DEPARTMENT OF ECONOMIC DEVELOPMENT, ENVIRONMENT & TOURISM

FINAL REPORT

AGRO-PROCESSING RESEARCH STUDY

Turnaround Partners

18 July 2007

Glossary of Terms

Co-Ops	Co-Operative
DOA	Department of Agriculture
EU	European Union
FAO	Food and Agriculture Organisation
NGC	New Generation Co-Operatives
SMME	Small, medium & micro enterprises

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EXECUTIVE SUMMARY

The Agro Processing Research study was commissioned by the Department of Economic Development, Environment and Tourism with the aim of ascertaining the scope and potential of agro-processing within the Province. According to the Terms of Reference, the Department sought to obtain a picture of the sustainability and profitability of the industry, as well as to find out if the province has factor capacity to carry out agro-processing activity. Further aims of the project were to evaluate successful agro-processing models and make recommendations on their replication in the rest of the Province. At the outset, it was agreed that the study would focus on four (4) crops: i.e. bananas, mangoes, oranges and tomatoes, since Limpopo Province is a major producer of these commodities.

In the execution of the project, the consultants adopted a structured methodology which commenced with confirmation of the client expectations. This culminated in a detailed Project Charter and Workplan. Thereafter the consultants conducted a desktop study as well as personal interviews in order to gather data from Government departments, Statistics SA, farmers organizations, among others. This information was analysed and synthesized into reports which were presented to the Department.

The study findings indicate that production, processing and marketing of the 4 commodities quoted above is currently being dominated by commercial interests, with rural and emerging farmers relegated largely to informal markets. These commercial interests have access to market information which has enabled them to penetrate domestic and export markets. At the same time, commercial farmers, through their growers associations, have access to extension workers who provide valuable technical assistance. Rural and emerging farmers, on the other hand, do not have access to similar resources.

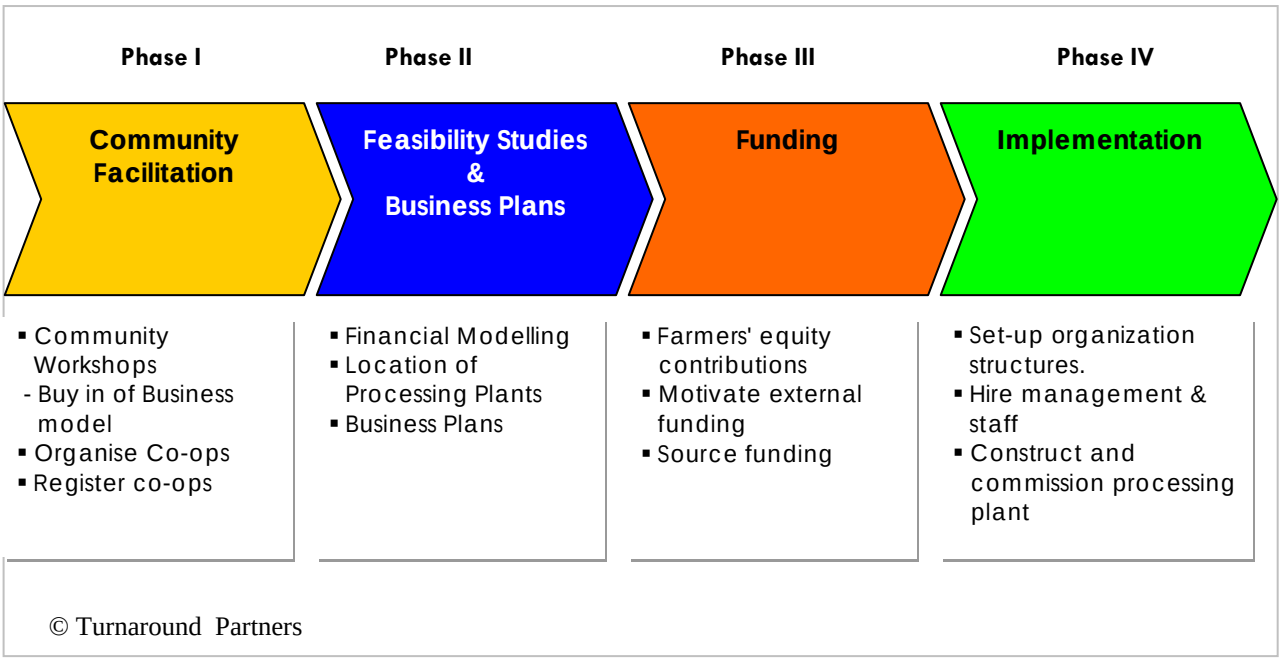
In view of the current state of affairs, any government interventions should focus on rural and emerging farmers. To this end, government should facilitate the formation of producer co-operatives in the areas where the above commodities are grown. The co-operatives will, in turn, establish processing enterprises which, in addition to providing a market for the commodities, will provide agricultural extension services. Producers' co-operatives have been in existence in other countries for more than a century. They have survived and thrived with some of them having grown and evolved into multi-national corporations.

It is the considered view of the consultants that the successful establishment of the co-operatives will have a catalytic impact on the economic growth of the areas where they will be established. The distribution channel for all fresh produce is the same. Thus, once a co-operative enterprise

has been established, farmers growing fruits and vegetables other than bananas, mangoes, oranges and tomatoes can have access to markets for their other products. South African supermarkets are importing high valued fresh produce which can be grown by rural farmers in Limpopo!

In order to facilitate the establishment of co-operatives, a high level framework for an implementation strategy is represented by the diagram below:

Fig 1: High Level Framework for Establishment of Co-Ops



The most important phase is Community Facilitation whose focus is to obtain farmers' buy in on both the concept and the mechanics of producer co-operatives.

This report is structured to incorporate prior interim reports as these form part of the final body of work and improves the flow and readability of the report.

1 INTRODUCTION

The Limpopo Growth and Development Strategy has recognised Agro-processing as one of the two high potential industrial clusters in the Province. The Province has recognised that there occurs a good amount of primary and secondary production which is exported from the Province while consumption goods are sourced from outside the Province.

The Department of Economic Development Environment and Tourism has commissioned this research into agro-processing in order to investigate potential of adding value to primary agricultural commodities produced in the Province, especially the four commodities; namely oranges, bananas, mangoes and tomatoes.

2 SCOPE AND OBJECTIVES

The scope and objectives of the project are outlined in the Terms of Reference (Appendix 1) as issued by the Department. The Project Charter (Appendix 2) further clarified and outlined the objectives as follows:

2.1 OBJECTIVES

The objectives of this project are as listed below:

- To ascertain the scope and potential of agro-processing activity so as to obtain a picture of the sustainability and profitability of the industry.
- To find out if the province has factor capacity to carry out associated agro-processing activity, including human resources and infrastructure.
- To evaluate successful agro-processing models and make recommendations on their replication in the rest of the province.

2.2 SCOPE

The scope of the study is as follows:

PHASE 1:

- Identify the major production areas of the 4 commodities under review
- Categorize production by farmer groups
- Compile production data for each of the 4 commodities under review
- Analyse production data for each commodity
- Identify constraints to increased production
- Identify major inputs for horticulture and livestock farming

PHASE 2

- Identify current and potential markets for the 4 primary commodities
- Analyse SA market trends
- Analyse global market trends
- Identify opportunities for markets in RSA and exports
- Beneficiation/ Value Addition
- Analyse value addition for each of the 4 commodities
- Identify opportunities for adding value
- Identify opportunities for SMMEs
- Determine employment potential

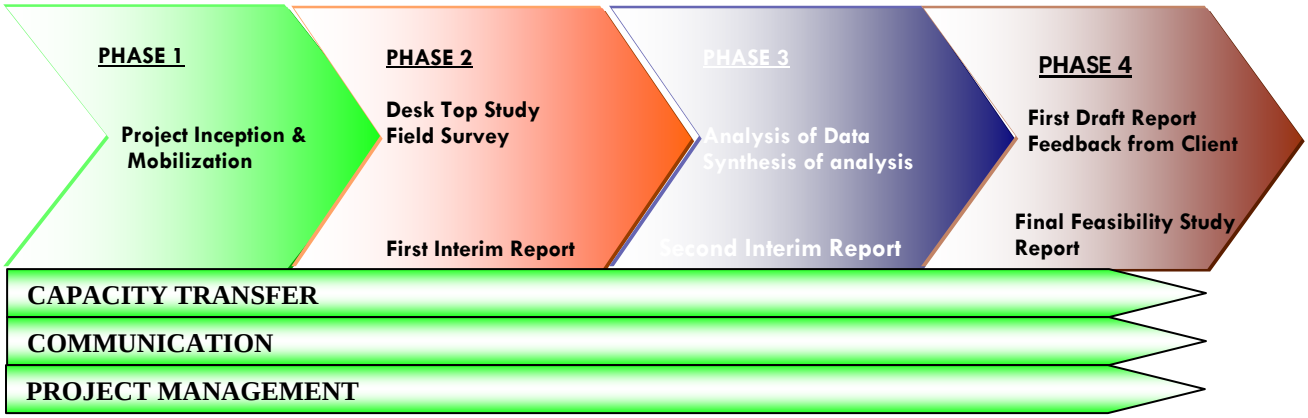
PHASE 3

- Draft and Final Reports

3 METHODOLOGY

A structured methodology has been followed during the conduct of this project and it is summarized in the graphics presented below, and discussed in the subsequent paragraphs. The approach starts with project inception, and ends with the final study report.

Fig 2 METHODOLOGY



PROJECT INCEPTION
- Organise project
- Confirm client expectations
- Identify stakeholders
- Develop study framework

MOBILIZATION
- Mobilize project resources & setup team.
- Lists of entities to include in Field Survey
- Appointments with Field Survey participants.

DESK TOP STUDY
- Gather existing data
- Dept of Agriculture/ Statistics SA, etc.
- Grower organisations
- Distributors
- Other published data.

FIELD SURVEY
- Interviews with Field Survey participants.

FIRST INTERIM REPORT

ANALYSIS
- Analysis of data from Desk top survey.
- Analysis of data from Field Survey.

SYNTHESIS
- Synthesis of all data

2nd INTERIM REPORT

FINAL REPORT
- Feedback from Client - 2nd Interim Report
- Present First Draft Report
- Feedback from Client

FINAL FEASIBILITY STUDY REPORT

3.1 PHASE 1: INCEPTION & MOBILIZATION

The work conducted during Phase 1 of the project is detailed below.

3.1.1. INCEPTION

Work on the project started with reconfirming the client's expectations as far as the project outputs, reporting channels and conduct of the study. This offered an opportunity for the consultants to clarify with the client as far as any additional instructions and deliverables. The result of this exercise was the production of the Project Charter and Project WorkPlan. The Project WorkPlan was presented to the Department and was approved.

3.1.2 MOBILIZATION

The initial activities entailed project planning and mobilization of resources required for the execution of the project. Data collection forms, questionnaires and analytical tools for use during the study were

assembled and tested. Field survey participants were identified and a list of the participants were made.

3.2 PHASE 2: DATA GATHERING

3.2.1. DESKTOP STUDY

This entailed the gathering of existing information. Data was accessed from the Limpopo Department of Agriculture, National Department of Agriculture, Statistics SA, as well as databases of the various product specific grower associations. Other local and international publications such as those of the Food and Agriculture Organisation, were also reviewed.

3.2.2 FIELD SURVEY: INTERVIEWS

Interviews were conducted with various stakeholders, with the aim of gaining information with regard to their operations, their views on the state of the industry in general as well as specific information on the performance of the various commodities being researched. The list of survey interviews is as shown below:

Limpopo Department of Agriculture
Statistics SA
Banana Growers Association
Citrus Growers Association of South Africa (CGSA)
Citrus Growers Association of Southern Africa (CGA)
Citrus South Africa (CSA)
Citrus Research International (Pty) Ltd (CRI)
Mariveni Farmers' Co-operative
South African Agricultural Processors Association (SAAPA)
South African Vegetable Growers Association (SAVGA)
South African Mango Growers' Association (SAMGA)
Tomato Growers Association

3.3 PHASE 3: ANALYSIS & SYNTHESIS

At the conclusion of the data gathering phase, data was collated and analysed. Preliminary conclusions were derived which were presented in the Second Interim Report. Further analysis and synthesis have now been conducted and are presented in this Draft Final Report.

3.4 PHASE 4: PROJECT REPORTS

This phase entails combining of all the project phases: desk top study, field survey, analysis and synthesis into a body of work to be presented to the client. The initial report is the Draft Final Report which will be presented to the client. Feedback will be sought from the client, and after incorporating this feedback, a Final Project Report will be prepared and presented to the client.

3.5 CLOSE-OUT SESSION

A Close-Out session will be conducted with the client. This session will afford the consultants an opportunity to present lessons learned to the client and present any other observations which bring value to the project.

3.6 CONCURRENT ACTIVITIES

In addition to the core activities of the project, other activities taking place were as follows:

- Capacity Transfer: This is an important aspect of the projects which we engage in and we ensured that there is continuing passing on of skills to those persons that we worked with during project.
- Consultation and communication: Ongoing consultation and communication with the client enabled the client to be kept informed of developments as the project progressed. The consultations also ensured that we got feedback as to the requirements of the client and whether these were being met.
- Project Management: This is another key aspect. This activity ensured that the project progressed on schedule, that regular status reporting took place, that project issues were resolved and that quality work was delivered to meet the client's requirements.

3.7 THE PROJECT TEAM STRUCTURE

Team Leader

The Team Leader had overall responsibility for timely and quality delivery of the project. He was the project's quality controller. The team leader for this project was Mr Michael T. Wakatama.

Project Consultant

The Project Consultant was responsible for the day-to-day project execution. He was responsible for the deliverables. The project consultant for this project was Professor M Gundidza.

4 AGRO-PROCESSING ASSESSMENT TOOLS

Agro-processing requires a number of factors to be put in place before commencing production of value added products. This requires prior careful and detailed analysis of the value chain. An effective tool for achieving such detailed analysis is the Commodity Systems Assessment Methodology for Problem and Project Identification. Almost all the successful agro-processing enterprises have used such assessment tools.

Figures 1, 2 and 3 summarise this methodology.

