public health concerns; and
- Distance of low-income families from markets increasing, meaning additional costs in time and transport to access food supplies (Source: FAO, Aragrande and Argenti (2001)).

Urbanisation not only translates to the development of larger metropolitan mega-cities, but also smaller urban centres. These market towns and administrative centres are of critical importance in facilitating exchanges between the rural and urban areas. Rural populations depend on these urban services, including access to traders and markets to dispose of their agricultural produce and to access the retail stores and other facilities located in local urban centres. In this study, rural tomato producers in Limpopo were seen to depend on processors in Tzaneen as a market for their tomatoes.

Local government can partner together with private sector to invest in transport infrastructure such as rural access roads and trucks, storage facilities, marketing facilities and other post-harvest infrastructure within these small and medium sized market towns. This would not only provide a market for producers, but contribute to employment creation for rural populations and may in some cases, help to decrease migration pressure on the larger urban centres (FAO, 2005).

Creating and enabling environment

Local government policy should be designed to facilitate the strengthening of agro-sector through enhancing rural and urban linkages that improve opportunities for added value and serve as effective means of achieving economic transformation and sustainable livelihoods. The scope of this assistance by the local government must go beyond urban agro-industries but also reach poor and marginalized rural populations as well as communities. The services provided cover the following key areas:

- (i) Advice on options for strengthening the agro-industrial sector and fostering the equitable integration of agro-based SME's into viable markets.
- (ii) capability building at institutional and industry levels as a key means of enhancing agro-based productivity and marketing performance
- (iii) Support to traditional agro-industries to improve their productivity and efficiency and increase their integration into national / global value chains and promote rural livelihood diversity.

There are various ways in which an enabling environment for value chain participants to become more integrated into the formal value chain can be created.

- Investment Promotion: local governments can set up the required strong institutions and create an enabling environment to attract agribusiness investment in their localities.
- Market development
- Advisory Support for value chain participants such as legal advice for farmers entering into supply contracts
- Export promotion: making information available and accessible to value chain actors who have the capacity to export. Assisting these actors to meet the requirements for export by providing export facilitation services or linking them with such service provider.

- Designing inclusive industrial policies
- Providing a platform for information availability and accessibility to all value chain players.
- Facilitating communication and information exchange between value chain supporters and value chain influencers such as between private sector, government departments as well as development agencies
- Design and implementation of custom interventions rather than generic interventions
- Encourage value addition in the value chain
- Improved logistics.
- Infrastructural development
- Promoting and Enabling access to financial and credit services is also critical along the value chain.
- Mentoring

Some more targeted and specific direct interventions and programmes would include:

1. Cluster and network development: Mobilising cluster and network development programmes to foster linkages among agro processors, small and large scale farming enterprises as well as collaborative relations with local support institutions. This will facilitate knowledge and information exchange, improved logistics and gains may be made through collective action. Cluster development work will include cluster mapping, identifying existing clusters in a region; cluster twinning initiatives, including business-to-business networks, inter-institutional partnerships and alliances among cluster associations; development of horizontal and vertical networks and export consortia among other activities. In the same vein, processing hubs within local urban municipalities close to areas of production can also be developed.
2. Infrastructure: Provision of irrigation infrastructure, tunnels, is important to enhance farmers' production capacity by improving yield and quality, reduce post-harvest losses and maintain product shelf life. Limpopo is a very dry area that often experiences drought conditions which significantly reduce the quality and quantity of tomato yields. Irrigation systems for smallholder producers will enable producers to have regular water supplies throughout the year thus enhancing production.
3. Establishment of Fresh Produce Depots in the rural areas or close to rural areas where farmers can have access to cold chain infrastructure such as pack house facilities as well as refrigerated trucks without travelling long distances. Producers can deliver their produce and it will be a central place central point for other value chain actors. Fresh produce delivered will be cleaned, graded, packed, loaded and transported to fresh produce markets from these depots. Additionally, the depots can act as agricultural hubs bringing together various value chain actors and offer services such as input supplies, technical support for production as well as market information.

Some recommendations specific to supplier development include:

1. Timely interventions: Service providers, government and development organisations assisting farmers must do so in a timely manner. Farmers said they often receive inputs late, affecting their production.
2. Training and Capacity building to enhance:
 - Technical skills such as production and processing
 - Agribusiness management skills such as farm planning and management, financial management, risk management, marketing strategy and human resource management
 - Specialised training such as GlobalGap, EuroGap and SAGap certification training so that value chain actors can meet the standard required in the market.

