

# A developmental systems approach to agro-processing policy

## SUMMARY

Agro-processing is an increasingly important market access point for agricultural producers. The development of the agro-processing sector thus has significant potential to create opportunities for smaller agricultural producers, thereby supporting the creation of new employment and livelihood opportunities in rural areas. However, market access points are not homogenous from the point of view of smaller producers. Policy needs to incorporate the possibility of the adverse inclusion of smaller producers into established markets. The likelihood of beneficial inclusion outcomes will be enhanced by a stronger focus on net farm income projections for individual producers; farmer cooperatives at the processing level; innovation in the location and structure of agro-processing infrastructure; and better policy co-ordination among the various government actors.

## INTRODUCTION

The share of processed food in overall food consumption is increasing. This trend highlights both the opportunities for job creation in food processing as well as the growing importance of agro-processing as a market for smaller agricultural producers. However, experience has shown that the mere fact of developing agro-processing infrastructure does not necessarily translate into better, more sustainable livelihoods for smaller emerging farmers. In addition, smaller agro-processing entities often face considerable barriers to market entry, which limit their ability to grow. These outcomes can be traced back to specific features of agri-systems, which determine how economic rent is allocated among system participants. The identification of these features, and the assessment of their likely impact on smaller market participants, is a crucial factor impacting on the selection of where and how agro-processing interventions will have the greatest developmental impact.

Agricultural system structures may be differentiated with respect to the relationships among different system participants (Ericksen et al, 2010), from input providers, to producers, through to processors, wholesalers, distributors and retailers. The growth of the **corporate** system – which is now the dominant system in South Africa – has been facilitated by urbanisation, globalisation and changing consumer strategies for accessing the end products of agriculture.

The most important features of this corporate system are the following:

- The growing share of processed food in overall food sales.
- A growing distance between producers and consumers.
- The growth of supermarkets as the dominant retail format.
- The dominance of big corporates and rising concentration in almost every part of the system, from inputs providers through to processors and retailers.
- A reduction in the number of market access points for smaller agricultural producers as a result of this concentration.
- A declining share of the final retail price of goods accruing to producers.

Current estimates are that around 65% of all retail food sales, and 97% of all **formal** retail food sales, take place through one of the “Big Four” supermarket groups. The estimated relative market share of each is indicated in Table 1.

**Table 1. Formal retail food market share of leading supermarkets in South Africa**

Supermarket group	Formal market share <sup>1</sup>
Shoprite	38%
Pick n Pay	31%
Spar	20%
Woolworths	8%

<sup>1</sup> Pereira, 2014

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**Table 2: Packaged/processed food company market share (2009)**

Company	Share of total packaged food sales	Examples of products
Tiger Brands	17.2	Maize meal, baked products, canned vegetables, processed meat, cereals
Unilever	4.9	Margarine, spices, sauces, teas
Parmalat	4.8	Dairy products, fruit juice
Nestle SA	4.6	Baby foods, cereals, confectionary
Clover	4.6	Dairy products, fruit juices
Dairybelle	4.0	Dairy products, fruit juices
Pioneer Foods	3.7	Cereals, dried fruit, biscuits, juices

Source: Igumbor et al, 2012.

**Table 3: Farm gate – retail price spread of basic food items (July 2015)**

Food item	Farm gate price	Retail price	Farm gate as % of retail price
Full cream milk – fresh 1 litre	R4.30	R12.19	35%
Fresh chicken (per kg)	R22.00	R39.96	55%
Pork (per kg)	R25.00	R69.25	36%
Beef (per kg) A class	R34.50	R65.00 <sup>1</sup>	53%
Tomatoes – fresh (per kg)	R5.00	R17.45	29%

Source: NAMC (2015), Absa (2015) . <sup>1</sup>This is the average price for the *cheaper* cuts of beef, such as brisket and chuck, implying that the overall farm gate percentage of the retail price is probably lower than indicated.

In addition to retail maturity, most other parts of the South African food supply chain – including processing – indicate an advanced stage of consolidation (Louw et al, 2008). An assessment of mergers and acquisitions in the food manufacturing sector over a 20 year period by the Competition Commission indicates growing concentration (Kirsten, 2009). Table 2 shows the share of **total** packaged food sales in South Africa by the six largest companies in this sector. The market share of each company in a particular product (such as maize meal or dairy products) will be considerably higher than their share of the total packaged food market. For example, Clover holds almost 32% of the fresh milk market and almost 40% of the butter market (Clover Ltd, 2013); three companies – Premier, Pioneer and Tiger – control just over 86% of the bread market (Tiger Brands Ltd, 2014) and Tiger Brands holds 75% of the local tomato processing sector (Louw, Vermeulen and Madeuvu, 2006).