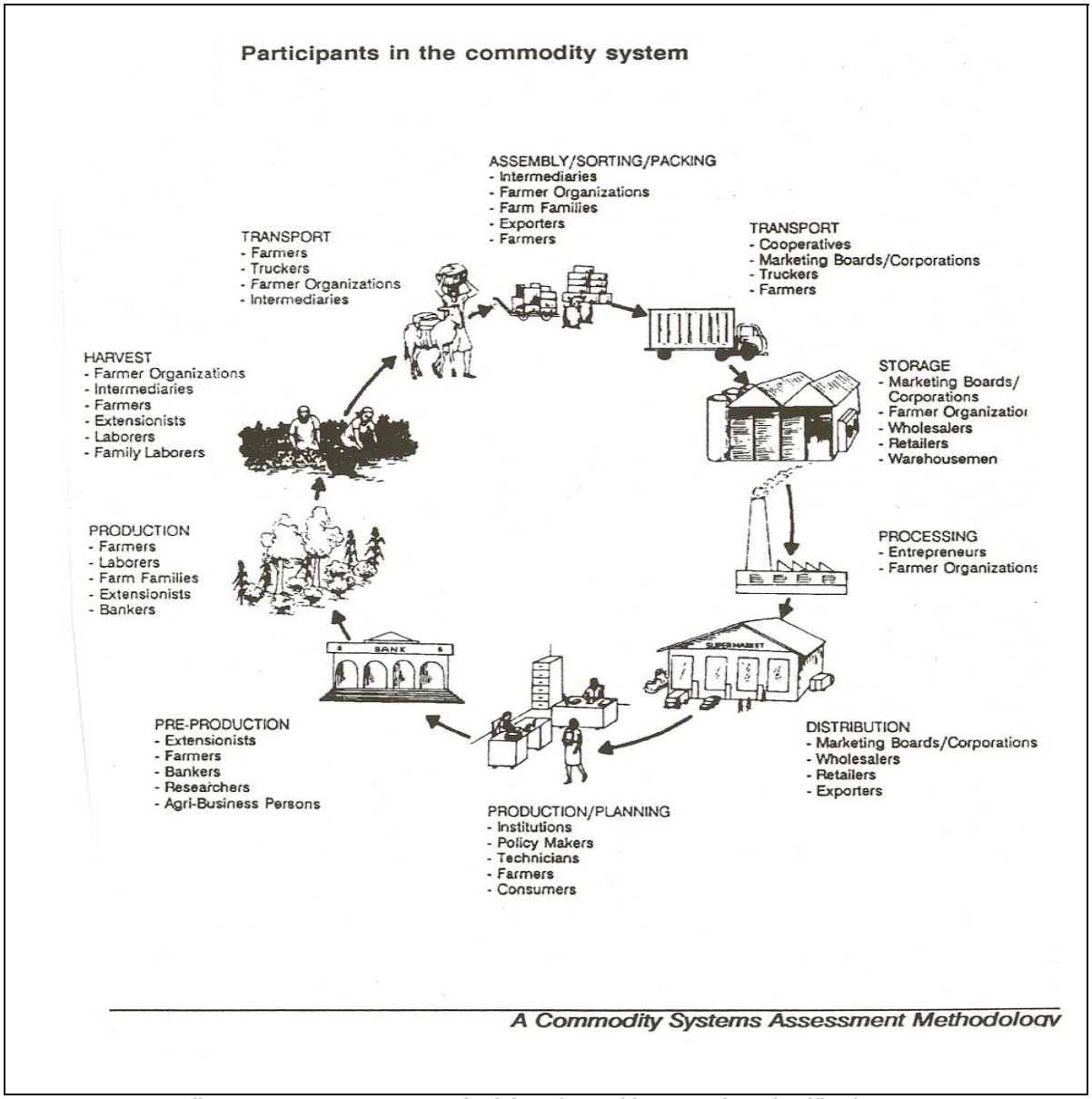
In any attempt to solve problems there are three basic steps:

- Identification and description of the problem
- Identification and formulation of the solution, and
- Execution of the solution

This research project concentrates on steps one and two. In developmental work, both are interdependent; effective solutions cannot be prepared without a clear understanding of the problem(s).

Based on the above **the key to problem solution is proper problem identification,** and therefore the four commodities in question, bananas, mangoes, oranges and tomatoes have to go through this system before agro-processing can commence.

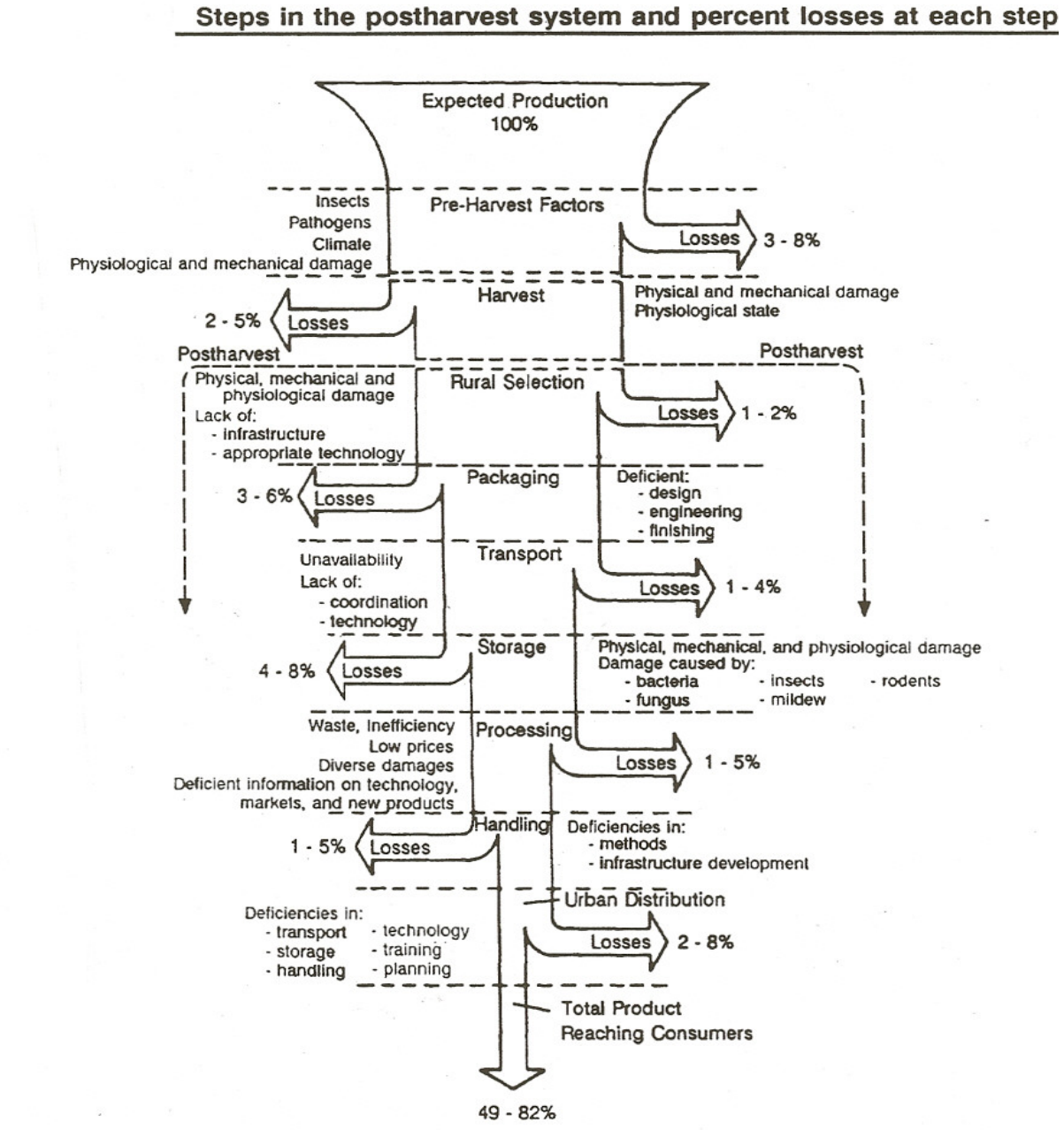
Fig 3: A Commodity Systems Assessment Methodology



Source: **A Commodity Systems Assessment Methodology for Problem & Project Identification: J LaGra, 1990**

As can be derived from this figure, all the participants in the commodity system have to be identified and then take part in each relevant point of the value chain if successful agro-processing enterprises are to be established. The commodity systems methodology reveal all the necessary facets to complete this cycle in the value chain of the four commodities, and problems will be highlighted for each commodity.

Fig 4: Post Harvest Systems & Losses

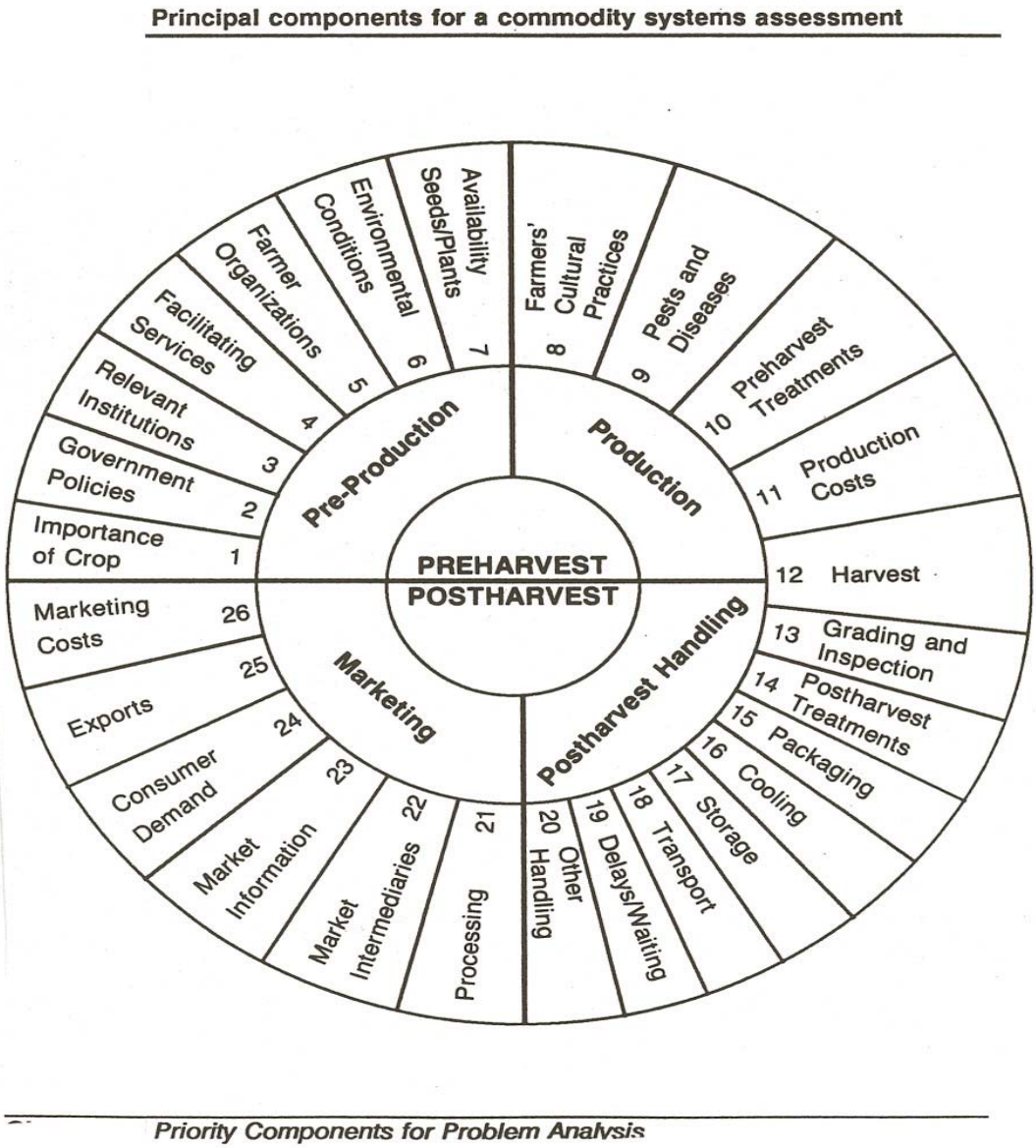


Source: Amezquita and La Gra, 1979, p. 18.

Introduction to Food Systems

The process outlined in the above figure needs to be studied prior to production so as to avoid losses in the post harvest cycle. Many rural farmers suffer losses after the post harvesting stages. Losses lead to reduction in revenue. Hence before processing starts, the possible focal points for possible losses have to be studied and continually reviewed.

Fig 5: Principal Components of the Commodity Systems Assessment



Source: A Commodity Systems Assessment Methodology for Problem & Project Identification: J LaGra, 1990

This figure outlines the principal components for a commodity systems assessment. It illustrates the four major components of a Commodity Assessment System:

1. The pre-production and relevant components to drive it
2. Production itself and the components necessary to drive it
3. Post-harvest handling and its important components
4. Lastly marketing, which is key to the whole value chain and all that is involved in the marketing arena to make it sustainable.

5 DESCRIPTION OF THE AGRO-PROCESSING INDUSTRY

Many companies in South Africa large, small and medium do carry out a variety of agro-processing activities in the commodities being considered in this project, (bananas, mangoes, tomatoes and oranges) in various parts of the country.

In general processing companies do not produce the raw materials themselves but buy them from farmers. There are many value added products being produced especially from tomatoes and oranges. This study has revealed that very few small scale farmers are involved in value addition of the commodities. Bananas are mainly packed and sold without value addition. The prices offered to growers by processing companies are not all that attractive. More details on the industry will be discussed in Sections 8 -11 which cover each of the commodities individually.

6 SECTOR INPUTS

6.1 INPUTS

Limpopo Province has the potential for manufacturing some of the inputs required by the agro-processing industry for both local use and for sale to other provinces. Some of the raw materials necessary for manufacturing these inputs can be found in the province and, annual expenditure for these inputs would attract medium-sized manufacturers. The table below shows the major inputs by value.

TABLE 1: AGRO-PROCESSING INPUTS

INPUT		EXPENDITURE R'000
Fertilizers		273 328
Packaging materials		358 774
Crop chemicals		229 678

Sources: Annual Reports 2006: Foskor (Pty) Ltd: Sasol Nitro (Pty) Ltd: Nampak (Pty) Ltd

6.2 FERTILIZERS

Mineral fertilizers and agricultural lime are essential inputs for the agricultural industry. While the province produces (or has available) three of the essential four minerals, it buys-in all its fertilizer requirements from other provinces. See the table below.

TABLE 2: FERTILIZER RAW MATERIALS

Limestone		Available in Limpopo
Magnesite		Available in Limpopo
Potash		Imported (overseas)
Phosphate		Available in Limpopo (Phalaborwa)

Sources: DME: Mining Production Statistics 2005.

Indeed, the phosphate rock that is the starting material for compound fertilizers is railed some 800km to Richards Bay where Foskor (Pty) Ltd manufactures fertilizers for local and international distribution. Water soluble fertilizers such as Calcium Nitrate and Magnesium Nitrate are imported from other provinces; these fertilizers are used in the horticulture industry. Other major manufacturers of fertilizers are Kynoch Fertilizer (Pty) Ltd, Omnia Group Ltd and Sasol Nitro (Pvt) Ltd.

