



# Aquaculture in Lepelle- Nkumpi



Prepared by:

*Urban-Econ Development Economists*

*1088 Pretorius Street, Hatfield, 0028*

*Tel: 012 342 8686*

*Fax: 012 342 8688*



# Table of Contents

---

<b>1. Introduction.....</b>	<b>3</b>
<b>2. Development Description .....</b>	<b>3</b>
2.1 Background to fish farming.....	3
2.2 Project Description.....	4
2.2.1 Stages of fish farming.....	4
2.2.2 Main categories of fish.....	5
2.2.3 Infrastructure and equipment needed .....	6
2.2.4 Important considerations .....	6
2.2.5 Authorisation process .....	9
2.2.6 BEE/SMME opportunities .....	10
2.3 Secondary uses .....	11
<b>3. Market Analysis.....</b>	<b>12</b>
3.1 Supply Analysis.....	12
3.2 Demand Analysis.....	12
3.2.1 Consumption trends of Fish.....	12
3.2.2 Net effective demand .....	13
<b>4. Potential Impact .....</b>	<b>15</b>
<b>5. Funding options.....</b>	<b>17</b>

# 1. Introduction

This pre-feasibility is a preliminary study of aquaculture potential in the Lepelle-Nkumpi municipality. The purpose of this study was to identify potential of aquaculture development, to provide advice to the proposed aquaculture schemes and to make suggestions for further requirements.

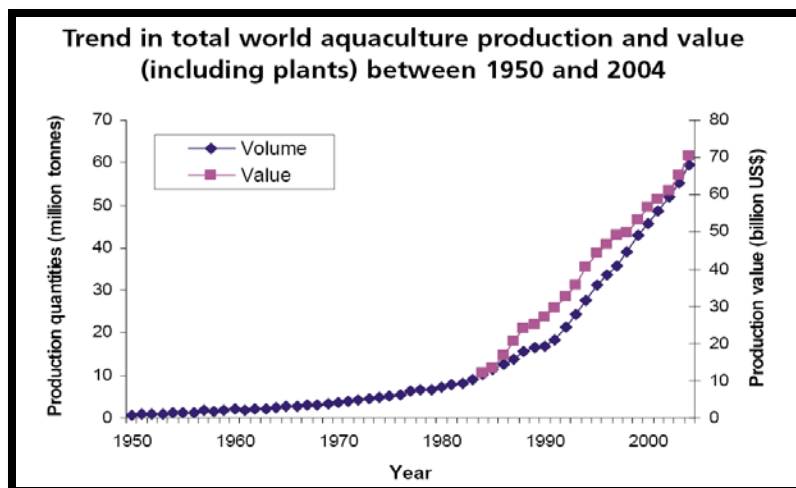
## 2. Development Description

### 2.1 BACKGROUND TO FISH FARMING

Aquaculture is the farming of freshwater and saltwater organisms under controlled conditions<sup>1</sup>. Aquaculture employs many different strategies to achieve the final goal of producing a marketable farm-raised product<sup>2</sup>. Fish farming is the principal form of aquaculture and involves raising fish commercially in tanks or enclosures, usually for food. Fish species raised by fish farms include salmon, catfish, tilapia, cod, carp, trout and others. Increasing commercial fishing operations have caused overfishing – fish farming offers an alternative solution to the increasing demand for fish.

#### *Trends*

According to the Aquaculture Association of Southern Africa (AASA) the world aquaculture industry contributes approximately 30% of total food production. Africa produces about 6% (570,000 tons) of the total world catch; with South Africa contributing 9% and 0.5% to Africa's and total world catch, respectively.



Although South African aquaculture production is limited in its contribution to Africa's and global production, it has shown an increase over the past decade. According to AASA, total production and value has increased from 3,000 tons (R 51 million) in 1997 to 4,030 tons (R 146 million) in 2000.