## IMPLICATIONS FOR SMALLER AGRICULTURAL PRODUCERS

This relatively concentrated market structure has particular implications for smaller agricultural producers, and thus for policy that aims to create livelihood opportunities in this sector. Most importantly, certain participants have much more

power in the system relative to others – there are clear winners and losers in the system. The main outcome of this asymmetrical power allocation has been unevenness in who is able to appropriate value in the system, and who is not. Importantly from the point of **the dti** is that the market power of agricultural producers *in general* is declining. This has had the following results:

1. **The farm share of the retail price of goods is on a general downward trend, while input costs are increasing.** Since 1947, South African farmers have faced declining terms of trade (Qeqe and Cartwright, 2005). A 2009 NAMC investigation into the dairy industry (Kirsten, 2009) showed that dairy farmer profitability since 1994 had been squeezed to such an extent that it had resulted in a sharp decline in the number of producers. At the same time, retail margins on milk (which ranged between 1% and 5% under the old Dairy Board) increased to between 15% and 30%. Dairy farmers are almost always price takers from processors and/or retailers. The NAMC investigation also concluded that the relatively low prices paid to dairy farmers constitute a significant barrier to entry for small and emerging farmers. Between 1998 and 2012 around 5 000 dairy farmers went out of business, with estimated farmworker job losses of 50 000.

**Table 4: : Relative market share of large and small dairy producers in South Africa**

Daily production (litres/day)	% of producers		
	1995	2004	2012
500 or less	58	23	0.8
More than 3 000	0	21	88

Source: Terblanche (2009, p4); Coetzee (2012)

It is not only in the dairy sector that there is a considerable gap between farm gate and retail prices. Table 3 (page 2) sets out the farm gate – retail price spread for a number of basic food items, as at July 2015.

- 2. The generally declining terms of trade for agricultural producers has a particularly negative effect on smaller agricultural producers, who are producing lower volumes.** Declining terms of trade are driving a move towards larger farms, since smaller farming units are increasingly no longer viable. This is a trend that has been recorded in many countries where concentration in food processing and retailing has increased.

Between 1950 and 1990 there was a decline in the number of farming units in South Africa, from 116 848 to 62 084 (Tilley, 2002). From 1990 to 2007 the number of commercial farming units fell by a further 36%, to 39 982 (StatsSA, 2009) although the land under production only fell by about 10% over the same period. The average farm size in 2002 was 1 881 hectares, up 33% from 1 414 hectares in 1993. Despite the increase in farm size, the gross farming margin\* fell from 27.1% in 1993, to 25.3% in 2007. Since 1995, there has also been an increase in the number of farm bankruptcies (Jacobs et al, 2008). The odds are thus stacked against new smaller market entrants.

The trend towards bigger dairy producers is indicated in Table 4, which shows how the percentage share of large producers is increasing, while that of small producers is declining. This is a direct result of the declining terms of trade for producers, which means that lower volume producers cannot make a profit at the (given) price. In 2012, farms producing more than 5 000 litres of milk a day accounted for just over 75% of national milk production (Coetzee, 2012). In 2014, the average dairy herd size (of cows in milk) was 353.

## MARKET ACCESS IS NOT HOMOGENOUS

Agricultural producers require markets for their products and a central goal of agro-processing policy is to increase access points, through the facilitation of increased processing activity. There is, however, a

general trend to characterise the “problem” of market access as a simple *binary* question; focusing attention on the occurrence of a market linkage rather than the details of the terms on which that access occurs. In light of the market analysis presented above it is, however, entirely possible that a small agricultural producer may be successfully linked with a buyer, but that the terms of that relationship will be so disadvantageous to the producer as to be unsustainable in the longer term. For example, a dairy processor may indicate that they have a strong interest in purchasing milk from small farmers, but at the prevailing producer price for milk those farmers may not be able to stay in business.

Another example would be a planned abattoir facility in an area that services a large constituency of smallholder livestock farmers. While it is true that many of these farmers would benefit from an additional market access point, they need to receive a certain minimum price and other non-price terms (such as volume and flexible grading) for this particular market access point to actually deliver sustainable benefits.

Much the same argument can be applied to many agricultural products. Of particular importance to smaller farmers is the cost of transportation of produce to a particular market access point. In a low-volume production environment this cost may be considerable, and the limited choice of modes of transport often contributes to the relatively high post-harvest losses of many smaller producers.

## IMPROVING THE TERMS OF MARKET INCLUSION

As Ponte (2008) points out, the *terms of inclusion* into a particular system are often much more important in determining the outcome for a particular market participant than the fact of inclusion. The implication is that small producers do not require only “market access”. Rather, what they require is (1) access to markets where they can earn a return sufficiently high to compensate for their relatively low volumes of production; and (2) a more efficient transaction cost structure associated with that access.