The process of manufacturing these fertilizers is relatively simple. At the same time, capital costs for plant and equipment would be affordable to a well resourced SMME with the requisite technical skills.

It should be noted that banana peels contain about 5% phosphate which would make them suitable for organic fertilizer. This potential opportunity should be evaluated as a separate exercise from this research project.

6.3 PACKAGING MATERIALS

Major packaging materials for agro-processing include glass and plastic bottles, jars, metal and plastic containers, corrugated paper cartons and pallets. The manufacture of these products with the exception of plastic bottles, plastic containers and pallets, is very capital intensive and requires economies of scale.

Mondipak, a division of Mondi Limited which is a subsidiary of Anglo American, is manufacturing corrugated paper cartons at its factories in the Nkowankowa Industrial Park. The high volumes of horticulture products from this area gives the company the requisite economies of scale. There are also some pallet manufacturers in the Tzaneen area.

A number of manufacturers of plastic packaging such as plastic bottles and pallets are operating within the province.

6.4 CROP CHEMICALS

The manufacture of crop chemicals is dominated by multi-national companies, most of whom import bulk chemicals from sister companies for local packaging. This is a high tech and capital intensive industry which requires a high skills base and massive expenditure on Research and Development.

It is the considered view of the consultants that manufacturers are unlikely to relocate to Limpopo unless there are adequate potential volumes to make it worth their while.

6.5 LIVESTOCK & POULTRY FEEDS

It is the consultant's view that this input to the red and white meat industry offers some opportunities to well resourced SMMEs. Annual expenditure for stock and poultry feed in 2002 was about R594 million. The table below shows Limpopo production figures for the major raw materials in 2002.

TABLE3 : STOCKFEEDS RAW MATEIALS

MAJOR RAW MATERIAL		PRODUCTION: METRIC TONS
Maize		129 376
Soya Beans		10 896
Cotton		18 542
Sunflowers		44 710

Source: Spesfeeds (Pty) Ltd, Animal Feeds & Manufacturers Association (AFMA)

It should be noted that some cattle producers use hominy chop, a by-product of maize milling, as a substitute for maize. Other substitutes in current use (as a source of energy) are sorghum and orange pulp. Since the province is a large producer of mangoes and bananas, mango seed and pulp and banana waste should be evaluated for possible use in cattle feed.

Reject ripe bananas, supplemented with protein, vitamins and minerals are commonly fed to pigs. Green bananas are also used for fattening pigs but, because of the dryness and astringency and bitter taste due to the tannin content, these animals do not care for them unless they are cooked, which makes the feeding costs too high for most growers. Therefore, dehydrated green banana meal has been developed and, though not equal to grain, can constitute up to 75% of the normal pig diet, 40% of the diet of gestating sows. It is not recommended for lactating sows.

Beef cattle are quite fond of green bananas whether they are whole, chopped or sliced. Because of the fruit's deficiency in protein, protein or urea is added, with a little molasses

mixed in to improve the taste. It has been found that meal made from dehydrated reject bananas can form 14% of total broiler rations without adverse effects.

6.6 OPPORTUNITIES FOR MANUFACTURE OF AGRO-PROCESSING INPUTS

The following are some potential opportunities for the manufacture of agro-processing inputs:

- Water soluble fertilizers
- Agri-lime
- Stock feeds.

These opportunities have been selected as they require medium capital expenditure and can be manufactured by small to medium sized enterprises.

7 THE VALUE CHAIN IN AGRO-PROCESSING

The value chain in agro-processing starts from pre-production, to the market. The value chain is divided into four major sections namely:

- Pre-production
- Production
- Post-harvest handling
- Market.

Each commodity has its own value chain which is discussed in detail in a dedicated section. Losses can be experienced at each stage of this general value chain. Extreme care therefore should be taken to avoid losses and hence income. One very important issue about this value chain is that employment can be created at each stage and that the establishment of an agro-processing plant in any area depends primarily on the availability of sustainable markets for the products, on availability of the raw materials as well as technical know how. This research study will highlight issues on each value chain and suggest ways on how to establish a successful agro-processing plant in the most suitable locations.

8 BANANAS

In 2004, a total of 130 mostly developing countries produced bananas. Production, as well as exports and imports of bananas, are highly concentrated in a few countries. The 10 major banana producing countries accounted for about 75% of total production. India, Ecuador, Brazil and China alone accounted for half of the total bananas produced, and exported 11.7 million tones during the year 2004. While the Latin American and Caribbean region dominated production up to the eighties, the Asian region took the lead

in banana production during the nineties. African production levels have remained relatively stable and much lower.

8.1 OVERVIEW OF THE BANANA INDUSTRY IN SOUTH AFRICA

- There are at least 350 farmers in six sub-tropical production areas
- Production areas are as follows: Levubu near Louis Trichardt (1 100 ha); Letaba at Tzaneen (1 000 ha); Hazyview (2 600 ha), Sabie, Onderberg around Malelane and Komatipoort (4 800 ha); Natal South Coast (2 000 ha) and Natal North Coast (700 ha).
- During the last quarter of 2002, the 16 major fresh produce markets of South Africa recorded that 87 950 tons sold at an average value of R11 200 per ton.
- Improvements in tissue culture technology have been instrumental in the growth and productivity of the industry.
- Approximately half of the many millions of South Africa banana plants are exported into other African countries, the Caribbean and Latin America.
- Production has increased from an average of 16 tons a hectare in the early 90's to 30 tons a hectare currently.
- Bananas are mainly grown for the local market.

8.2 SOUTH AFRICAN PRODUCTION

The table below presents the statistics for banana production for the period 2001 to 2006.

TABLE 4: BANANA PRODUCTION IN SOUTH AFRICA

Year	2001/02	2002/03	2003/04	2004/05	2005/06
Production ('000 Tons)	392.5	352.0	277.0	316.3	366.2

Source: Department of Agriculture: Central Statistics 2006.

As can be seen in the above table, the South African production of 366 tonnes (2005) is quite small, compared to a figure of 11.7 million tones which was exported by the major exporting countries. From a production figure of 392 tons in 2001/02 production decreased in the years 2002/03, 2003/04, however production has again picked up in 2004/05 and 2005/06.

8.3 PRODUCTION IN LIMPOPO PROVINCE

TABLE 5: TOP 3 BANANA PRODUCTION AREAS

Area	Planted hectares	Production	
		Metric Tons	% Province
Soutpansberg	1 189	23 604	48.98
Letaba	757	16 935	35.14
Phalaborwa	133	5 717	11.86
Sub-total	2 079	46 256	95.98
Small Scale Areas	120	1 932	4.02
Total Province	2 199	48 188	100.00

Census of Agriculture, Provincial Statistics 2006- Limpopo

As shown by the above table, the major areas of banana production are Soutspansberg, Letaba and Phalaborwa. Limpopo's overall production constitutes approximately 13% of the nation's total banana production.

TABLE 6: SMALL SCALE BANANA PRODUCTION AREAS

Area	Planted hectares	Production	
	Metric Tons	Metric Tons	% Province
Dzanani	38	1 002	**2.08**
Mutale	45	681	1.42
Polokwane	37	249	0.52
Sub-total	120	1 932	4.02
Total Province	2 199	48 188	100.00

Source: Department of Agriculture: Central Statistics 2006.

The table and figure above show that Dzanani, Mutale and Polokwane produce very small quantities of bananas and hence do not warrant the establishment of agro-processing plants.

As far as overall production is concerned, the small scale growers contribute a small percentage 4% to the overall banana production in the Province.

8.4 INDICATIONS: BANANA PROCESSING

Production statistics indicate that viable processing plants could be established in Soutpansberg and Letaba. Phalaborwa could be a possibility too on a smaller

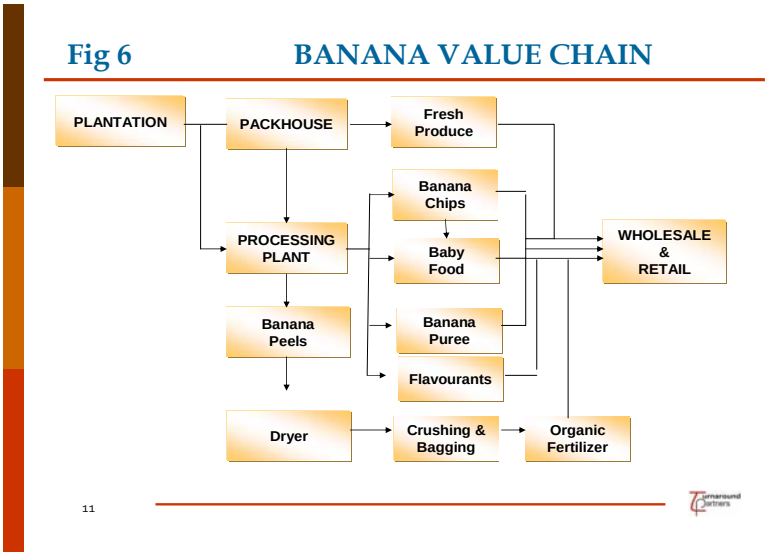
scale. The other areas do not produce enough bananas to warrant the establishment of processing zones unless production is increased.

It is worth noting that of the 366 200 tons produced in the year 2005/06, only 977 tons were taken into processing. This indicates that the level of processing is still quite low at 0.27% of total production. The reasons for this level of processing may be varied and need to be understood before embarking on processed foods facilities.

8.5 THE BANANA VALUE CHAIN

The banana value chain is presented in the figure below.

Fig 6 BANANA VALUE CHAIN



As shown in this figure, a variety of products can be produced from bananas. Most of the products shown above are not currently produced in the province and hence an opportunity exists in establishing processing plants which could create jobs.

8.6 PROCESSED FOODS

The banana is utilized in many ways in the human diet—from simply being peeled and eaten as a fresh fruit, to being cooked and used as the starch component of a meal, to salads, as well as chips for snacking.

Bananas that do not meet standard as fresh produce can be processed into a variety of foods, as indicated below.

Banana puree is important as infant food as it is easily digested. Puree can be successfully canned by the addition of ascorbic acid to prevent discoloration. The puree is produced on a commercial scale in factories close to banana fields and packed in plastic-lined cans and drums. It is then used in the manufacture of many other foods such as baby foods, cakes, pies, ice creams, milk shakes and many other products. Banana nectar is prepared from banana puree which is combined with cellulose gum as a stabilizer.

Sliced ripe bananas, canned in syrup, are used in tarts, pies, gelatins and other products. Fried green banana chips have been increasing in popularity in various parts of the world over the past 25 years and these products are commonly found in retail groceries alongside potato chips and other snack foods. Dried bananas, or so-called "banana figs" are peeled firm-ripe bananas split lengthwise, sulphured, and oven-dried. Figs can be eaten as a snack or minced and used together with candied lemon peel in fruit cake and other bakery products.

Dehydrated banana flakes are added to cereals, used in baked goods, meat loaf, curries, desserts, sauces, and other products. South Africa has produced flakes of 2/3 banana and 1/3 maize meal. In other parts of Africa, ripe bananas are made into beer and wine. The Tropical Products Institute in London has established a simple procedure for preparing acceptable vinegar from fermented banana rejects.

VALUE ADDED PRODUCTS MADE IN OTHER COUNTRIES

- Banana puree
- Banana baby Foods
- Banana chips
- Banana paste
- Banana wine
- Banana vinegar
- Banana figs
- Banana flour
- Banana catsup

VALUE ADDED PRODUCTS ON THE SOUTH AFRICAN MARKET

- Banana flavoured yoghurt
- Banana flavoured mageu
- Banana flavoured milk
- Banana flavoured custard
- Banana chips

8.7 LOCAL DISTRIBUTION CHANNELS

The bulk of banana production (approximately 60% of production) is sold locally as fresh bananas. The most significant distribution channels for fresh fruit are the national fresh

produce markets such as the Johannesburg Fresh Produce Market, Tshwane Fresh Fruit Market, Cape Town Fresh Produce Market and the Durban Fresh Produce Markets. The large chain supermarkets such as Pick & Pay, Shoprite and others also sell a lot of bananas. Independent fruit and vegetable retailers such as Fruit & Veg City and others also play a significant role in the local distribution channel as they function as both wholesaler and retailer.

The smaller retailers usually source their produce from the fresh produce markets. Informal markets source their produce either directly from small scale growers or from the fresh produce markets.

Processors also absorb a small amount of the produce and turn it into purees, flavourants etc.

8.8 EXPORTS

The balance of the crop that is not consumed locally is being exported. The Banana Growers Association currently exports to Libya. Small volumes are exported to Botswana. Inquiries have been received from the Middle East, Russia etc.

8.9 OTHER VALUE ADDED PRODUCTS

Banana leaves produce fibre which is used for manufacturing many products such as baskets, rope, table mats and handbags. In India and Japan paper of good strength has been made from crushed, washed and dried banana pseudo stems which yield 48 to 51% of unbleached pulp.

Dried banana peel, because of its 30 to 40% tannin content, is used to blacken leather. The ash from the dried peel of bananas is rich in potash and used for making soap. Ash from burned peel of unripe fruits of certain varieties is used for dyeing.

Baskets Woven from Banana leaves and twine/sisal

N.B Note that there is sisal production in the Letaba area which together with banana leaf fibre can generate another industry for rural people in the areas of Vhembe and Mopani areas in making baskets such as those above..

In Japan, the making of fibres for clothing, tablecloths and paper has been going on for centuries. Inputs/equipment needed for value addition will be presented in the subsequent report.

8.10 CONCLUSIONS

- The Province has the potential to increase banana production.
- There are no value addition factories in the Province other than the packing houses for the local market.
- There is space for establishing processing plants in the Province.

8.11 RECOMMENDATIONS

- That the establishment of banana processing plants be investigated further. Potentially viable areas for processing plants are: Letaba and Soutspansberg, with Phalaborwa as a marginally potential area.
- Programmes for small scale grower support services are needed. Such programmes could offer services such as agriculture extension which would assist small scale growers to improve productivity and quality.
- Rural household and small scale producers be encouraged to produce more bananas for processing.
- That as many of the value added products as is possible, be produced.
- An art and craft industry be established using banana by-products such as leaves.
- Abandoned pack houses in the respective municipalities be revived.
- That small scale producers be encouraged to join the Banana Growers Association of South Africa in order to benefit from research, extension services as well as for marketing purposes.

9 MANGOES

9.1 OVERVIEW OF THE MANGO INDUSTRY IN SOUTH AFRICA

Currently a total of about 7 500 hectares is under mango cultivation in South Africa in a season that runs from December to March/April. Total production ranges from 85 000 to 100 000 tons per annum.

