LIMPOPO CORRIDOR SPATIAL DEVELOPMENT INITIATIVE
PROMOTING AGRO-INDUSTRIAL
Livestock Sector
Diagnosis, Strategies and Pre-Viability Studies

ETC International Team – Drawn up by

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Maputo
April 2003
The main audience for this study

The business people interested in investing in the agro-industrial sector in the Limpopo Corridor

All PRIVATE or PUBLIC entities who assist their clientes in this task.
What does this study offer?

A pre-feasibility evaluation of agro-industrial processing projects in the Limpopo Corridor; projects resting,

On the one hand, on selecting some of the commercial opportunities identified in earlier studies;

On the other hand, in recognising projects which, although in an advanced stage of implementation, are faced with a range of difficulties.
The context of the study

It is different from the context of earlier studies for two main reasons:

In terms of framework for its strategic planning, and

In the socio-economic circumstance in which it arose.

The main strategic framework – the so-called Spatial Development Initiative (SDI);

As to the circumstances:

The new economic enviroment and

The exist commercial risk factors in the country.
PART I. VISON

(Provide in the former report on the Agro-industrial Processing)

PART II. DIAGNOSIS ......................... 2

Current situation of livestock in the Limpopo Corridor
Livestock industry
Livestock infrastructures
Livestock policy and strategy
Main constrains and opportunities

PART III. STRATEGY ......................... 19

Recommended strategy for livestock industrial processing
Identification and justification of the selected anchor projects
Summary of the financial indicators of the anchor projects

Project 1: Cattle and goat abattoir, with cattle feed lot
Project 2: Tannery
Project 3: Animal feed industry, with egg production unit
The Vision

What is the scope of the Limpopo Corridor?

Broad versus narrow definition of the Limpopo Corridor
The Limpopo Corridor can be defined more by the spirit of cooperation, generated by a series of geographical and socio-economic synergies, than by the politico-administrative boundaries fixed by the national government and by local administrations.
Scope of the Limpopo Corridor

Broad definition?

Gaza +10 dist. From Inhambane +2 Maputo prov.
Surface: $\approx 125,000 \text{ Km}^2 \ (\approx 17\% \ of \ the \ Country)$
Population: $\approx 2$-$2.3$ million inhabitants (13% of the Mozambican population)

Restrict definition?

Gaza+2 Maputo prov.
Surface: $\approx 85 \text{ Km}^2 \ (\approx 11\% \ of \ the \ Country)$
Population: $\approx 1.3$-$1.5$ million (8% of the Pop.)
<table>
<thead>
<tr>
<th>District</th>
<th>Surface (1000 km²)</th>
<th>Population (1000 people)</th>
<th>Density</th>
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<tbody>
<tr>
<td><strong>Total Valley</strong></td>
<td>125</td>
<td>100</td>
<td>2.013</td>
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<tr>
<td>Gaza</td>
<td>76</td>
<td>61</td>
<td>1.117</td>
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<td>Xai-Xai City</td>
<td>0,1</td>
<td>0</td>
<td>112</td>
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<tr>
<td>Bilene</td>
<td>2,2</td>
<td>2</td>
<td>139</td>
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<tr>
<td>Chibuto</td>
<td>5,7</td>
<td>5</td>
<td>169</td>
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<td>Chicualacuala</td>
<td>18,2</td>
<td>15</td>
<td>36</td>
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<td>Chigubo</td>
<td>14,9</td>
<td>12</td>
<td>14</td>
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<td>Chokwe</td>
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<tr>
<td>Massangena</td>
<td>7,5</td>
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<td>Massingir</td>
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<tr>
<td>Xai-Xai</td>
<td>1,9</td>
<td>2</td>
<td>174</td>
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<td><strong>Other districts</strong></td>
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<td>Inhambane</td>
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<td>Funhalouro</td>
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<td>Panda</td>
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<td>Zavala</td>
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<td>Magude</td>
<td>7,0</td>
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<td>40</td>
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<tr>
<td>Manhíça</td>
<td>2,4</td>
<td>2</td>
<td>127</td>
</tr>
</tbody>
</table>

Notas: 1/2 de Funhalouro, 1/3 de Massinga

Fonte: INE. 1999. *Demographic Projeções 1997-2010*
The Limpopo Corridor

at the present moment
Figure 2: Structure of Gaza's GDP by economic activity, 1997-2000