<sup>1</sup> American Heritage Definition of Aquaculture

<sup>2</sup> [www.fishfarming.com](http://www.fishfarming.com)

Source: FAO, 2006

National aquaculture production data (2003-2006) is presented in the following table. In 2003, the sector accounted for 3,474 tons of production and increased slightly to 3,564 tons valued at R210 million in 2006. The greatest increase in production was attributed to the abalone sub-sector where production increased by 61% - from 515 tons in 2003, to 833 tons in 2006. The oyster, mussel and trout sub-sectors reported declines in production of 19.2%, 39.5% and 18.4% respectively, and prawn production ceased.

Table 1: Aquaculture production



Species	Production			
	2003		2006	
	Quantity (Tons)	Value (Million R)	Quantity (Tons)	Value (Million R)
<b>Marine</b>				
Abalone	515	134	833	178.3
Oysters	250	1.6	202	8.0
Mussels	900	5.1	542	4.7
Prawns	130	11.8	0	0
Finfish	10	0.4	0 <sup>f</sup>	0
<b>Freshwater</b>				
Trout	1,300	-	1,100	33.4 <sup>b</sup>
Tilapia	160	-	50 - 80	0.75 - 1.2
African Catfish <sup>d</sup>	50	-	66	0.99
Common carp <sup>d</sup>	30	-	40	0.6
Mullet <sup>d</sup>	15	-	20	0.3
Largemouth Bass <sup>d</sup>	9	-	12	0.18
Marron crayfish <sup>e</sup>	8	-	30 - 40	5.5 - 7.4
Koi carp	77	-	1.4 million fish	7.0
Aquarium species <sup>a</sup>	30	-	2,600 boxes	2.86
<b>Totals</b>	<b>3485</b>		<b>3564</b>	<b>R210 million</b>

Source: dti, 2006




## 2.2 PROJECT DESCRIPTION

### 2.2.1 STAGES OF FISH FARMING

Fish farming consists of 5 stages<sup>3</sup>:

-  Hatchery stage
-  Nursery stage

<sup>3</sup> Mosig & Fallu, Australian Fish Farmers, 2004

-  Grow-out stage
-  Processing stage
-  Marketing stage

These stages are subsequently discussed.

### *Hatchery stage*

During the hatchery stage, flow-through or re-circulation methods are used to hatch eggs. It is suggested however, that in the early stages of fish-farming, one should rather follow the more practical and less costly method of purchasing seed stock from an established hatchery.

### *Nursery stage*

Many nurseries utilize intensive flow-through or re-circulation technology which is capital intensive but offers a high degree of reliability. Other approaches include cultivating fish in a plankton-rich pond, giving it time to grow and then harvesting the fingerlings a few weeks or months later.

### *Grow-out stage*

During this stage, young post-nursery stock is grown to the size at which they will be harvested for the market. Stock can be grown in a variety of different systems; flow-through and re-circulation ponds being utilised the most.

### *Processing stage*

Most seafood is sold in processed form e.g. boneless, skinless fillets. If one wants to process the fish as part of the project it is important to comply with food and safety regulations. A safer and more cost-effective method is to form a strategic alliance with someone well-established in this field.





### *Marketing stage*

During the final stage of fish farming, the product is marketed. This is the most important stage of the process and should preferably also be done by professionals who know the sector.

---





## **2.2.2 MAIN CATEGORIES OF FISH**

There are four categories of fish based on climatic conditions:

-  Cold water species e.g. Atlantic salmon, rainbow trout
-  Temperate water species e.g. estuary perch
-  Warm water species e.g. cod, catfish
-  Tropical water species e.g. prawns, tilapia

The decision on the type of fish for this project will be based on the optimal temperature range for each of these species. Therefore, it will be important to assess the climatic conditions at the proposed site.