\* Gross profit as a percentage of gross farming income, gross profit calculated as gross farming income less current expenditure and the purchase of animals, data source StatsSA (2009).

Production cooperatives have been proposed as one means of improving the terms of market access for smaller farmers in developing countries. The assumption is that if groups of smaller farmers got together to pool their output they would have a much better chance of attracting a big buyer and be able to negotiate a good price. In reality this is seldom the outcome. While it holds that bigger output volumes are more attractive to buyers (since they are associated with lower transaction costs), it does not hold that this is automatically associated with a higher price, since primary producers are invariably price takers. And it is the price received that is a critical determinant of long-term farmer viability. In addition, evidence suggests that many buyers are reluctant to incorporate producer cooperatives into their supply chains in *preference* to large individual producers because of the higher risk that the former may not be able to guarantee uniformity of supply and quality to the extent that the latter can. Thus producer cooperatives tend to have limited access to such supply chains, functioning as additional sources of supply rather than primary sources

## AGRO-PROCESSING INTERVENTIONS SHOULD AIM TO ACHIEVE BETTER MARKET TERMS FOR PRODUCERS IN ADDITION TO MARKET ACCESS

Market access is not homogenous from the point of view of smaller producers. Successful agro-processing linkages need to incorporate a strategic focus on the *terms* of market inclusion. There are essentially two main approaches to improving the terms on which smallholder farmers are included into markets:

- Facilitating an increased share of the total value of the final product; and
- Reducing transaction costs in order to increase farm margins.

Agro-processing policy that is based on facilitating one or both of these two outcomes – an increased share of total product value and/or reduced transaction costs – is most likely to generate the desired developmental outcomes for smaller agricultural producers. The practical implications for policy development and focus of such a differentiated approach to the facilitation of agro-processing are set out in the following section.

## POLICY IMPLICATIONS

### 1. *Greater attention needs to be paid to individual Net Farm Income projections*

As a general rule, the feasibility assessments of proposed agro-processing initiatives tend to be conducted at a *macro* scale. That is, the determination of whether or not an investment should be undertaken is usually based on a calculation of the

market value of the item in question and macro demand projections (on a national or international scale). To this is added the technical viability of production of the item, based on agronomy assessments. Where **the dti** has been approached directly by a potential buyer of a particular product, the feasibility studies usually focus on identifying existing or potential producers who could meet these technical requirements (in terms of land, water, location and general environmental requirements).

These macro feasibility assessments are necessary for establishing the viability of a particular intervention, but they are not sufficient since they do not incorporate the possibility of adverse market inclusion outcomes (after Hickey and Du Toit, 2007). Whether or not a particular market incorporation strategy is likely to be beneficial for smaller producers is a question to be answered empirically, on a case-by-case basis.

In the example of the proposed linkages between a dairy processor and small milk producers, a critical feasibility criterion to be included is the impact at the individual producer level. This requires a detailed projection of net farm income per producer. This exercise will highlight possible volume and/or transaction cost constraints, which may then be used to determine both the viability of the overall intervention and/or specific issues that require attention in order to improve the sustainability of that intervention. Net farm income projections are particularly helpful in separating out farmer-specific issues (such as production methods) from market access issues (such as the cost of transport) and market terms (such as the price to be paid). This information will provide a solid basis on which to focus support and market interventions.

It is not unusual for large corporates in the agri-food processing and retailing sector to approach **the dti** with proposals around the creation of a new supplier base, often focused on smaller producers. There are a number of potential benefits to these corporates from such an expanded supplier base, including meeting their preferential procurement and enterprise development obligations.

As the rand continues to devalue, there will be greater pressure on local business to find additional local suppliers. Not only are imported products becoming more expensive, but it is very likely that larger producers will focus on exporting a greater share of their output, which is rapidly becoming more price competitive in international markets, and will earn a higher Rand return. As competition for local suppliers increases, there will be opportunities for **the dti** to structure programmes that have better outcomes for smaller producers through the

negotiation of preferential marketing arrangements, particularly with those retailers operating in higher-income markets.

## ***2. Farmer cooperatives at the processing level may facilitate a greater capture of value***

As discussed, there are a number of potentially problematic issues with the establishment of production cooperatives (in addition to the number of studies that have identified problems in the construction of primary cooperatives). However, cooperation at the level of agro-processing can have significant benefits for smaller producers, by providing the prospect of capturing a greater share of the value chain.

Returning to the example of the proposed abattoir to service rural livestock owners: while the abattoir may offer only limited benefits for many of these farmers, given the relatively low producer price of beef applied to their small cattle numbers, cooperative ownership of the abattoir offers the prospect of a higher income per unit of livestock, by capturing a share of the wholesale margin. If the abattoir is engaged in direct retail sales, that income may be even higher. A similar argument can be applied to small dairy producers, who can achieve a significantly higher return per litre of production by engaging in value adding activities such as bottling and retailing fresh milk or the production of processed dairy products. While it is usually not viable for the small producers to invest in their own individual processing facilities it may be viable for them to do so on a consolidated basis.