Source: UNDP, 2001
The LC in nowadays

17 activities comprising the GDP by province
≈ 9% of the National economy
LC ≈ 274 million US dollars
South ≈ 440 million US dollars (without the Capital)
Maputo City ≈ 1.133 million US dollars
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<thead>
<tr>
<th>Year</th>
<th>GDP</th>
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<tbody>
<tr>
<td>1996</td>
<td>2.937</td>
</tr>
<tr>
<td>1997</td>
<td>3.189</td>
</tr>
<tr>
<td>1998</td>
<td>3.453</td>
</tr>
<tr>
<td>1999</td>
<td>3.473</td>
</tr>
<tr>
<td>2000</td>
<td>2.947</td>
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</table>

\[ \approx \text{US$ 3.2 billion US dollars a year in 1996-2000} \]
Graph 2. Weight of the Limpopo Valley in the National Economy compared with Maputo City and the Southern Region

- Limpopo Valley Corridor: 9%
- Maputo City: 35%
- Southern, without Maputo City: 14%
Gráfico 2. Contribuição Provincial para o PIB, Moçambique 1996-2000

Map. Cidade

Map. Prov.

Gaza

Inhambane

Sofala

Manica

Tete

Zambézia

Nampula

C. Delgado

Niassa

in %

Fonte: PNUD, 2002
Graph 3. Weight of the GDP of the Limpopo Valley Corridor in the Economy of the Southern Region, Mozambique 1996-2000

<table>
<thead>
<tr>
<th></th>
<th>Maputo City</th>
<th>Limpopo Valley Corridor</th>
<th>Rest of the South</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>72%</td>
<td>17%</td>
<td>11%</td>
</tr>
<tr>
<td>US$ 10^9</td>
<td>1133</td>
<td>274</td>
<td>166</td>
</tr>
</tbody>
</table>
The likely prospect for the Limpopo Corridor in the next future

The broader region of the Limpopo Corridor (particularly the Limpopo River Basin and the Limpopo Railway) has become one of the privileged and more attractive places for private investment in Mozambique. i.e MEGA PROJECTS:

"Corridor Sands" (heavy sands),

"National Limpopo Park",

“Massingir Dam”,

The high tension power line to Inhambane e the Pande gas pipeline, two major infrastructure projects which, in the medium to long term, will bring important benefits for the development of the Limpopo Valley.
What will the likely agrarian land in the Limpopo Corridor?

Today it is used approximately 16 to 20% of the total land use for agrarian purpose in the country, of which 95% in family farming, 4.5% medium farming and less than 1% in large farming.

The present weight of agriculture is still relatively high, both in terms of production and employment. But will this weight continue?
Two possible alternatives

The economic structure remains more or less the same; i.e., in the case the projects currently expected to be implemented fail.

The economic structure will change dramatically, if not so much in terms of employment but in terms of production.

Either a change towards a structure similar to Maputo City (4% Primary, 20% Secondary, 76% Tertiary), or a change towards a higher industrial than service weight.
Estrutura do PIB da Zona Sul com e sem a Cidade de Maputo por Actividade Económica, Média Anual entre 1996-2000

Source: UNDP, 2002
Oportunity to transform the economic structure of the Southern Region, either through the industrialization of the mining and agricultural sectors or through the services (tourism, commerce and transport)

Will the mega-projects anchor economic growth?
And what about development?
Here is the major change and also opportunity for the agro-industrial processing
Constrains

Entrepreneurs: what do they say and demand?

Ministry of Planning and Finance, Labour, Cooperation and Environmental Action
EDM e TDM
Tourism
Land
Is the Ministry for Labour promoting unemployment?
Single Counter (Balcão Único)
Empresas do Grupo B versus colecta dos impostos
PROAGRI
SADC Commercial Protocol
Is there a place for a national HIPC?
CURRENT SITUATION OF LIVESTOCK IN THE LIMPOPO CORRIDOR

Map 1.1: Gaza Province

- Districts with largest number of cattle (SPP, 2001 inventory)
  - Mabalane: 19,375 head
  - Chibuto: 19,517 head
  - Chokwe: 22,604 head
  - Xai-Xai: 19,086 head

Graph 1.1: Evolution of numbers of cattle

Graph 1.2: Evolution of numbers of goats and sheep (1995-2001)

Source: DINAP Annual Reports
Graph 1.4: Evolution of beef production, 1992-2001

Graph 1.5: Evolution of pork production, 1997-2001
Economic Freedom and Per capita Income