The optimal temperature range for each of the species is listed below:

-  Cold water species: between 10°C - 18°C
-  Temperate water species: between 15°C - 23°C
-  Warm water species: between 20°C - 28°C
-  Tropical water species: between 26°C - 33°C











---

### **2.2.3 INFRASTRUCTURE AND EQUIPMENT NEEDED**

Infrastructure that any fish farm requires includes:

-  Feed storage room: Feed should be kept in a cool, dark and dry place.
-  Stock holding room: This room is the pivotal point of the fish farm and due cognizance should be taken thereof when planning the layout of the farm. Here fish are quarantined, graded and inspected. The floor plan will suit the species being farmed.

Equipment that will be needed for the farming includes:

-  Plankton net
-  Maximum-minimum thermometer to record periodic temperature movements
-  pH meter to record changes in the pH
-  Dissolved oxygen (DO) meter to measure the amount of oxygen available in the water
-  Test kits to measure the alkalinity of the water, the amount of nitrate, nitrite, ammonia and phosphorus in the water
-  Harvesting equipment such as nets and traps
-  Handling gear e.g. containers to handle fish
-  Oval meat tubs for carrying small fish
-  Fish bins for fresh, chilled fish
-  Pumps

---

### **2.2.4 IMPORTANT CONSIDERATIONS**

The following issues need to be considered when commencing the project:

#### ***Access to water***

Water is the most important part of an aquaculture project and enough of this resource should be available at the proposed site.

The potential for fish production is limited by the low availability of suitable water bodies in the municipality, however there are efforts underway in the Limpopo Province of converting disused irrigation schemes into aquaculture projects. Irrigation schemes make use of on-farm storage dams as ponds for fish production.

Water bodies available in the municipality include:

- ⇒ Mogoto Dam
- ⇒ Nkumpi Dam
- ⇒ Rooipoort Dam
- ⇒ Nkumpi river
- ⇒ Olifantsriver
- ⇒ Tudumo river
- ⇒ Mohlalpitsi river

Suitability of these water bodies should be investigated beforehand. It is important to note that any potential project on aquaculture should have economies of scale to be competitive and sustainable in the long run.

#### *Water quality management*





Water quality imposes the living standards under which the farm stock live. Excellent water quality is needed for fish farming to be successful; therefore it is imperative that a pond manager be appointed. The pond manager should manage the water quality by monitoring and assessing, amongst others, the oxygen levels, pH, ammonia and carbon dioxide levels.


#### *Pond maintenance*

Pond maintenance is required to prevent production problems. The most effective step is to dry the pond between crops and then liming the pond to kill parasites and pathogens.

#### *Technical and socio-economic considerations*










Prior to starting commercial aquaculture, technical and socio-economic feasibility studies would be essential to identify appropriate species and scale of production, and to assess its profitability through the following basic surveys on:

-  Local market (market price, demand in quantity, public preference, etc)
-  Seed (existence of seed suppliers, cost, quantity and quality, etc)
-  Culture techniques (availability and cost of technical staff, local acceptability of techniques, existence of technical backup, etc)
-  Feed (existence of feed suppliers, cost, quantity and quality, etc)

-  Infrastructure (availability of electricity, water and fuel, availability of equipment and materials, costs of construction and facility, transportation costs of seed, feed and product, operational cost, etc)










### *Choice of species*

Hinrichsen (2007) identified the following considerations when deciding on suitable species for the area:








-  Is the species indigenous, exotic or extralimital?
-  If exotic, does the species occur in the area?
-  Is the species suited to the conditions and climate?
-  Are the rearing, biology and husbandry techniques for the species known?
-  Have the various approaches to production of the species been investigated?
-  Does the design of the facilities suite the species?
-  Is feed readily available for the species?
-  What are the market prospects for the species?
-  Will the chosen species be spawned on site and if not, are sources of juveniles available?

### *Choice of site*



The following should be considered when deciding on a site for the proposed project:







-  Does the project conform to regional development objectives and is the site correctly zoned?
-  Can legal access be gained to the site?
-  Does the site have adequate water resources that can be accessed legally?
-  Is the site physically accessible?
-  What services (electricity, water, roads, sewage and refuse) are required?
-  What infrastructure is required?
-  What is the surrounding land use and how will this influence the project?
-  What is the environmental sensitivity of the area?
-  Have floods, tides, winds and other forces of nature been considered?