The mango industry is oriented more to the local than the export market. With regards to exports, 65% of exports go to the EU, 20% to the Middle East and 15% to other markets. The main processed products are juice, dried mango and atchar. There is little to no growth in production in some areas of South Africa. The country's main competitors are Peru (main), Brazil, Ecuador and Puerto Rico

9.2 SOUTH AFRICAN PRODUCTION

Production statistics for mango planting in South Africa is as shown in the table below:

TABLE: 7 AREA PLANTED TO MANGOES IN SOUTH AFRICA

Province	Hectarage	%Percentage
Limpopo	4 453	58.5%
Mpumulanga	1 610	21.1%
Other	1 550	20.4%
Total	**7 613**	**100.00**

Source: Census of Agriculture, Provincial Statistics 2006- Limpopo.

The table shows that the Limpopo Province is the largest producer of Mangoes in the country followed by Mpumalanga. The largest producer of mangoes in the Limpopo Province is Hoespruit with 2 550 hectares under mangoes, producing 45 500 tons annually.

9.2.1 MANGO PRODUCTION COSTS

TABLE 8: MANGO PRODUCTION COSTS

PRE-HARVEST		COST/HA (RAND)
Pruning		762.97
Weed control		690.05
Fertilization		1 322.68
Spraying (Diseases and Pests)		220.63
Irrigation		889.61
Labour		885.88
TOTAL PRE-HARVEST		**4 771.82**
HARVEST		**COST/HA (RAND)**
Labour		913.50
Transport (orchard to pack house)		328.75
TOTAL HARVEST		**1 242.25**
OVERALL TOTAL COST		**6 014.07**

Source: Mango Growers Association (Subtropical): Tzaneen

The average cost of production for a 7-10 year old mango tree plantation is shown in the table above.

9.3 PRODUCTION IN LIMPOPO PROVINCE

The top producing areas in the province are as listed below:

TABLE: 9 TOP 3 MANGO PRODUCTION AREAS

Area	Planted hectares	Production	
	Metric Tons	Metric Tons	% Province
Sautpansberg	261	1 069	3.25
Letaba	3 978	24 167	73.51
Phalaborwa	819	6 294	19.15
Sub-total	5 058	31 530	95.91
Small Scale growers	272	1 344	4.09
Total Province	5 330	32 874	100.00

Source: Census of Agriculture Provincial Statistics 2006- Limpopo

As shown by the above table and figure above, the major areas of mango production are Letaba, followed by Phalaborwa and to a lesser extent Soutspansberg. These levels of production could warrant the establishment of mango processing plants in these areas.

TABLE 10: SMALL SCALE PRODUCTION AREAS

Area	Planted Hectares	Metric Tons	% Province
Giyani	109	266	0.81
Mutale	20	100	0.31
Waterberg	60	52	0.16
Musina	72	889	2.7
Mokopane	5	16	0.05
Ellisras	4	15	0.05
Tzaneen	1	3	0.01
Bela Bela	1	3	0.01
Sub-total	272	1 344	4.09
Total Province	5 330	32 874	100.00

Source: Department of Agriculture: Central Statistics 2006

The table above indicates that Giyani, Waterberg, Ellisras, Bela Bela produce insignificant quantities of mangoes to warrant the establishment of mangoes in these municipalities unless production is scaled up.

The above table indicates that the contribution of small scale growers to mango production in the Province is still quite small as compared to large scale producing areas.

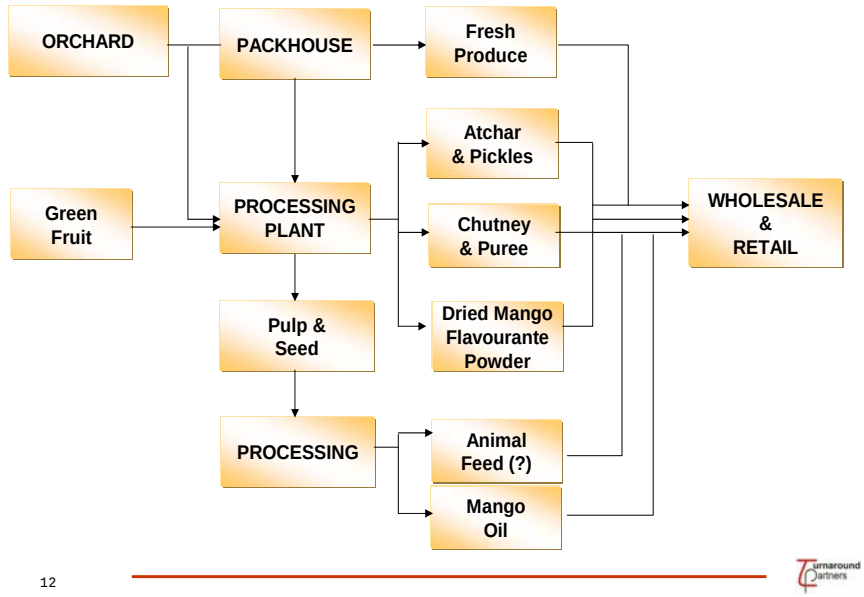
9.4 INDICATIONS: MANGO PROCESSING

The above statistics indicate that viable processing plants can be established in Letaba and Phalaborwa, and to a lesser extent at Soutpansberg. The other districts do not produce enough mangoes. However, household and orchards combined produce enough mangoes to warrant the establishment of processing plants in areas such as Thohoyandou, Giyani and Tzaneen

9.5 MANGO VALUE CHAIN

The mango value chain is presented below.

Fig 7 MANGO VALUE CHAIN



The value chain above indicates that several products based on the mango can be produced in many rural areas

9.6 MANGO PROCESSED FOODS

Mangoes are processed at two stages of maturity. The green fruit is used to make chutney, pickles, curries and dehydrated products.

Ripe mangoes are processed into canned and frozen slices, purée, juices, nectar and various dried products. Mango purée can be frozen, canned or stored in barrels for later processing. The commercial beverages are juice, nectar and squash. Mango nectar and

juice contain mango purée, sugar, water and citric acid in various proportions depending on local taste and government standards

Mango processing presents many problems. The trees are alternate bearing and the fruit has a short storage life. The large number of varieties with their varied attributes and the lack of simple, reliable methods for determining the stage of maturity for processing also affects the quality of the finished products. The lack of mechanized equipment for the peeling of ripe mangoes is a serious bottleneck for increasing the production of these products.

MANGO BASED PRODUCTS ON THE SOUTH AFRICAN MARKET

- Mango atchar
- Mango juices
- Mango concentrated drinks
- Mango flavoured wine
- Fresh mango fruit
- Fresh cut and sliced mango
- Mango nectar
- Mango squash
- Dried mango slices

9.7 LOCAL DISTRIBUTION CHANNELS

Most mangoes are grown for the local market either in the form of fresh fruit or processed products. Again the most significant distribution channels for fresh fruit are the national fresh produce markets such as the Johannesburg Fresh Produce Market, Tshwane Fresh Fruit Market, Cape Town Fresh Produce Market and the Durban Fresh Produce Markets.

The following table provides indications of the fresh fruit and processed product which was sold on the local markets.

TABLE 11: FRESH & VALUE ADDED PRODUCTION

Year	2001/02 Tons	2002/03 Tons	Price: R/ton/ 2002
Fresh fruit	23 366	17 000	1 550
Dried mango	8 128	6 090	1 350
Atchar	23 561	15 025	500
Juices	15 153	11 761	1 200
Subtotal	70 208	49 876	
Other products	17 370	17 336	
Total	87 578	67 212	

Source: South Africa Mango Growers Association, Tzaneen.

The table above indicates that the value addition can reduce losses, since products such as atchar are made of green mangoes which are off-spec for the fresh produce markets. Dried mangoes and juices can also be made from low grade mangoes. Juices can be concentrated and on dilution for the consumer the producer achieves added value.

TABLE 12: MANGO MARKET STATISTICS

YEAR	2001/02	2002/03	2003/04	2004/05	2005/06
Domestic Sales (Tons)	25 504	**15 562**	16 988	18 276	16 171

Source: South Africa Mango Growers Association, Tzaneen.

The table and figure above indicate that the domestic sales of mangoes were high in the 2001/02 period but then dropped in 2002/03. Since then volumes have recovered slightly in 2003/04, 2004/05 then dipped again in 2005/06. This trend indicates a volatile market/demand pattern.

TABLE 13: INTAKE FOR PROCESSING

	2001/02	2002/03	2003/04	2004/05	2005/06
Processing Intake	48 780	33 896	51 460	64 001	40 236

Source: South Africa Mango Growers Association, Tzaneen.

The table above indicate that in general there is quite a large proportion of mangoes used for processing in South Africa. In the 2001, 48 780 tons were used for processing. The volumes dropped in 2002, recovered in 2003 and 2004, then dipped again in 2005 and 2006. This indicates a fairly volatile market as far as volumes are concerned.

9.8 MANGO EXPORTS

South African mangoes are mainly exported to Europe, Middle East, Far East, Canada and some African countries in the region. The figure below indicates the export volumes.

TABLE 14: MANGO EXPORTS

EXPORTS					
Year	**2001/02 Tons**	**2002/03 Tons**	**Price: R/ton 2002**		
Exports	17 375	17 336	1 500		

Source: South Africa Mango Growers Association, Tzaneen.

9.9 OTHER : OUTLOOK FOR MANGOES

The following is a summary analysis of the outlook for mangoes:

- The 2006 crop is expected to be of a similar in size as the 2005 crop.
- The demand for dried mango is expected to continue to grow.

- Juice factories continue to absorb a major portion of the crop.
- The Rand/Euro exchange rate and export market prices may have an effect on export volumes.
- Market research will continue to be invaluable in accessing new markets.

9.10 CONCLUSIONS

- There are a number of producers of mango juice, mango atchar, fresh cut mangoes in the Province and country at large.
- Production comes from rural and urban households, small scale as well as commercial farmers.
- The market for fresh mangoes is saturated during the peak season.
- Mangoes rot during the peak season due to oversupply.
- The South African Mango growers Association provides extension services to its members.
- It may be viable to establish mango processing plants in the major mango producing area of the Limpopo Province.

9.11 RECOMMENDATIONS

This section presents recommendations which have been developed with regard to mango processing:

- Adequate production exists which suggest that potentially viable mango processing plants could be established in each of the mango growing areas of the Province: Letaba, Phalaborwa and Soutspansberg. The smaller producing areas including the rural and small scale areas could warrant the establishment of buying depots which could act as feeder centres to the main processing facilities.
- Small scale mango producers should be encouraged to join the South African Mango Growers Association for extension services and marketing and capacity building.
- Capacity building programmes and grower support systems should be established in the small scale growing areas. This will help to increase production and improve quality of output.
- Small scale growers need assistance with marketing strategies/ access to markets. This could be addressed with the establishment of buying depots linked to processing plants.
- Linkages should be forged between growers and Universities and colleges of agriculture in order to open access to research for producers.

- Once established, the processing plants should act as a market for small scale producers to sell their mangoes.

10 ORANGES

10.1 OVERVIEW OF THE ORANGE INDUSTRY

The agricultural sector in South Africa has a strong citrus industry across many provinces. The industry is an important foreign currency earner. The orange sector is composed of four broad categories, namely oranges, naartjies, grape fruit, lemon and limes. The industry is export orientated and contributes more than R3 billion to the economy of South Africa.

10.2 SOUTH AFRICAN PRODUCTION

Oranges are produced in summer and winter where climatic conditions are suitable for the crop but for the best quality the areas should be frost-free. The fruit is produced in most parts of the Provinces of South Africa, but the main producing areas are Eastern Cape, Limpopo, Western Cape, Mupumalanga and Kwazulu Natal where subtropical conditions prevail. The area under citrus for 2005 is estimated at 57 168 ha.

TABLE 15: TOTAL AREA PLANTED FOR CITRUS IN 2005

PROVINCE	% OF TOTAL AREA PLANTED
Limpopo	31
Eastern Cape	23
Mpumalanga	21
Western Cape	17
Kwazulu Natal	7
Northern Cape	1
North West	0

Source: Citrus Growers Association: Durban

According to the table above the Limpopo Province produces the largest quantities of oranges followed by the Eastern Cape, Mpumalanga, Western Cape and Kwazulu Natal. Among all citrus fruits, oranges constitute 63% of the total fruit production, followed by grape fruit, lemons, naartjies, lemons and limes.

TABLE 16: ORANGE PRODUCTION IN SOUTH AFRICA:2001/02 TO 2005/06

Year	Tons
2001/02	1 262 527
2002/03	1 266 634
2003/04	1 330 187

2004/05	1 139 940
2005/06	1 213 980

Source: Citrus Growers Association: Durban

The table above indicates that orange production per annum has been fluctuating over the years reaching peak production of 1 330 187 tons in 2003/04 production year.

10.3 PRODUCTION IN LIMPOPO PROVINCE

Oranges are grown by rural and urban households, small scale farmers as well as commercial farmers.

TABLE 17: TOP 4 ORANGE PRODUCTION AREAS

Area	Planted hectares	Production	
	Metric Tons	Metric Tons	% of Province
Musina	3 950	76 437	17.44
Letaba	10 816	291 118	66.43
Phalaborwa	1 117	26 605	6.07
Mokopane	1 589	21 110	4.82
Sub-total	**17 472**	**415 270**	**94.76**
Small Scale Areas	**1 158**	**22 945**	**5.24**
Total Province	**18 630**	**438 215**	**100**

Source: Census of Agriculture, Provincial Statistics 2006 - Limpopo

As indicated in the table above, Letaba followed by Musina are the largest producers. Phalaborwa and Mokopane do not produce enough oranges to warrant the establishment of processing plants.

TABLE 18: SMALL SCALE ORANGE PRODUCTION AREAS

Area	Planted hectares	Production	
	Metric Tons	Metric Tons	% of Province
Mutale	49	1 350	0.31
Bela-Bela	47	1 267	0.29
Polokwane	257	5 087	1.16
Ellisras	14	225	0.05
Giyani	132	132	0.03
Soutpansberg	592	14 060	3.21
Waterberg	55	600	0.14
Thabazimbi	12	224	0.05
Sub-total	**1 158**	**22 945**	**5.24**
Total Province	**18 630**	**438 215**	**100.00**

Source: Department of Agriculture: Central Statistics 2006

The small scale areas produce small quantities of oranges and hence it is not advisable to establish processing plants in these areas unless production of oranges is scaled up.