(1999 Per Capital income in Purchasing Power Parity)

Free: $23,325
Mostly free: $11,549
Mostly unfree: $3,238
Represed: $3,829

"2002 Level of Economic Freedom

Source: O'Driscoll, 2002: 2
# The Index of Economic Freedom, Mozambique

## 1995-2002

<table>
<thead>
<tr>
<th>Year</th>
<th>1995</th>
<th>2002</th>
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<tbody>
<tr>
<td>Rank</td>
<td>97</td>
<td>76</td>
</tr>
<tr>
<td>Score</td>
<td>4.20</td>
<td>3.05</td>
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<tr>
<td>Category</td>
<td>Repressed</td>
<td>Mostly Unfree</td>
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### 1995

<table>
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<th>Government Intervention</th>
<th>4.0</th>
<th>Foreign Investment</th>
<th>4.0</th>
<th>Wages and Prices</th>
<th>4.0</th>
<th>Regulation</th>
<th>4.0</th>
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</thead>
<tbody>
<tr>
<td>Fiscal Burden</td>
<td>3.0</td>
<td>Monetary Policy</td>
<td>5.0</td>
<td>Banking and Finance</td>
<td>4.0</td>
<td>Property Rights</td>
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<td>Black Market</td>
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### 2002

<table>
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<th>Foreign Investment</th>
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<th>Wages and Prices</th>
<th>3.0</th>
<th>Regulation</th>
<th>4.0</th>
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</thead>
<tbody>
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<td>Fiscal Burden</td>
<td>3.5</td>
<td>Monetary Policy</td>
<td>1.0</td>
<td>Banking and Finance</td>
<td>3.0</td>
<td>Property Rights</td>
<td>4.0</td>
<td>Black Market</td>
<td>4.0</td>
</tr>
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</table>

**Country Trend**

<table>
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<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>3.05</td>
<td>3.35</td>
<td>3.80</td>
<td>3.90</td>
<td>4.10</td>
<td>4.00</td>
<td>4.10</td>
<td>4.20</td>
</tr>
</tbody>
</table>

*From 1990 to 1999, according to World Bank Group data, compound growth in GDP averaged 3.9 percent annually and per capita GDP increased from $144 to $198 (in constant 1995 U.S. dollars). Mozambique's government intervention score is 1 point worse this year; however, its monetary policy, foreign investment, and black market scores are respectively, 2 points, 1 point, and 1 point better this year. As a result, Mozambique's overall score is 0.30 point better this year.*

http://cf.heritage.org/inde
SUMMARY OF MAIN CONSTRAINS AND OPPORTUNITIES IN THE LIVESTOCK SECTOR

Constrains:

- Defective general management
- Defective veterinary care
- Insufficient breeding cows
- Prevalence of disease
- Defective health coverage to prevent and control diseases
- Insufficient livestock infrastructures
- Water shortages during 4-6 months of the year
- Credit not available for the sector
- Lack of a commercial culture
- Defective commercial network for family sector livestock products
- Lack of industries (abattoirs, meat processing, milk, animal feed, tanneries)
- Limited extension for publicising technical norms on breeding and handling animals.

Opportunities

- Existence of various livestock species. There is a good beef cattle unit.
- Existence of some livestock infrastructures (dip tanks, treatment corridors, drinking points)
- Quality grazing land, though scarce in the dry season
- Existence of livestock farmers with some knowledge of breeding (there is a tradition of breeding animals)
- Willingness of the breeders to develop animal production.
- The recent creation of associations of beef cattle farmers, which shows an initiative to organise and strengthen the sector.
Preliminary Observations

Investment is not a game, to say nothing as to being an incursion into the unknown. Investors do not make decisions on the basis of uneducated guesses, but on the basis of specific information which is immunized both to exaggerated optimism and to the unfounded pessimism;

Complementarity, trust and agreement achievement

The investor’s main concerns are related to security and timing

Productivity and competitiveness
ANCHOR PROJECTS

DEVELOPMENT:
Main results of the 3 pre-feasibility studies
LVSDI
AGRO-PROCESSING SECTORAL STUDIES

Livestock Project 1: Cattle and goat abattoir With cattle feed lot
(PRE-VIABILITY STUDY – Final Report)
PROJECT 1: Cattle and goat abattoir, with cattle feed lot