### *General feasibility*






-  Has a feasibility analysis and business plan been done for the project?
-  Is the project financed and has provision been made for capital reserves?
-  Is the required technology available?
-  Are the required human resources and skills available?
-  Are the required support services in place and have the logistical needs been considered?
-  Have water, species and feed resources been considered in detail?
-  Have social matters been addressed. Is the project acceptable to neighbours and local communities?

### *Market Analysis*

-  Have the markets been identified and secured?
-  Has market timing, seasonality, needs and price been researched?

-  Is the market size and demand known?
-  Can the quality demand of the market be matched or bettered?
-  In what form should the product be presented in the market?
-  Is the market competition known?
-  Have market logistics (handling, freezing etc.) been considered?
-  Have the phytosanitary and other legal requirements been addressed?

### *Authorisations and legal matters*

-  Does the project require approval in terms of the National Environmental Management Act?
-  Does the water use for the project require authorisation?
-  Are any transport permits for aquaculture organisms required?
-  Are veterinary permits for import and export of organisms required?
-  Are any authorisations required from the Local Authorities?

---

## **2.2.5 AUTHORISATION PROCESS**

In order to simplify the authorisation process, Hinrichsen (2007) identified clearly defined steps to follow:

### *Step 1: Formulation of an aquaculture project*

This step consists of conceptualisation of a project or venture so that the concept can be used to inform the authorisation process.

### *Step 2: Choosing of a candidate species*




This step consists of the identification of an appropriate species and may require consultation with various Government Departments and organisations, especially when the use of exotic species is considered.

### *Step 3: Land access planning*

This step consists of ensuring that the land earmarked for a proposed aquaculture project or venture is rightfully owned or that consent is obtained for the use of the land.

### *Step 4: Land use planning*

This step consists of ensuring that the land use planning for a proposed project or venture is in place. These land use planning aspects include:

-  Ensuring that the land is correctly zoned,
-  Ensuring that building plans are in place for any new structures, and
-  Ensuring that due consideration is given to any environmentally sensitive areas.

***Step 5: Service planning***

This step consists of ensuring that the necessary services and service infrastructure (electricity, water, roads, sewage services, telecommunications etc.) is available at the required capacity.

***Step 6: Water use planning***



This step consists determining the need for a water use authorisation from the Department of Water Affairs and Forestry.

***Step 7: Environmental planning***

In this step a determination is made whether a project requires an environment authorisation and the process by which such an authorisation is gained. In cases where an environmental authorisation is required, an application must be made in this regard to the Department.

***Step 8: Permitting***

This step determines which additional permits may be required by an aquaculture venture. In this regard permits may be required from:

-  The Marine and Coastal Management Branch of the Department of Environmental Affairs and Tourism for the capture or transport (including export and import) of all marine organisms and for the keeping of certain endangered or exotic species, and
-  The Veterinary Services of the Department of Agriculture for the import or export of aquaculture organisms.






***Step 9: Post approval planning***

Once the necessary authorisations have been obtained, there may be a requirement for the implementation of ongoing checks and balances, and in certain cases, renewal of the authorisations. These post approval requirements may include internal and external compliance and/or environmental audits, reporting, record keeping, permitting and renewals as required by the respective authorities.

---

**2.2.6 BEE/SMME OPPORTUNITIES**

The following opportunities for BEE/SMME development exist:








-  Reliable truck company to transport fingerlings
-  Cage building company to assist with building quality cage structures
-  Local feed producing company
-  Marketing
-  Packing and packaging products

-  Opportunity for company to assist with harvesting





## **2.3 SECONDARY USES**

### *Fish oil*

Fish oil has numerous uses, some of which are given below:

-  Omega-3 fatty acids and fish oil reduce the risk of cardiovascular diseases.
-  Fish oil supplements protect the skin from harmful UV rays.
-  Researchers have discovered that fish oil could prevent breast cancer from spreading and causes some cancer cells to die when combined with propofol, an anesthetic.
-  Fish oil could reduce the symptoms of ulcerative colitis – inflammation to the large intestine.
-  Fish oil is also used in skin treatments.
-  Reduces blood cholesterol.
-  It is used in patients with rheumatoid arthritis and bronchial asthma.