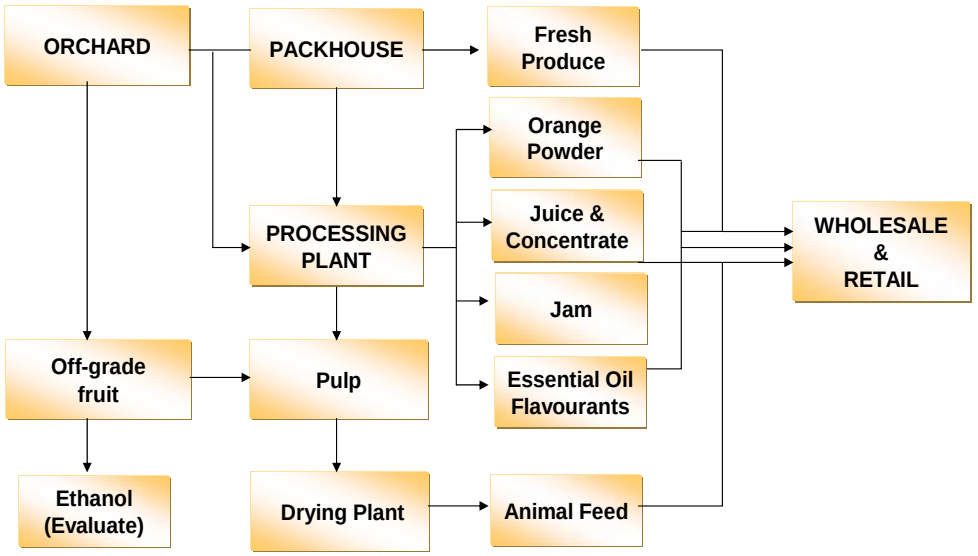
10.4 INDICATIONS: ORANGE PROCESSING

The production statistics presented above indicate that viable processing plants can be established in Letaba, Musina, and Phalaborwa. The other districts do not produce enough oranges to warrant the establishment of processing plants.

Of the small scale producing areas, Soutspansberg and Polokwane produce substantial volumes. These areas could hold smaller processing plants, or partial processing facilities or collection depots.

10.5 THE ORANGE VALUE CHAIN FLOW

Fig 8 ORANGE VALUE CHAIN



This value chain indicates that there are many points at which value adding could be derived.

10.6 PROCESSED FOODS

There is a wide variety of products which can be made from oranges. The indications are that value addition industry is well developed and that there can be opportunities for new producers.

Oranges are mostly consumed as fresh fruits. Value addition usually involves the production of juices, squashes and orange flavoured drinks. Jams, marmalades, jellies and confectionary products also take up a substantial amount of the processed form of products. Essential oils are obtained from fruit peels and they are used for manufacturing flavourants and colours for usage in drinks and food products. Essential oils are also used by pharmaceutical companies for addition to certain medicines, in aromatherapy and by the cosmetics industry.

PROCESSED FOODS ON THE SOUTH AFRICAN MARKET

- Orange juices
- Orange concentrate
- Orange Squashes
- Orange Jellies
- Orange Drinks eg Fanta
- Orange flavourants and colourants
- Orange jams/marmalades

TABLE 19: TOTAL ORANGES USED FOR PROCESSING IN RSA ('000 TONS)

Year		Tons
2001/02		339.0
2002/03		170.0
2003/04		200.0
2004/05		235.0
2005/06		*

* Information not available
Source: Citrus Fruit Fresh & Processed: Food & Agric. Organisation (FAO) 2006

The table above indicates that there was a substantial drop in the quantities of oranges taken for processing in the 2002/03 production year. Since then there has been a steady recovery in volumes to a situation where 2004/05 volumes were at 69% of 2001/02. The reasons for the drop could be a shift in preferences with younger people preferring a wider assortment of juices versus the traditional orange, or due to the increase in exports.

10.7 LOCAL DISTRIBUTION CHANNELS

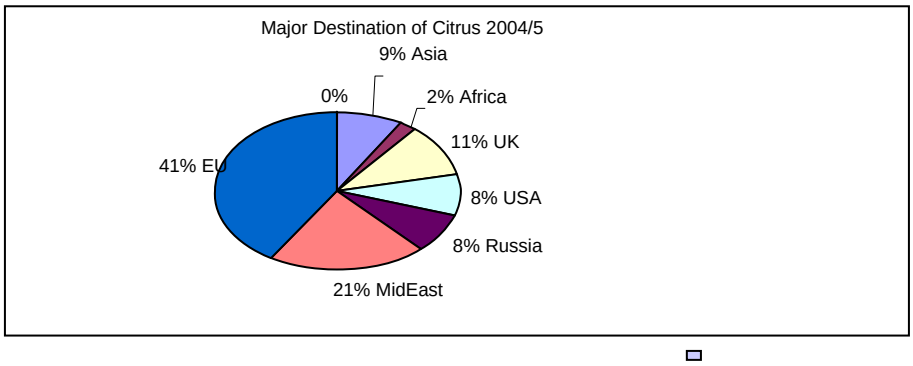
Citrus produce in South Africa is sold though several marketing channels such as national fresh produce markets, wholesalers and retailers. Processors also absorb a substantial amount of the produce for juice production etc. Informal markets also play an important role as a market while a larger portion of the product is exported to foreign countries through export agents.

Of the total orange production, 8.6% is sold through the national fresh produce markets (oranges are mostly an export crop). This percentage includes produce that will be resold to informal markets. There has been a decline in the volumes of oranges sold in the major fresh produce markets since the 2000/01 production year. The price of oranges sold in the fresh produce markets over the last ten years is R825.00 per ton, compared to R989.00 per ton, which is the average in international markets.

10.8 EXPORTS

Orange production in South Africa is mainly aimed at the export market. A study of international competitiveness has shown that the South African orange industry has 10-15% international market share even if production is relatively small compared to other producing countries. South Africa is regarded as the third largest exporter of oranges after Spain and USA. About 69% of total orange production was exported to more than 20 countries in 2004/05 production season. Most of the oranges are exported to Europe, UK, Middle East and the Mediterranean, Russia and Africa.

Fig 9: MAJOR DESTINATION OF CITRUS PRODUCE IN 2004/05



Source: Citrus Growers Association (CGA) Durban

The above shows the major export markets for South African oranges. The EU countries comprise the largest market followed by the Middle East and UK.

TABLE 20: ORANGE EXPORTS

Year		Tons, 000	Prices:R/ton
2001/02		732.0	768
2002/01		726.0	925
2003/04		717.0	1 056
2004/05		760.0	1 084
2005/06		*	1 112

* Information not available
Source: Citrus Fruit Fresh & Processed: Food & Agric. Organisation (FAO) 2006

The table above show that there has been an increase in orange exports from 2003/05

Table 21: EXPORTS OF ORANGE JUICES ('000 TONS)

Juice Type		2001	2002	2003	2004	2005
Concentrated		14.6	17.0	11.5	7.4	10.1
Single Strength		-	-	-	-	0.7

Source: Citrus Fruit Fresh & Processed: Food & Agric. Organisation (FAO) 2006

From the above table, it can be shown that juice exports have shown some growth in 2001 and 2002, then declined in 2003 and have been on the increase again in 2004 and 2005.

Southern African Citrus Growers (CGA) has accessed a new market in China. 178 405 cartons were exported to China during the 2005 season. The volumes were expected to increase; but owing to the misunderstanding of protocol and different interpretations by the Chinese and South African Plant Health and Quality Assurance Officers, such volumes did not increase. The Chinese inspectors did not certify/pass any citrus orchards for the 2005 season and only allowed imports from four production units which were registered in 2004. The main stumbling block was that China would not allow citrus from farms which have false coddling moth, whereas in South Africa, growers have individual orchards that are free from false coddling moth, even if their complete farm is not free of the pest.

10.9 OTHER: TRANSFORMATION ISSUES

According to Citrus Growers Association, the South African citrus industry is undergoing transformation in all production areas. There are currently 66 farms dealing with issues such as land ownership claims. In terms of exports, 16 000 tons from previously disadvantaged individuals were exported in 2003/04 out of the 861 000 tons of the total production. This means HDI farmers contributed 1.9% to exports (Transformation of Agricultural Sector, 2004, NAMC).

In Limpopo title deeds and full ownership of the Zebediela Estate citrus plantation has been handed to the Batladi Community after a successful land claim. The community consists of 331 households near Mokopane. The restitution also provided the formation of partnerships between the Batladi community and the existing farmers on the estate.

10.9.1 BUSINESS OPPORTUNITIES AND CHALLENGES

Prospects for growth and development in the Southern African citrus industry depends on the availability of water and meeting the markets needs. The industry is export-driven, and the local market cannot sustain large volumes of the fruit. As a result the challenge on South African farmers is to acquire new markets with attractive prices to cover the cost of inputs.

As far as citrus exporting is concerned, members find it difficult it to compete price-wise on the normally over supplied world markets against countries like Brazil and US in terms of processed citrus (apart from acid content, which is low sugar/ acid ratios). SA Valencia orange concentrates often necessitate local processors to trade at 5-10% below the world prices, while the unit price is high.

Challenges that the emerging sector is facing in South Africa include old trees, whose productivity is low, sometimes sharp practices of export agents as well as the fact that some of the pack-houses do not meet international standards.

10.10 CONCLUSIONS

- There are areas where production warrants the establishment of processing plants.
- Small scale farmers lack access to markets and end up incurring post-harvest losses.
- Some small scale farmers lack financial inputs to expand their production
- There is no value addition by emerging farmers, who lack capacity to do so.
- There are unused structures (which were built by the homelands government) and these could be renovated and turned into processing plants.

10.11 RECOMMENDATIONS

- Small scale farmers should be encouraged to produce oranges for processing
- Processing facilities could be established in the areas where there is adequate production, i.e. Letaba, Musina and Phalaborwa. Soutspansberg and Polokwane are possible sites for smaller plants. These potential sites warrant further investigation of the viability of such processing facilities.

- Processing plants could offer a ready market for small scale producers, thereby mitigating post-harvest losses and creating wealth and job creation.
- Capacity building and support programmes should be put in place for small scale growers.
- Small scale producers should be encouraged to join citrus growers associations so they have access to extension support, research and marketing support

11. TOMATOES

11.1 OVERVIEW OF THE TOMATO INDUSTRY

Tomato is the most popular vegetable grown by subsistence, resource poor farmers in South Africa. It contributes approximately 23% to the gross value of vegetable production. During 2003/04 production year, tomato production increased by 204%. There are currently 695 producers in both commercial and emerging sectors. The commercial sector contributes 95% of total produce while the emerging sector contributes only 5%. According to the industry there is no barrier of entry in both production and marketing. There has been a constant increase in the production of tomatoes from 1995/96 to 200/01. During 2003/04, the industry experienced sharp increase in gross value due to the increased demand for tomatoes

11.2 SOUTH AFRICAN PRODUCTION

- Tiger brands dominates the tomato-processing with 75% of the processed tomato produced
- Tomato prices are based on the free market determined by the major fresh produce markets in South Africa
- Tomatoes are subject to large seasonal price fluctuations, implying a high price risk
- Increased access to markets for the emerging farmers is expected to encourage the smallholder farmers to participate in the mainstream agricultural economy

11.2.1 AREAS PLANTED

Large scale tomato production is carried out in all Provinces except Gauteng. Limpopo Province is the leading producer of tomatoes, producing over half of the total national production. A total of 6 475 hectares was planted in South Africa during the 2005 production year. This represented a 1.1% increase in production compared to the 2004 production year. Limpopo Province is the major tomato-producing area with 3 590 ha, which is more than 50 % of the total area planted to tomatoes in the country. Other

important regions in terms of hectares under tomato cultivation are KwaZulu-Natal, Western Cape Province and Mpumalanga.

TABLE 22: TOMATO PLANTING AREAS: 2005

Province		Area Planted as % of National Total
Limpopo		55
Mpumalanga		14
Eastern Cape		12
Kwazulu Natal		10
North West		5
Western Cape		3
Northern Cape/Free State		1

Source: Commodity Profiles 2006: Vol I Department of Agriculture

The total volume of the tomato industry in South Africa is approximately 650 000 tons with a value of R1.3 billion.

11.3 PRODUCTION IN LIMPOPO PROVINCE

TABLE: 23 TOP TOMATO PRODUCTION AREAS

Area	Planted hectares	Production	
	Metric Tons	Metric Tons	% of Province
Soutpansberg	180	5 997	2.67
Letaba	3 259	155 355	69.28
Musina	859	45 874	20.46
Sub-total	4 298	207 226	92.41
Small Scale Areas	658	17 017	**7.59**
Total Province	**4 956**	**224 243**	**100.00**

Source: Census of Agriculture, Provincial Statistics 2006 - Limpopo.

Letaba produces the highest volumes of tomatoes in the Province followed by Musina and Soutpansberg. Most of the tomatoes produced are sold fresh to the ZZ2 tomato company in the Province.

TABLE 24: SMALL SCALE GROWING AREAS

Area	Planted hectares	Production	
	Metric Tons	Metric Tons	% of Province
Ellisras	22	1 260	0.56
Mutale	41	595	0.26
Polokwane	115	4.319	1.93
Mokopane	128	2 416	1.08

Thabazimbi	27	572	0.25
Bela-Bela	36	2 050	0.92
Waterberg	81	2 531	1.13
Phalaborwa	46	942	0.42
Giyani	162	2 335	1.04
Sub-total	658	17 017	7.59
Total Province	**4 956**	**224 243**	**100.00**

Source: Department of Agriculture: Central Statistics 2006

From the table and figure above, it can be shown that many municipalities produce low volumes of tomatoes and thus would not be able to support the establishment of processing plants unless production is scaled up.

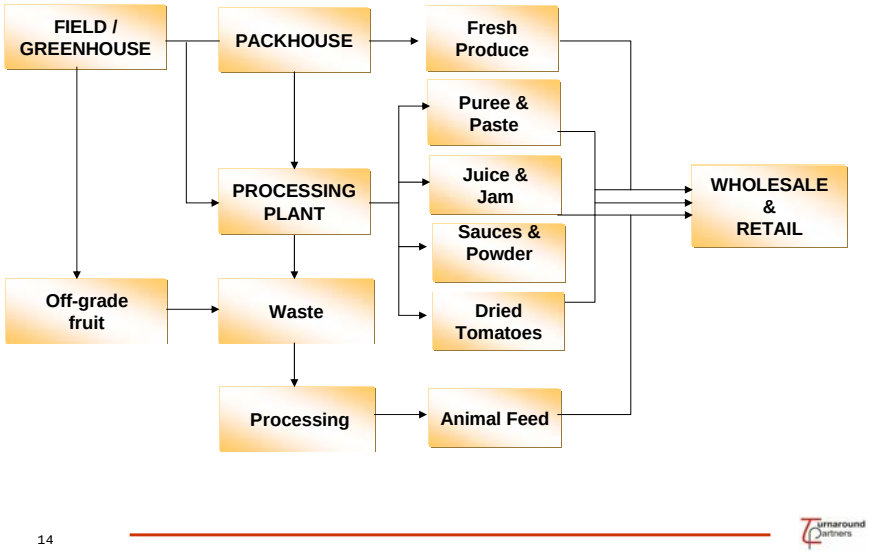
The above figure indicates that small scale growers with 7% of total production, produce comparatively produce far much less tomatoes than the commercial producers.