3. **Entrepreneurship Development:** Localised entrepreneurial programs designed to create a business environment that encourages the initiatives of rural, young and women entrepreneurs. Local governments can help build-up the capacity of institutions that support the agro-businesses in their locality. This can be done thorough establishing and or supporting the provision of both industry-wide and sector-specific business development services by private and public institutions. Such initiatives would promote value added initiatives such as tomato processing for sundried tomato.

4. **Access to Finance:** While there were various efforts by the government to support value chain actors especially small holder farmers, government interventions alone are inadequate as the level of need is very high. If smallholder farmers receive training on land preparation and pest control, in the absence of access to finance, and market access, they are still not positioned to fully participate in the supply chain. A silo approach to value chain development is inefficient. Innovative ways of facilitating access to finance need to be explored. These ways should consider existing conditions within smallholder farmers such as their land tenure, and develop funding models around the existing land tenure systems.

7. Conclusions

From the study of the tomato and potato value chains, it is clearly articulated that linkages exist between the urban and rural space. It is noted that inefficiencies within either space affect the other. For instance, production challenges in rural areas, lead to supply challenges in urban areas where the bulk of final consumers of agricultural products are found. Products and services move through the value chain, following patterns of demand and supply in both rural and urban spaces. Along the value chain continuum, interlinkages between the various actors are created. Each value actor takes advantage of these linkages to identify opportunities that maximizes returns and profitability. Any challenges identified will require the actors to devise corrective actions in order to make gains from the linkages.

The findings from this study are very insightful in indicating opportunities and challenges faced by value chain participants along the value chain. As such, to the local government, the value chain analysis offers a simple participatory way to analyse the potentials and constraints within prominent economic sectors of a specific locality.

It is interesting to note that in South Africa an aging smallholder farming population dominates rural areas. While, urban areas are filled with unemployed youths who either do not consider agriculture a viable source of livelihood or have no access to the resources needed to participate in the agricultural value chains. It is our opinion that this disconnect arises from the lack of/inadequate investment in commercial agricultural institutions and systems, markets and infrastructure within rural communities. From our observations most smallholder farmers portrayed that farming is difficult and farmers are poor. But this poor smallholder farmer narrative can be changed. Smallholder farming has played a key role in uplifting the livelihoods of the people involved in the locality.

Physical markets still represent one of the largest interfaces between producers and the different types of consumers who need and use their produce. Therefore it is important to establish markets, and ensure that these markets function well. Innovation is required in solving problems of access to finance and inputs for smallholder farmers in value chains.

It is therefore within the interest of both local and national government to make the agricultural value chain in its entirety, attractive and to function effectively so as to attract youth into this sector. It also follows then that interventions within agricultural value chains should not occur in silos but rather as part of a broader strategy. While local governments have the responsibility to create and maintain an enabling environment for business

and investment in both rural and urban areas; the importance of Public- Private Partnerships cannot be underscored.

All players within the value chain, at all levels have a role and responsibility towards the value chain and its efficiency. As such, the buy in of local communities, private sector, and civil society is important in ensuring that local government-led interventions in both rural and urban area are successful.

Annex 1: List of Interviewees

Participant Name	Company Name/Affiliation	Value Chain Role
Vance Hodgson	Tiger Brands - Musina	Processor
Dirk	FreshMark - Polokwane	Pack house
Willie Van Zyl	Goseame Open Market	Market Agent
Rudi Venter	Mooketsi Fresh Produce Market - RSA	Market Agent
Leon Labuschagne	Sakata Seeds	Input Supplier
Leigh Dale	Martindale Seeds	Input Supplier
Steven Mohale		Commercial Farmer
Derrick	Z22 Farms	Commercial Farmer
Walter Mocketla	RefilWE Enterprise	Farmer
Mandla Nkomo	TechnoServe	Informant
Tshilidzi Mathobo	Limpopo Department of Agriculture	Government
Nomvula	Potato SA	Industry Association
Brendan Baatjies	Land bank	Financial institution
Jap	McCain	Processor
Elizaberth Rohde	KFC	Processor
Sara Maphila	Smallholder farmer	Producer
Elias Mutheiwana	Smallholder farmer	producer
Julia Manenzhe	Smallholder farmer	producer
Sydney Zharare	Genesis Analytics	Informant

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