**Justification**

- The raw material is available in Gaza province
- Currently no abattoir with the capacity and quality to provide services to cattle farmers who do not possess their own abattoirs
- There is a market able to absorb all the production
- The effect on the region is substantial: it helps eliminate existing market shortcomings, increase the value added created in the region, and facilitate market access
- The livestock breeders have a tradition in the activity, and with the extension services provided by the company through associations of farmers, the necessary know-how will be guaranteed;
- The inclusion in the same company of activities upstream of the abattoir, in the form of fattening cattle, and eventually the finishing of goats and sheep
- The time for recovering the investment is reasonable (less than 5 years).
Supplier:  
- Familiar sector  
- Commercial

Origin:  
Gaza, Centre and north

Activities:  
- Prospection  
- Marketing  
- Refrigerated transport

Markets:  
- Gaza  
- Inhambane  
- Maputo  
- Export of goat

Products:  
- Beef  
- Goat meet  
- Organs  
- Hides  
- Hooves

RAW MATERIAL
Feed lot for cattle: it is recommended that Model 1 (Appendix 1) be adopted

PROCESSING
1. Reception  
2. Health inspection  
3. Slaughter  
4. Preparation  
5. Cutting/dressing  
6. Packaging  
7. Refrigeration  
8. Freezing

MARKETING
CREATION OF BRAND QUALITY CERTIFICATION

Promotion undertaken by the abattoir among the family sector and small breeders, organised in duly legalised and upgraded associations

Transport

It is determinant to undertake extension among the family sector and the small commercial breeders, in order to increase levels of productivity and extraction.
## SUMMARY OF PRE-VIABILITY INDICATORS

### SCENARIO – Cautious

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Values</th>
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<tr>
<td>Investment needed</td>
<td>4,070,387 USD</td>
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<tr>
<td>Break-even year</td>
<td>Year 3</td>
</tr>
<tr>
<td>&quot;Break-Even&quot;</td>
<td>3,450,909 USD</td>
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<tr>
<td>Sales in Break-even year</td>
<td>5,684,088 USD</td>
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<tr>
<td>Time to recover investment</td>
<td>54 months</td>
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<td>IRR (Internal Rate of Return)</td>
<td>20.93 %</td>
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<tr>
<td>NPV (Net Present Value)</td>
<td>1,043,813 USD</td>
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</tbody>
</table>
LVSDI

AGRI-PROCESSING SECTORIAL STUDIES

LIVESTOCK PROJECT 2: REHABILITATION, MODERNISATION E DIVERSIFICATION OF ACTIVITY OF THE MATOLA TANNERY

(PRE-VIABILITY)
PROJECT 2: TANNERY

Justification

Availability of raw material in the provinces south of the Save river

Structuring effect in the Gaza region, and in the other provinces south of the Save (the factory will also process hides from all over the country, since there is no other tannery functioning), given the weight of the livestock sector (notably cattle and goats) in the economy of the region

Existence of export markets and some national market (the growth of which depends on the recovery of the footwear sector)

At the level of infrastructures with an impact on the sector, it is essential that the factory should play the role of extensionist to the abattoirs (delivering salt, and warning of the care needed in removing and storing hides) and to the livestock farmers (managing and feeding the animals)

Import substitution will occur in the medium term through the recovery of the footwear sector, and exports will increase significantly both through an increase in the amounts exported, and in the increase in the unit value per kg of hide

The recovery of the existing factory has the great advantage that there is already skilled labour in place, essential to ensure that the industry is competitive

The time for recovering the investment is reasonable (less than 5 years).
**COMPANY ACTIVITY**

**RAW MATERIAL**

- **Supplier:**
  - Family sector
  - Comercial

- **Origin:**
  - Gaza
  - Inhambane
  - Maputo

- **Animal species:**
  - Cattle
  - Goats
  - Sheep

**PROCESSING**

- **WETTING & CUTING**
- **RE-CURING**
- **FINISHING**

**MARKETING**

- **Products:**
  - Hides for clothing
  - Hides for footwear
  - Hides for upholstery
  - Other

- **Mercados:**
  - Export
  - National

- **Subcontracting:**
  - Handicrafts obtained from hides and horns

- **Extensions among the breeders and the abattoirs/slaughterhouses**
  - Acquisition
  - Transport