11.4 INDICATIONS: TOMATO PROCESSING

The statistics above indicate that tomato processing plants could be established in Letaba, Musina and possibly Soutspansberg. The other areas do not produce adequate amounts to warrant the establishment of plants.

11.5 THE TOMATO VALUE CHAIN

Fig 10 TOMATO VALUE CHAIN



11.6 PROCESSED FOODS

By far the largest components of processed tomatoes go into tomato sauces, puree and concentrate. From these products other sub-categories of processed foods are made such as canned tomatoes, frozen pastes and tomato juices. Some tomatoes are processed into dehydrated powdered tomatoes, soups and dried tomatoes. The following table gives indications of the quantities taken up by various processing methods, for the period 2000 to 2005.

TABLE 25: PROCESSED TOMATOES FROM 2000 TO 2005

Year	Canning & Bottling Tons	Freezing Tons	Dehydration Tons	Juices Tons
2000/01	144 548	310	309	0
2001/02	138 480	0	58	0
2002/03	123 539	0	73	1 880
2003/04	131 723	87	41	1 290
2004/05	141 872	123	0	1 877

Source: Commodity Profiles 2006. Vol. I Department of Agriculture.

This table indicates that most of the tomatoes are canned or bottled, with the next highest category being frozen pastes and dehydration. As from 2002/03 production of tomato juices has increased substantially.

TOMATO BASED PRODUCTS ON THE MARKET IN SOUTH AFRICA

- Tomato sauces
- Tomato relishes
- Tomato puree
- Fresh tomatoes
- Powdered tomato soups
- Tomato with beans/spaghetti etc,
- Pasta and other sauces
- Tomato juices
- Dried tomatoes
- Canned tomatoes

11.7 LOCAL DISTRIBUTION CHANNELS

Fresh produce markets are one of several, but possibly the most important distribution channel for tomatoes. Market prices are determined within the free market environment on the market floor and are used as a basis for determining the prices for almost all the other marketing channels.

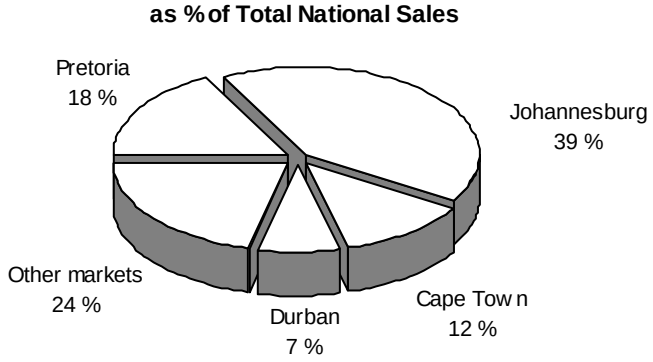
TABLE 26: TOMATO DISTRIBUTION CHANNELS

Channel	% of Total Sales
Fresh Produce Markets	53
Exports	2
Processing	11
Direct sales	34

Source: Commodity Profiles 2006. Vol. I Department of Agriculture

Fresh produce markets distribute the highest proportion of the tomato crop, with a 53% share of the market. Direct distributions to the trade (eg supermarkets and vegetable shops) constitute 20%, with the balance going directly to processors.

Fig 11: TOMATO SALES ON THE MAJOR PRODUCT MARKETS



Source: South Africa Vegetable Growers Association (SAVGA) (Pretoria)

According to the figure above, the Johannesburg fresh fruit market is the most important distributor, followed by the Pretoria market.

11.8 EXPORTS

South Africa is not a major exporter of tomatoes. Most tomatoes produced are destined for domestic markets and very small volumes are exported. The volume of tomatoes exported has been significantly decreasing (by 17, 6 %) from 2003 to 2004 and from 2004 to 2005 there was another, more dramatic, decrease of 92, 8 %, from 6 160 to 446 tons.

11.9 OTHER: EMPOWERMENT ISSUES

According to SA Tomato, there are currently 26 emerging farmers in Limpopo Province who have registered with the organisation. Tiger Brands, the biggest processor in tomatoes plays a crucial role as it is supporting 120 emerging farmers in the Musina area and other provinces. Farmers in this programme are helped with technical issues and production information, while at the same time farmers have a guaranteed market when the products are ready.

11.10 CONCLUSIONS

- Small scale tomato farmers in Limpopo are facing issues of access to markets and end up suffering post harvest losses.
- Many of the small scale producers are not involved in value addition.
- Limpopo Province has an opportunity to establish processing facilities which could act as a ready market for the small scale producers.
- The establishment of grower support systems could assist the small scale farmers to improve productivity and profitability.
- Climatic conditions are favourable for tomatoes in Limpopo Province.
- Emerging farmers lack financial inputs.
- Value addition enterprises owned by emerging farmers can create employment.

11.10 RECOMMENDATIONS

- That value addition processing facilities should be considered for establishment in the major tomato growing areas of Letaba, Musina and possibly Soutspansberg.
- Small scale farmers should be assisted with financial inputs in order to increase production.

- The proposal to add value to tomatoes (or any of the other crops) be subjected to assessment through the Commodity Assessment Methodology System outlined in this presentation, in order to avoid making unworthy investments.
- The small scale tomato growers should be encouraged to join the Tomato Growers Association of South Africa in order to have access to extension support, research and marketing.

12 POTENTIAL PROCESSING FACILITIES

The table below summarizes the areas where potential processing plants can be established for processing various products.

Table 27: Potential Processing Facilities

Product/ Rating	1	2	3
Bananas	Soutspansberg	Letaba	Phalaborwa
Oranges	Letaba	Musina	Phalaborwa
Tomatoes	Letaba	Musina	Soutspansberg
Mangoes	Letaba	Phalaborwa	Soutspansberg

While the volumes indicate that viable processing plants could be established in these areas, there is need to conduct a detailed feasibility study into the establishment of each. The studies would interrogate what levels of processing could be done, whether the facility should be a fresh produce packhouse of value added product processing. A detailed market study would also be conducted to ascertain the availability of markets for the resulting products.

Of similar importance would be the assessment of linkages with the smaller scale and rural producers in order to design linkages with the large processing facilities.

13 SYNTHESIS & ANALYSIS

From the research that was undertaken, it is the considered view of the consultants that policy interventions should focus on small scale and emerging farmers. Established commercial farmers have long established support networks through grower associations which provide access to agricultural extension services, research and marketing support. This is not the case for small scale and emerging farmers.

13.1 ACCESS TO MARKETS

Small scale and emerging farmers lack access to markets. This is the case for all the four commodities reviewed (bananas, mangoes, oranges and tomatoes), with farmers incurring post-harvest losses. By and large, farmers rely on informal

sales outlets (roadside stalls, for instance) which cater for localized and small market segments. As a result, these markets soon get over-supplied, with the consequent loss of produce.

Losses could be prevented or minimised through access to larger markets outside the local markets and through processing of the produce into value-added products. Such value added products have a long shelf-life and could be marketed outside the Province.

Roadside markets

Rotting fruit at small scale farm

13.2 TECHNICAL AND FINANCIAL RESOURCES

Small scale and emerging farmers lack the technical and financial resources to expand production.

Through market research, commercial growers produce commodities that are market and usage specific. In the case of tomatoes, for instance, there are specific varieties preferred for canning, tomato paste and other specific varieties for fresh tomatoes. On the other hand, the desired varieties for mangoes are the stringless type.

By and large, most rural and emerging farmers do not have this market intelligence. For these farmers to enter the formal markets, they need information about market requirements.

13.3 INTERVENTIONS

In 1893, a group of citrus growers in the state of California, USA organized themselves into a co-operative, Sunkist Growers, for the purpose of a co-operative approach to marketing their fruit. At that time, the industry was fragmented, distribution was disorganized and the growers had to deal with unscrupulous sales agents. On the other side of the USA in the state of Florida, the Florida Citrus Canners Co-Operative was organized in 1933 with the same purpose in mind, as well as for the purpose of producing value-added orange juice.

Today, these co-operatives have global brands with markets in more than 60 countries. Farmers throughout the world have realized the benefits of co-operative marketing of their products and these co-operatives cover just about the full range of farm commodities, from fruit and vegetables to meats.

These types of co-operatives are known as producer co-operatives. In recent years, a new type of co-operative called a "New Generation Co-operative" (NGC) has emerged. The NGC combines solutions to both the financing and operations problems that are faced by farmers. The basic concept of the NGC is that producers capture profits that are realized beyond the farm gate. Thus, the main emphasis of this type of co-operative is on value-added processing with farmers viewing themselves as producers of a finished product rather than a raw commodity. The paper "New Generation Co-Operative and Related Business Structures" (Appendix 3) provides a discussion of NGCs and contrasts these with traditional co-operatives.

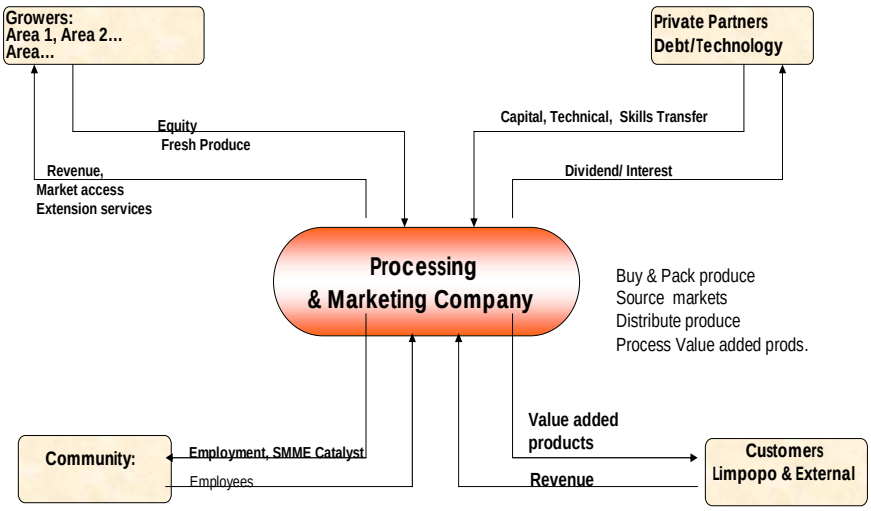
Producer co-operatives have been in existence for more than one and a half centuries and are a proven model for marketing farm produce by small producers. These co-operatives have survived and thrived because they serve the needs of members.

The following section provides a business model for small scale and emerging farmers in Limpopo. The producers' co-operative is the anchor of the proposed business model.

14 A CO-OP BASED AGRO-PROCESSING BUSINESS MODEL

The diagram below encapsulates the proposed model:

Fig 12: A Co-Operative Agro-Processing Business Model



14.1 FARMERS CO-OPERATIVE

A co-operative is a group of people with similar needs who collectively own and operate an enterprise for their mutual benefit. Under ordinary circumstances, each group of commodity growers would form their own co-operative. In the case of Limpopo, it is being proposed that all commodity growers in a district or local municipality form one farmers co-operative. The rationale for this approach is that all the farmers have the same overriding needs, i.e., access to markets, finance and extension services. From a business stand point, such a supra-co-operative would have economies of scale with shared resources and channels both of which would minise operating costs. In addition, the proposed structure would ensure that the enterprise is supplied with commodities all year-round since the four commodities ripen at different times of the year.

The co-operative association will establish a company that will process and market the farmers' fresh produce and value added products. **It is imperative that such a company be staffed with professionals who will manage the day to day affairs of the company.**

14.2 MEMBERSHIP

Only producers of the four commodities (or any other defined commodity or geographic grouping) would be allowed to join the co-operative.

14.3 GOVERNANCE

Members shall choose a Board of Directors that is representative of the interests of all commodity producers. In other words, the Board of Directors shall be comprised of at least one member from each of the four commodities. Board members will, in turn, elect a chairman and put in place appropriate committees to oversee the major functions of the enterprise.

14.4 CAPITALIZATION

14.4.1 EQUITY

Members shall raise a portion of the cost of establishing the processing company through equity stock or options on sales of produce. Each share of stock will give a member the right and the **obligation** to market **a production unit** through the processing company for a defined period, such as one calendar year.

The **obligation to market a production unit** means that each member will be legally bound to deliver the production units that are commensurate with the shares of stock purchased. However, if a member cannot meet his/her obligations, the said member will be obliged to let other members sell their excess produce through the said members' stock. In the event that a member has more produce than his/her stock requirements, the co-operative shall have the right but not the obligation to purchase the excess produce.

A production unit, in this instance, shall be determined on the basis of an "economic" weight for each commodity or a basket of products. As an example, a production unit may be composed of 700 kilograms of bananas, one tonne of mangoes, 250 kgs of oranges and 500 kgs of tomatoes, or any other combinations, as stipulated in the co-op regulations.

In order to preclude one member from dominating the affairs of the co-operative, the co-operative shall put a cap on the number of shares that an individual member can buy. It is suggested that a member be allowed to purchase no more than 10% of the co-operative's issued share capital.

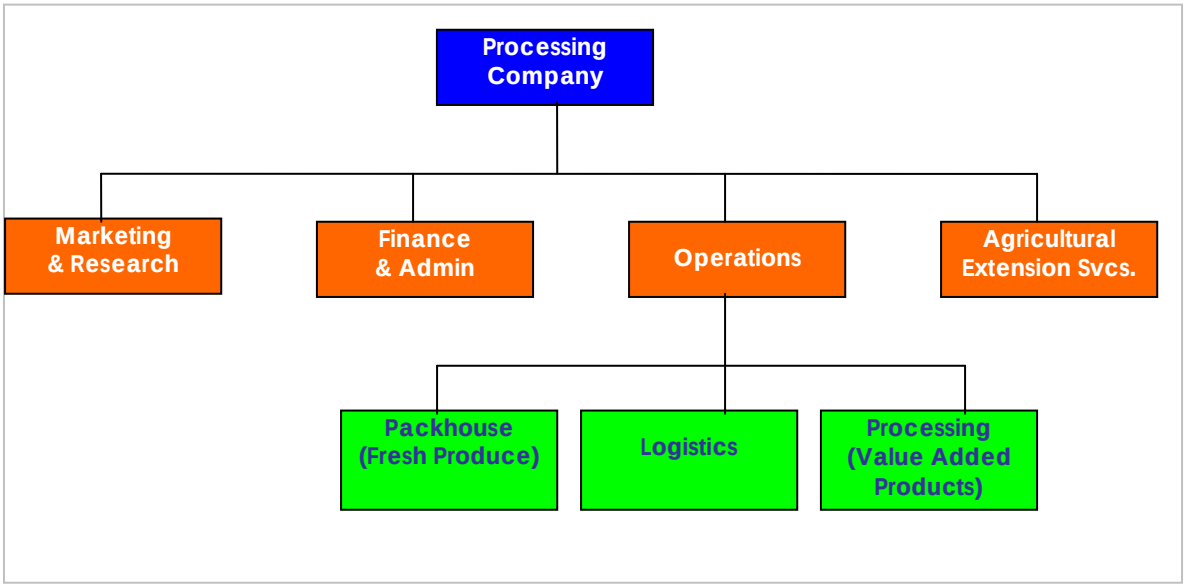
14.4.2 DEBT FINANCING

It is unlikely that members will be able to raise all the capital needed from their own contributions. In that case, they can, raise the remaining capital through debt financing or better yet, arrange an equity and debt financing package with a development finance institution such as the Development Bank of Southern Africa or the National Empowerment Fund, etc.