Establishing and operating such enterprises is not, of course, an easy or low-risk alternative: most smaller producers do not have the business experience or technical skills necessary to manage an agro-processing facility. There is thus an important role for government to play in developing innovative models around cooperative agro-processing that will bridge this skills requirement. Such models will contribute significantly to earning better returns for smaller producers.

## ***3. Innovation in the structure and location of processing infrastructure will reduce transaction costs***

Transaction costs – particularly the costs of transport, post-harvest storage and cold storage – may be significant for smaller agricultural producers. A focus on reducing these transaction costs may contribute to increasing the sustainability of smallholder agro-processing initiatives.

Transport costs are especially important for smaller producers since it is difficult for them to generate economies of scale based on their relatively small volumes of production. As a result, per unit transportation costs may be so high as to erode much

of their gross farming margin. Transportation modes may also be implicated in a rise in post-harvest losses, due to inadequate refrigeration or unsuitable storage of perishable items. Therefore, the location of processing infrastructure and the ways in which produce accesses these points may be significant for net farm incomes.

The proposed **agri-parks** initiative of the Department of Rural Development and Land Reform (DRDLR) provides a potentially significant component of a strategy for increasing access to processing infrastructure. Agri-parks are planned in each of the 44 district municipalities, and could provide a good foundation off which to leverage certain components of **the dti's** agro-processing strategy. Coordination among identified demand for particular processed items; planned or existing infrastructure at an agri-park; and corresponding farmer support programmes are most likely to result in successful programme outcomes.

## ***4. Co-ordinated policy responses across multiple institutions are critical***

Agri-food policy presents a particular challenge for policymakers because it encompasses a wide range of policy areas and thus requires a co-ordinated response, something that is difficult to achieve in practice (Barling, Land and Caraher, 2002). Effective policy integration does not only require horizontal co-ordination (among different national departments and agencies), but vertical co-ordination as well, including the various levels and spheres of government (ibid).

Activities directly related to **the dti's** agro-processing programme are located in the national departments of agriculture (DAFF) as well as rural development and land reform. Additionally, the various provincial departments of agriculture and rural development play a role in farmer support and extension services, while local government has a role in land use regulation and critical infrastructure provision, such as water and electricity. Effective co-ordination of efforts and resources is key to improving programme outcomes, but this is not a simple task.

Once again, the agri-parks initiative provides a potentially good entry point for achieving the goal of policy co-ordination. A “census” of existing and planned (funded) agricultural projects and initiatives for each of the 44 districts would be a useful exercise. This information could provide the basis for identifying potential economies of scale to support specific agro-processing initiatives. For example, if three neighbouring districts have a strong focus on supporting small-scale tomato farmers, there may be a good argument for locating one large tomato processing facility in a location accessible to all three, rather than duplicating this in each one.

## CONCLUSIONS

The development of the agro-processing sector has significant potential to create new market access opportunities for smaller agricultural producers, thereby supporting the creation of new employment and livelihood opportunities in rural areas. However, potential market access points are not homogeneous for such producers. Certain market opportunities are more likely to provide the desired employment and income opportunities than others. The critical differentiating factor is the terms on which market incorporation is achieved. Greater attention needs to be placed on forecasting and assessing these terms of incorporation **for individual producers** as part of the initial feasibility process for proposed agro-processing interventions.

Producer-owned agro-processing facilities (either exclusively or in partnership with other parties) offer significant potential to increase producer share of the total value chain, thereby improving the prospects for positive net farm profitability.

Additionally, smaller producers face very particular challenges in terms of physical market access and related issues around post-harvest storage and the management of perishable items. These factors contribute to the generally higher per unit transaction costs of smaller producers, and undermine their competitiveness and long-term viability. Innovation in the location of processing infrastructure as well as alternative means for accessing that infrastructure (such as mobile abattoirs and in-field portable cold-storage containers) may impact significantly on these costs, thus enhancing smaller farm net incomes.

The challenge of policy and resource co-ordination is significant in the agro-processing space, but must be overcome to increase the effectiveness of programme spend. DRDLR's agri-parks programme – which aims to establish an agri-park in 44 district municipalities – may provide a key point for the coordination of both horizontal and vertical efforts around agro-processing.

The rapid devaluation of the Rand offers particular advantages for smaller agricultural producers and associated processing activities, as imported items (butter from the European Union is one example, prepared vegetables from East Africa is another) become more expensive, and larger local producers increasingly look to more lucrative export markets.

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