- **Prospection**
- **Marketing**
### SUMMARY OF PRE-VIABILITY INDICATORS

#### SCENARIO – Cautious

<table>
<thead>
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<td>Break-even year</td>
<td>Year 3</td>
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<td>&quot;Break-Even&quot;</td>
<td>1,803,946 USD</td>
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<tr>
<td>Sales in Break-even year</td>
<td>2,400,245 USD</td>
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<td>Time to recover investment</td>
<td>56 months</td>
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<tr>
<td>IRR (Internal Rate of Return)</td>
<td>17.34 %</td>
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<td>NPV (Net Present Value)</td>
<td>984,328 USD</td>
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LVSDI
AGRO-PROCESSING SECTORAL STUDIES
Livestock Project 3. Animal Feed Industry, With Egg Production Unit
(PRE-VIABILITY STUDY)
PROJECT 3: ANIMAL FEED INDUSTRY, WITH EGG PRODUCTION UNIT

Justification:

Availability of some raw materials in the region, and great possibilities of promoting production of them;

Structuring effect in the region due to the impact it has in giving value to agricultural and agro-industrial by-products and residues, apart from the important role in creating an alternative market for some agricultural products (maize, sorghum, cassava, and oil seeds).

Currently there is a market (monogastric) in the region south of the Save river, and there is great potential in the Gaza region

The location of a factory alongside the Limpopo railway line is a determinant factor for distributing the production to Maputo province

There is a potential for import substitution of animal feed (which reaches Mozambique at prohibitive prices) and of maize, as well as eggs for consumption. Current national egg consumption is met by resort to imports, which account for more than 95% of the eggs eaten in the country

The animal feed factory project integrates promoting maize production upstream from its activity, and its own production of eggs downstream

The return on the investment in the factory, in the integrated way the project is designed, will be very reasonable.
SUPPLIER:
- Familiar sector
- Commercial

ORIGIN:
Gaza, Centre and north

Activities:
- Prospection
- Marketing
- Transport

Markets:
- Gaza
- Inhambane
- Maputo

Raw material processing marketing

Suppliers and origin

Promotion of maize production in Chokwe undertaken by the factory among the association of maize producers, duly upgrades

Extension among farmers’ associations and the commercial sector

Acquisition in Gaza and in the provinces of central and northern Mozambique

Transport

Products:
- Poultry feed
- Feed for pigs
- Feed for cattle
- Others
- Simple food supplements
- Others

Merit

Gaza

Inhambane

Maputo

1. Storage
2. Milling
3. Formulation
4. Weighing
5. Mixing
6. Milling
7. Granulation
8. Bagging

Own egg production unit
- Acquisition of laying hens
- Extraction of eggs

Undertake promotion among the family sector, through creating and upgrading associations to exploit small units of laying hens for the production of eggs
## SCENARIO – Cautious

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<td>&quot;Break-Even&quot;</td>
<td>1,493,943 USD</td>
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<td>Sales in Break-even year</td>
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<td>Time to recover investment</td>
<td>52 months</td>
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<td>IRR (Internal Rate of Return)</td>
<td>24.11 %</td>
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<tr>
<td>NPV (Net Present Value)</td>
<td>604,366 USD</td>
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For the three projects

<table>
<thead>
<tr>
<th>Interest rate on bank funding (70% of the total investment)</th>
<th>10%</th>
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<tbody>
<tr>
<td>Taxes</td>
<td>Complete payment of all applicable taxes is considered.</td>
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<tr>
<td>Security in the supply of raw materials (quality, quantity and competitiveness)</td>
<td>Investments are considered in agricultural tools (in project 2), financing agricultural inputs (in all 3 projects), and the necessary extension services (in all 3 projects).</td>
</tr>
</tbody>
</table>
Conclusions and Recommendations

The three projects summarised above are technically, economically and financially viable, at least in term of pre-viability at the moment. The precautions taken in the assumptions used and the sensitivity analysis made of the project's critical parameters, give them a very reasonable margin of safety, and reduce the project risk significantly.

In short, with a total private investment in the three anchor projects selected in the order of 12-15 million US dollars (including investment in the agricultural sector so as to guarantee raw material in the necessary quantity, quality and competitiveness) the minimum conditions will be created in the Limpopo Corridor to develop livestock activity that is intimately linked with industrial processing.

The three livestock projects presented here, are not only technically, economically and financially viable - they can serve as an example of the viability of the type of strategy for other projects of processing livestock produce that may eventually arise in the Limpopo Valley.