14.5 ENTERPRISE CORPORATE STRUCTURE

The diagram below shows the proposed corporate structure of the processing company. This is a divisional structure covering four functional areas.

Fig 13 : Enterprise Corporate Structure



14.5.1 OPERATIONS

This division shall be responsible for buying produce, packing and manufacturing, warehousing and transporting goods for sale to customers.

14.5.2 MARKETING

This division shall be responsible for marketing products (sourcing markets) as well as market research.

14.5.3 EXTENSION SERVICES

This division shall provide agricultural advisory services to farmers as well as ensuring that farmers are producing specific varieties of commodities.

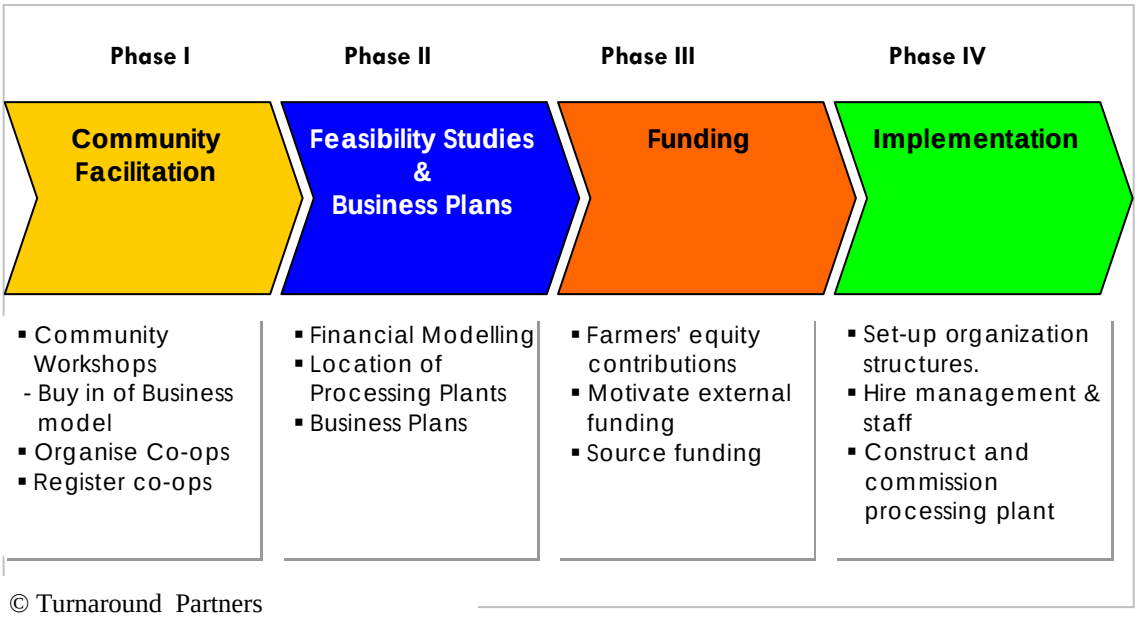
14.5.4 FINANCE AND ADMINISTRATION

This division shall be responsible for the accounting functions, finance and general administration.

15 IMPLEMENTATION STRATEGY

A high level phased implementation strategy is shown in the diagram below.

Fig 1 : High Level Framework for Establishment of Co-Ops



16 MARKET AND EMPLOYMENT POTENTIAL

The four commodities under study are consumed as fresh and processed products, as well as blended with other fruits and vegetables. By and large, the fresh commodities can be considered to be mass market products while some of the processed products are niche market products.

16.1 MARKET OVERVIEW

16.1.1 FRESH PRODUCE

Sustainable markets for the four commodities are found in the cities and towns where major distribution outlets have been established over the years. The major fresh produce markets are the Johannesburg Fresh Produce Market, the

Tshwane Fresh Fruit Market, the Cape Town Fresh Produce Market and the Durban Fresh Produce Market. The smaller towns also have formal as well as informal markets.

At the major markets, producers contract a sales agent to sell their products. The agents, in turn, may have supply contracts with supermarket chains and other institutions. In the recent past, some supermarket chains have contracted commercial producers to supply organic products, particularly vegetables, for a growing niche market. In the smaller towns, supermarkets often have formal or informal supply contracts with producers.

Government is a big buyer of fruit and vegetables for government institutions such as hospitals and prisons. Ordinarily, government procurement is on a tender basis, with a bias towards previously disadvantaged suppliers.

With the advent of democracy, exports markets have opened up for South African products, particularly in the Middle East and Asia. Currently, exports to Europe and North America are restricted because of EU treaty obligations and bilateral agreements. However, China is a potentially big market.

The export markets are more demanding and therefore, difficult to penetrate. Growers have to adhere to strict phyto-sanitary regulations governing the different export markets. At the same time, these markets are partial to specific varieties of fruit, e.g. stringless mangoes and seedless oranges. Thus, producers have to be cognizant of government regulations, on the one hand, and market preferences on the other.

Countries in the SADC region offer a good potential market for the four commodities in question, and Limpopo's proximity to these countries offers the Province a logistical advantage, especially if appropriate handling facilities are built at the Polokwane International Airport. The collapse of Zimbabwe's agricultural industry has made that country an export target and Angola, DRC and Mozambique are net importers of oranges and tomatoes.

16.2 PROCESSED PRODUCTS

The market for processed products made from the commodities in question are much more segmented than that of fresh produce. In the main, these markets are driven by affordability and consumer preferences.

16.2.1 BANANAS

As was shown in Section 8.6, there is a paucity of value-added banana products on the South African market. Most of the products use bananas as a flavourant in yoghurt, milk shakes, mageu and custard. A more recent product is banana chips, which is a niche market snack competing with more established snacks such as dried mango.

16.2.2 MANGOES

Section 9.6 presented mango products on the South African market. All of these products are primarily niche markets driven by consumer preferences. Mango juice, concentrates and squash compete with other fruit juices as well as carbonated drinks. Atchar and pickles are also niche products.

16.2.3 ORANGES

Of the three fruits, value added orange products have wider market appeal ranging from mass market products to niche market products. The orange flavoured carbonated drinks and orange squashes have mass market appeal, while the pure (100%) orange juices have a traditionally loyal market. Orange jams and marmalades have always been popular.

The consumption of non-carbonated orange drinks is expected to grow in the coming years. Growth will be driven by the increase in the affluence of the population in general and health considerations in particular. Unlike carbonated drinks and squashes which use sugar as a sweetener, pure orange juices rely on natural sugars for their sweetness. These natural sugars are easily digestible and, therefore, healthier than pure cane sugar (sucrose).

16.2.4 TOMATOES

A list of value-added tomato products currently on the market is shown in Section 11.6. Unlike the value-added fruit products, most of the value-added tomato products are consumed on a daily basis in the foods that people eat daily. Tomato sauce and puree as well as canned whole tomatoes can be used as substitutes for fresh tomatoes in soups and stews. At the same time, tomato sauces are used in canned beans, fish, spaghetti and a range of other canned

foods. These are "convenience foods" found in homes, the military and other government institutions. The world over, the consumption of convenience foods has increased with the increased affluence of the population. The same will happen on the South African market.

16.3 EMPLOYMENT POTENTIAL

The proposed business model envisages an agro-processing enterprise processing and marketing both fresh produce and value-added products. A combination of these two will greatly enhance the employment potential of each enterprise.

In the first instance, preparing fresh produce for the market is labour intensive, with most of the operations involving manual and/or semi-automated activities. Typical operations in a fresh fruit and tomato packhouse involve washing, grading and packing into bags, punnets and/or boxes. At best, these operations can be semi-automated but with a human operator.

With respect to processing, employment creation will be determined by the size of the plant and the desired level of automation. The enterprise could start off with batch processing, which is labour intensive and later install continuous processing machinery as warranted by growth in volumes.

In Appendix 5, we have compiled a catalogue of flow charts and suppliers of mango, orange and tomato processing machinery. This information will be invaluable for feasibility studies and business plans.

17 EDUCATION & TRAINING

The following institutions provide skills development, training and support:

- The Department of Agriculture
  - Agricultural education and training
  - Extension services
  - Further education and training
  - Bursaries for college and university studies
  - Learnerships, internships, mentoring and other programmes.
- Madzivandila College of Agriculture
- University of Limpopo
- University of Venda

18 PERSPECTIVES

18.1 CATALYTIC IMPACT

While the research study focused on the production and marketing of banana, mango, orange and tomato products, the successful establishment of co-operative enterprises could have a far-reaching positive and stimulative impact in the rural economy of the Province. In the first instance, the distribution channels for fresh produce is the same for both fruits and vegetables. Secondly, those rural farmers growing tomatoes in particular are probably already growing other vegetables or can be persuaded to grow other vegetables. With a packhouse and a marketing network in place, farmers could market the other vegetables through the co-operative enterprise.

South African supermarkets are currently importing some high valued vegetables (e.g fine green beans, baby corn, etc) from Kenya, Malawi. Zambia and Zimbabwe. With the support of dedicated extension personnel, rural farmers can produce these vegetables. And, the preparation and packing of these vegetables is even more labour intensive.

18.2 INFRASTRUCTURE AND RESOURCES

To date, Kenya has succeeded in retaining its position as the number one African exporter of horticultural products to Europe. The country has a strong co-operative culture and marketing networks built up over the last few decades. Limpopo Province can learn a few valuable lessons from Kenya.

In the main, nothing will stimulate the agro-processing industry in Limpopo more than the establishment of appropriate infrastructure and resources at Polokwane International Airport. Such infrastructure and resources would include cold storage and other warehousing facilities, materials handling equipment, clearing agents, just to mention a few. The setting up of such infrastructure in itself is another catalyst for development in the Province.

18.3 OTHER DEVELOPMENTS

During the course of this study, it emerged that the Department of Agriculture is undertaking some studies in agro-processing. It has also just emerged that a Food and Agro-processing Centre has recently been established at the

University of Limpopo and will also be extended to the University of Venda. The mandate of the Centre is to train SMMEs in agro-processing.

It is our considered view that LEDET should engage DOA and the two universities with the view of coordinating all provincial interventions in agro-processing. The various organizations can pool their resources and establish one implementation strategy for greater impact. Without a common approach, there is danger of sending mixed signals to the small scale producers, leading to confusion and maybe disenchantment.

18.4 GROWERS ASSOCIATIONS

The various growers associations possess a wealth of information and expertise on sub-tropical fruits, and they have expressed their willingness to assist small-scale growers. The associations provide extension services, market research and linkages to their members.

It is suggested that LEDET engages the associations, with a view of persuading them to provide free services/ mentorships to small-scale growers as part of their social responsibility programmes. The associations could also be persuaded to provide training to DOA extension workers on sub-tropical fruits. Another approach would be for the associations to provide in-service training and internships to students at the agricultural colleges and universities.

18.5 MARKETING & PROMOTION

At national level, the Department of Trade and Industry (DTI) promotes exports of South African products through a variety of programmes. We wish to suggest that Limpopo should consider creating a "marketing and promotion" function, either within LEDET or other provincial structures such as Trade & Investment Limpopo.

Broadly speaking, such a marketing and promotion initiative would assist growers, particularly small scale growers, in marketing their products within and outside South Africa. The initiative would undertake market research and establish or facilitate the establishment of linkages with distributors.

19 CONCLUSIONS AND RECOMMENDATIONS

19.1 CONCLUSIONS

Agro-processing in Limpopo is currently dominated by commercial interest, with rural and emerging farmers largely relegated to informal markets. These commercial interest, through their growers associations, have access to market intelligence and dedicated extension services which have enabled them to penetrate domestic and export markets.

In view of this state of affairs, it is our considered view that any government interventions must focus on rural and emerging farmers. These farmers do not have access to formal and sustainable markets, hence, produce is left to rot with the consequent loss of income. The fact that rural and emerging farmers are not organized into effective marketing forces has not helped their situation.

19.2 RECOMMENDATIONS

19.2.1 FACILITATION

In order to give previously disadvantaged farmers the chance to enter and penetrate formal markets, the Government of Limpopo should facilitate the formation of producer co-operatives. Such co-operatives have been in existence in other countries for more than a century. They have survived and thrived, with some having established themselves globally.

19.2.2 FARMER BUY IN

It is imperative that the facilitation towards the establishment of such co-operatives seeks and obtains the buy-in of the farmers with respect to both the concept and mechanics of a producer co-operative. After obtaining the farmers' buy in, feasibility studies and business plans can then be prepared. A phased approach to implementation is shown in Section 15.

19.2.3 PROFESSIONAL MANAGEMENT

The co-operative enterprise should be managed by professionals, while members, through a board of directors, exercise oversight over management.

20 ACKNOWLEDGEMENTS

We wish to acknowledge the assistance of LEDET staff, Department of Agriculture (Limpopo), who provided invaluable leads, as well as farmers and growers associations for information and insights.

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9 Banana Growers Association

10 Citrus Growers Association of South Africa (CGSA)

11 Citrus South Africa CSA

12 Citrus Research International

13 Mariveni Farmers Co-Operative

14 South African Agricultural Processors Association (SAAPA)

15 South African Vegetable Growers Association (SAVGA)

16 South African Mango Growers Association (SAMGA)

17 Tomato Growers Association

CONTACTS

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APPENDIX 1: TERMS OF REFERENCE

AGRO PROCESSING RESEARCH

1. Problem Identification

Limpopo province contributes less towards the domestic economy (in terms of GDP, at only 4%) than its share in the national population and the total land area (10%). The province has the highest population growth rate in South Africa. The large population relative to the small formal economy results in generally low levels of GDP per capita and therefore generally low levels of incomes.