### *Gelatine*

-  Gelatin recovered from fish skins can be processed into thin, pliable sheets, called films. Gelatin made from fish skins has a lower gelling point and is liquid at room temperature, making it suitable for use in products such as frozen desserts.
-  Fish-derived gelatin films serve as a protective barrier against the damaging effects of moisture and oxygen meaning that it could be used to reduce water loss in refrigerated and frozen foods.
-  Fish-gelatin offered better protection against oxidation.
-  Gels and films from fish gelatin could provide an effective barrier to many bacteria and increase the shelf life of some food products.

### *Fish manure rich water*

Fish manure in water proves to be a valuable fertilizer. When water is drained from the ponds it could be used to irrigate crops.

## 3. Market Analysis

---

### 3.1 SUPPLY ANALYSIS

The global harvest of natural aquatic resources for food, protein, oils and other materials has reached capacity and has already caused a collapse in the stocks of certain species, habitat loss and pollution. The FAO reported that nearly 75% of the world's major marine fisheries are now either overexploited or fully exploited and cannot be expected to yield higher production in the near term. Nevertheless, the demand for these aquatic resources is increasing and aquaculture production has the potential to meet this demand.

The world population has been increasing more quickly than the total food fish supply from production, resulting in a decreased global per capita fish supply from 14.6 kg in 1987 to 13.1 kg in 2000<sup>4</sup>. According to FAO statistics, aquaculture's contribution to global supplies of fish continues to grow, increasing from 9% in 1980 to 44% in 2007. Globally, aquaculture is growing more rapidly than any other food-producing sector<sup>5</sup>.

### 3.2 DEMAND ANALYSIS

The United Nations Food and Agriculture Organisation (FAO) estimated that rising population numbers mean that by 2030 an additional 37 million tons of fish will be needed to maintain current levels of consumption. Fish farming is the only way to meet future global demand and will have to produce 85 million tons of fish per year to keep up with demand.

Fish is a price sensitive commodity as it influences the consumption patterns and trends. According to the Expenditure and Income Survey of Statistics South Africa (StatsSA) the total costs of meat and meat products in relation to income are 0.34% for urban area and poultry consumption in relation to income is 0.11%. For the purpose of this study it will be assumed those households spend 0.03% on fish products, which is a third of spending on poultry products.

The demand for fish is determined using these figures, *ceteris paribus* (all other things remain constant).

---

#### 3.2.1 CONSUMPTION TRENDS OF FISH

---

<sup>4</sup> [www.fishfarming.com](http://www.fishfarming.com)

<sup>5</sup> Hinrichsen, E., 2007, *Introduction to Aquaculture in the Western Cape*

Product consumption refers to the consumption of the product by different consumers. Due to the fact that the product is price sensitive it is assumed that all income groups spend 0.03% of their total income on fish. This theory also assumes that all households in Lepelle-Nkumpi (51,242) eat fish.

*Table 2: Demand for fish in Lepelle-Nkumpi*

Income category (grow 2001 income category with inflation rate to 2008)	% Income distribution	Total HH income	Demand derived from this income group
R0 – R595	11%	R 1,679,826	R 50,395
R596 – R7,146	25%	R 49,591,381	R 1,487,741
R7,147 – R14,292	14%	R 76,901,693	R 2,307,051
R14,293 – R28,583	8%	R 87,874,362	R 2,636,231
R28,584 – R57,167	6%	R 131,842,163	R 3,955,265
R57,168 – R114,334	3%	R 131,798,519	R 3,953,956
R114,335 – R228,668	1%	R 87,808,768	R 2,634,263
<b>TOTAL:</b>	<b>100%</b>	<b>R 567,496,711</b>	<b>R 17,024,901</b>




*Source: Quantec, Urban-Econ & LED, 2008*

The number of households was used in a midpoint calculation to determine the average household income. Using this estimate, the demand for fish was derived. A total estimated demand of R 17,024,091 exists for fish in Lepelle-Nkumpi.