Unemployment for the province is also much higher than the national average resulting in the second highest unemployment rate nationally. People are forced to seek employment outside the province, as indicated by high levels of male absenteeism.

Limpopo province economy is therefore small relative to its share in national population and land area. Secondly, the formal economy is very open, which implies a significant cross-border flow of goods, services and factors of production. Primary and secondary goods production is exported from the province, whereas consumption and other intermediary goods and services are sourced from outside the province. The implication is a loss in potential employment and income that could be generated through the processing of goods produces locally.

Agro-processing is one of the two high potential industrial clusters in Limpopo next to mineral beneficiation. Due to the relative openness of the provincial economy, there is a significant cross border flow of goods and services. Primary and secondary production is exported from the province, whereas consumption and other intermediary goods and services are sourced from outside the province. The implication is a loss in potential employment and income that could be generated through the processing of goods produced locally.

A number of research initiatives have already been undertaken by the Department of Agriculture through service providers on the issue of Agro-processing. Certain research is shared during the Technical and Economic Cluster meetings that are held every two weeks with the purpose of discussing and harmonising ongoing research. Local municipalities have also been doing some research work. A report on the feasibility of Agro-processing in the Vhembe district has already been completed and is available for review. A number of business plans have been developed for the agro processing sector by a service provider called Ralman. The Department of Agriculture is working with LIMDEV in an area called Sishiku where they have developed the first processing unit. There is a template in the Department on all projects that are being undertaken in the province. An agricultural development strategy is being developed which should be ready after the 16th of March 2007 for circulation to external parties. The Department commissioned a study to conduct an agriculture survey which was meant to result in the creation of a database of producers in the entire province. However, the study did not provide the database and was therefore not accepted.

The Department of Economic Development Environment and Tourism in fulfilment of its mandate has commissioned this research in the agro-processing sector taking into account the factor endowment of the province, human resources, physical resources, knowledge resources, capital resources and infrastructure. The research will address the specific objectives outlined herein

2. Research Objectives

- To ascertain the scope and potential of agro-processing activity so as to obtain a picture of the sustainability and profitability of the industry

- To find out if the province has factor capacity to carry out associated agro-processing activity, including human resources, knowledge resources, capital resources and infrastructure
- Where skills are lacking, to ascertain whether institutions are making progress in supporting skills development
- To evaluate the successful agro processing models and make recommendations on their replication in the rest of the province

3. Research Questions

a. Does the Province have the capacity (human resources, physical, knowledge, capital and infrastructure) to engage in agro-processing
b. Is the agro-processing industry viable and sustainable enough to leverage employment levels within the province?
c. What sub-sectors fall under Agro-processing and typically what skills are needed within these sub-industries?
d. Can skills be obtained from the province and is there capacity for skills development where certain skills are lacking?
e. What has been the impact of agro processing in the overall development of the region?

4. Scope of Work To Be Undertaken

a. Industry research (food, beverages, leather, wood, Furniture, Paper, Printing and publishing)
b. Interviewing, data gathering (questionnaires) and interpretation from agro-processing industry stakeholders

5. Identification Of Key Stakeholders

a. DTI
b. SAB
c. Tertiary institutions
d. Department of Agriculture

6. Deliverables

A report will be submitted with two hard copies and a soft copy on a cd. The report will cover the following sections:

- Executive Summary
- Background to Research
- Methodology
- Findings
- Interpretation of results/conclusion
- Recommendations
- Bibliography

APPENDIX 2: PROJECT CHARTER

LIMPOPO PROVINCIAL GOVERNMENT
DEPARTMENT OF ECONOMIC DEVELOPMENT

AGRO PROCESSING RESEARCH PROJECT

1. Introduction

Agro-processing is one of the two high potential industrial clusters in Limpopo next to mineral beneficiation. Due to the relative openness of the provincial economy, there is a significant cross border flow of goods and services. Primary and secondary production is exported from the province, whereas consumption and other intermediary goods and services are sourced from outside the province. The implication is a loss in potential employment and income that could be generated through the processing of goods produced locally.

A number of research initiatives have already been undertaken by the Department of Agriculture through service providers on the issue of Agro-processing. Certain research is shared during the Technical and Economic Cluster meetings that are held every two weeks with the purpose of discussing and harmonising ongoing research. Local municipalities have also been doing some research work. A report on the feasibility of Agro-processing in the Vhembe district has already been completed and is available for review. A number of business plans have been developed for the agro processing sector by a service provider called Ralman. The Department of Agriculture is working with LIMDEV in an area called Sishiku where they have developed the first processing unit. There is a template in the Department on all projects that are being undertaken in the province. An agricultural development strategy is being developed which should be ready after the 16th of March 2007 for circulation to external parties. The Department commissioned a study to conduct an agriculture survey which was meant to result in the creation of a database of producers in the entire province. However, the study did not provide the database and was therefore not accepted.

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2. Background

Limpopo Province is well endowed with good soils and as such, agriculture is an important sector of the provincial economy. Of special importance are the fruit and

vegetable (horticulture) cluster and the red and white meat cluster. The former is concentrated in Vhembe, Mopani and Bohlabela districts while the latter is dispersed throughout the province.

While the Province is a significant producer of agricultural commodities, most of these have been "exported" to other provinces in their primary form. At the same time, inputs required for these commodities are imported from other provinces. As a result, the agricultural sector has yet to realise its potential in so far as industrial growth and the attendant job creation are concerned.

3. RESEARCH OBJECTIVES AND PROJECT SCOPE

The objective of this study is to identify and analyse the potential for adding value to primary commodities and local manufacture of inputs, thereby creating jobs. The research will pay particular attention to opportunities for developing and rural farmers as well as SMMEs.

The research will also identify and analyse the constraints that face the sector in general and developing and rural farmers in particular.

In short, the key focus areas for this project will be as follows:

- To assess the potential scale of the agro-processing sector with respect to value addition and employment creation.

- To assess the constraints facing the industry with respect to infrastructure, water resources and skills.

- To evaluate successful agro-processing models and make recommendations on their replication in the rest of the province. Particular attention will be given to the development of agro-processing in the rural areas.

4. ASSUMPTIONS AND CONSTRAINTS

The successful completion of this project is premised on the fundamental assumption of the availability of information and free access to the information. Basic information that is required for this project is as follows:

- Production data for each commodity at district, provincial and company levels.
- Employment statistics by commodity.
- Livestock data and density map thereof.

It is further assumed that consultants will have easy and timely access to provincial officials, company executives and other stakeholders.

At this point in time, no major constraints in executing this project are envisaged.

5. RELATED PROJECTS

The one project that is related to this project is the FEASIBILITY STUDY OF INDUSTRIAL PARKS. There may be other projects that have been commissioned by the Provincial Department of Agriculture.

The Feasibility Study of Industrial Parks is relevant for the following reasons:

- Availability of manufacturing space will be a pre-requisite to the establishment of agro-processing enterprises.
- The location of such industrial parks vis-à-vis their proximity to major growing areas will have a bearing on transportation costs.

6. RISKS

The risks pertaining to the successful and timely completion of this project are as follows:

- Availability and timely access to information;
- Timely access to stakeholders; and
- Timely feedback on Progress Reports.

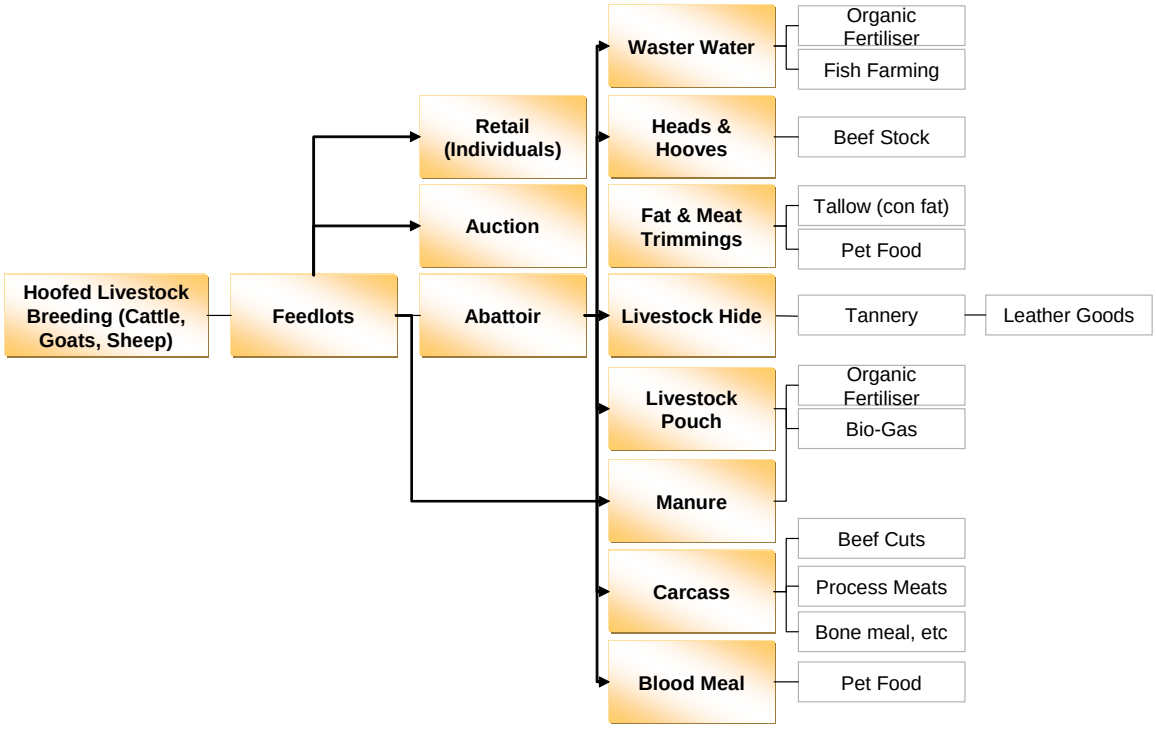
7. QUALITY MANAGEMENT APPROACH

The Team Leader shall be responsible for quality assurance, check each report/submission for accuracy and integrity.

8. TOOLS AND TECHNIQUES

The project will rely on templates to collect relevant data (See Appendix 1). With respect to value addition, value chains for each commodity will be developed as shown in the EXAMPLE below (Cattle Beneficiation Value Chain): these value chains will be developed when the desired commodity list is agreed to.

Cattle Beneficiation Value Chain



The potential and opportunities for value addition will then be evaluated at each point in the value chain. In the example above, for instance, the potential and opportunities for the following may exist:

- Community feedlot
- Abattoir
- Tannery
- Manufacture of leather goods
- Manufacture of organic fertilizer
- Etc.

Opportunities for linkages between developing and rural farmers and agro-processing enterprises will also be evaluated.

10 WORK PLAN

The Work Plan is shown on Attachment 1.

11 TEAM CONTACT DIRECTORY

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APPENDIX III: NEW GENERATION CO-OPERATIVES

Appendix IV : WORKPLAN

DEPT. OF ECONOMIC DEVELOPMENT

AGRO PROCESSING RESEARCH PROJECT

DETAILED WORKPLAN	Duration	ponsib	Start Date	Completion Date	DELIVERA
TASKS	eam Leader				
PROJECT MOBILIZATION					
Work Plan	7 days		05/03/07	12/03/07	Present Workpla
Confirm Client Expectations	1 day		01/03/07	01/03/07	
Confirm list of commodities					
Listing of Stakeholders & Participants	7days		05/03/07	12/03/07	
PRESENT WORKPLANS TO CLIENT			**12/03/07**	**12/03/07**	
PRIMARY COMMODITIES					
PRODUCT IDENTIFICATION					
Identify major agricultural commodities:	14days		01/04/07	14/07/07	
- in each district	14 days		01/04/07	14/07/07	
- in each local municipality	14 days		01/04/07	14/07/07	
Categorize commodities by farmer groups:	14 days		15/04/07	28/04/07	
- Commercial farmers			15/04/07	28/04/07	
- Emergent	14 days		15/04/07	28/04/07	
- Rural farmers	14days		15/04/07	28/04/07	
PRODUCTION STATISTICS					
Compile production data for each commoc	14days		15/04/07	28/04/07	
Analyse production data for each commoc	14days		15/04/07	28/04/07	
Categorize production data for each muni	14days		15/04/07	28/04/07	
- By farmer groups	14days		15/04/07	28/04/07	
Identify constraints to increased production	14days		01/05/07	12/05/07	
- Capital infrastructure	14days		01/05/07	12/05/07	
- Water, electricity & other	14days		01/05/07	12/05/07	
Identify major inputs for:	14days		14/05/07	28/05/07	
- Horticulture products	14days		14/05/07	28/05/07	
- Livestock	14days		14/05/07	28/05/07	
Identify opportunities/challenges of access	14days		14/05/07	28/05/07	
Identify constraints to local agro-processin	14days		14/05/07	28/05/07	
PRESENT PROGRESS REPORT TO CLIENT			**28/05/07**		

ACCESS TO MARKETS	14 days		29/05/07	08/06/07	
Identify current markets for primary commod	14 days		29/05/07	08/06/07	
Identify potential markets for primary comm	14 days		29/05/07	08/06/07	
Analyse SA market trends	14 days		29/05/07	08/06/07	
Analyse global market trends	14 days		29/05/07	08/06/07	
Identify opportunities for markets in RSA	14 days		29/05/07	08/06/07	
Identify opportunities for markets in Africa &	14 days		29/05/07	08/06/07	
EMPLOYMENT	15 days		29/05/07	29/06/07	
Compile employment data for each commodi	15 days		29/05/07	29/06/07	
Analyse historical employment trends	15 days		29/05/07	29/06/07	
Determine employment potential from increa	15 days		29/05/07	29/06/07	
production of primary commodities.	15 days		29/05/07	29/06/07	
BENEFICIATION/ VALUE ADDITION	30 days		01/06/07	30/06/07	
Analyse value chain for each commodity	30 days		01/06/07	30/06/07	
Identify opportunities for adding value	30 days		01/06/07	30/06/07	
Analyse RSA markets for value added produc	30 days		01/06/07	30/06/07	
Analyse regional & global markets for value a	30 days		01/06/07	30/06/07	
Identify opportunities for market penetration	30 days		01/06/07	30/06/07	
Identify opportunities for SMMEs	30 days		01/06/07	30/06/07	
Determine employment potential	30 days		01/06/07	30/06/07	
Report Writing	**14 days**		**01/07/07**	**14/07/07**	
Present Draft Research Report			**14/07/07**	**14/07/07**	
Review & incorporate feedback on Draft Report			**15/07/07**	**28/07/07**	
Present Final Research Report			**31/07/07**	**31/07/07**	**Final Report**

APPENDIX V: CATALOGUE

FRUIT & VEGETABLE PROCESSING EQUIPMENT