### **3.2.2 NET EFFECTIVE DEMAND**

The net effective demand of the fish market quantifies the gap between the fish supply and the fish demand in the Study Area. The sensitivity and lack of data available for the Study Area resulted in the difficulty of quantifying the net effective demand. Fish is a consumable commodity.

It is assumed that there is a demand in the Study Area based on the following assumptions:

-  Due to the fact that more South Africans are becoming health conscious, the demand for fish as protein source is growing
-  It is estimated that rising population numbers mean that by 2030 an additional 37 million tons of fish will be needed to maintain current levels of consumption
-  Approximately R 17,024,901 of the total annual household income in Lepelle-Nkumpi is spent on fish












From the aforementioned statistics it is assumed that there is an increasing demand for fish in the Study Area.



## 4. Potential Impact





---

### *Socio-economic impact*

-  Job creation – fish farming in Asia directly employs 12 million people<sup>6</sup>
-  Income generation
-  Increase in local revenue base
-  Poverty alleviation
-  Food security
-  Reduce hunger and malnutrition Business ownership
-  Community ownership
-  Black economic Empowerment
-  Labour intensiveness
-  Skills transfer
-  Development of small-scale and emerging farmers
-  Sustainability

This project will lead to increased employment opportunities created through spin-off opportunities in the local community. This will encourage entrepreneurship and curb poverty through income generation and skills training of the labourers of the project. This in turn leads to the improvement of the lives of the project labourers, their households and the community at large. Aquaculture helps to reduce hunger and malnutrition by providing food rich in protein, fatty acids, vitamins and minerals and also significantly improves food security by creating jobs and raising incomes. The project will also create spin-off employment opportunities from value-adding activities, business, utilities, transport, etc.

### *Environmental Impact*

-  Provide an alternative to continued depletion of natural fisheries, by reducing the world's dependency on wild stocks of fish
-  Settling ponds have proven to be an effective means of reducing source pollution<sup>7</sup>
-  Settling ponds can increase productivity in a pond-based water recycling system<sup>8</sup>
-  Release of non-native fish species is minimised because fish is grown in a secure closed system

---

<sup>6</sup> FAO, *Fish farming can meet rising demand*.

<sup>7</sup> [www.fishfarming.com](http://www.fishfarming.com)

<sup>8</sup> [www.fishfarming.com](http://www.fishfarming.com)



## 5. Funding options






---

The availability and accessibility of development finance for aquaculture will clearly be a major determinant of the rate of development of the sector. Commercial financial institutions are not always willing to finance these ventures because of the inherent risks. As a result, innovative ways will have to be found to make available a range of financial products and instruments to finance the development of this project.




### *Industrial Development Corporation (IDC)*

The IDC probably has the most experience in financing the aquaculture sector. It provides medium to large enterprises as well as emerging entrepreneurs from the previously disadvantaged communities with medium term finance for the establishment of new enterprises or the expansion of existing concerns. One can also utilize its expertise in evaluating project ideas, participating in and cofounding of project feasibility studies, as well as providing project finance for viable new and/or expansion projects.

Preference for financing is given to:







-  Financing fixed assets and the fixed portion of growth in working capital requirements.
-  Greenfield projects, expansions and rehabilitations.
-  Relatively sizeable projects.
-  Projects which have economic merit in terms of profitability and sustainability.
-  Projects which have developmental impact in terms of jobs, exports, spatial, empowerment and downstream opportunities.

The IDC also requires:



-  Security
-  Compliance with environmental requirements
-  Reasonable financial contributions from owners






### *Development Bank of Southern Africa (DBSA)*

The DBSA has a wealth of experience in promoting infrastructure development projects and its core areas of competency are:

-  Development with a focus on sustainable investment
-  Project management and mitigation of risk
-  Identification and selection of projects
-  Preparation and appraisal of projects
-  Monitoring implementation of projects
-  Mobilisation of private sector involvement







Examples of the various elements of infrastructure funded by the DBSA include:

-  Regional infrastructure – water, sanitation, energy, transport, ICT, etc
-  Municipal infrastructure – roads and water reticulation, municipal facilities, etc









-  Rural infrastructure - water schemes (including irrigation), sanitation, energy and roads, input depots and distribution points, markets, community-related infrastructure, etc
-  Social infrastructure - clinics, health centres and hospitals, education facilities and community learning centres, etc
-  Eco-tourism infrastructure - municipal infrastructure for open spaces, fencing, walking trails, game-stocking, buildings, cultural centres and heritage sites, etc
-  Enterprise infrastructure - physical infrastructure for small, medium and micro enterprises (including hives, manufacturing incubators and multi-purpose storage facilities), markets, market stalls and small shopping malls, technology transfer facilities, etc
-  Institutional infrastructure - including the institutional infrastructure for borrowers, specifically if it is project- and programme-related and builds capacity in a DBSA target area

### **Land Bank**

As a specialist financier guided by a new mandate from government, the Land Bank is required to promote agricultural and rural development by:

-  Developing and providing appropriate products for commercial and development clients
-  Leveraging private sector investment into the agricultural sector
-  Developing partnerships with intermediaries for on-lending
-  Developing techniques for financing high-risk agriculture and new business areas
-  Support the programmes of the Ministry of Land Affairs and Agriculture
-  Contributing to rural development by linking and aligning Land Bank activities with those of other government structures

A range of financial instruments has been developed by the Land Bank. They include:

-  **Long-term mortgages** – fixed term instalment loans for capital expenditure for the acquisition of land, machinery and other agriculture related capital goods
-  **Medium-term loans** - collateralised loans in the form of cash credit accounts for supplementing working capital
-  **Short-term loans** – tailored to meet important financing needs in the agricultural cycle
-  **Guarantees** - for the purpose of guaranteeing the meeting and fulfilment of corporate clients' obligations in connection with their agriculture related activities
-  **Establishment loans** - to Farming enterprises from large scale commercial farms to small-scale farms for establishing perennial crops
-  **Social Discount** – incentives, in the form of a discount on interest rates, for existing and new clients to initiate development projects with previously disadvantaged communities resident on their farms or in surrounding rural communities
-  **Installment Finance** - a type of medium-term loan where the goods financed secure the loan
-  **Micro Finance** - to resource-poor individuals and farmers (unsecured loans ranging from R250 to R18 000) planning to engage in any legal income generating activity

### **National Empowerment Fund (NEF)**

As a catalyst for Broad-Based Black Economic Empowerment in South Africa, the NEF enables, develops, promotes and implements innovative investment and transformation solutions to advance sustainable Black economic participation through a range of products and services.

***Khula Enterprise Finance***





Khula aims to ensure improved availability of loan and equity capital to Small, Medium and Micro Enterprises (SMME's) by offering loans, guarantees and seed funds to Retail Financial Intermediaries (RFI's) in need of capital and capacity. Khula is a limited liability company with the Department of Trade and Industry (DTI) as its major shareholder. Khula's operations are divided into two divisions: Loans and Credit Guarantees.

***Department of Trade and Industry (DTI)***

Effective export marketing assistance is available through the DTI.

***Other funding possibilities***

Other institutions that could assist in the Development of the project include:

-  South Africa's Technology and Human Resources for Industry Programme (THRIP)
-  National Research Foundation
-  SEDA
-  SETA