An Evaluation Report Prepared for the Department of Science and Technology (DST), Sustainable Livelihoods Division, by the Human Sciences Research Council

An Outcomes Evaluation of the Nkowankowa Demonstration Centre Fruit Processors Factory in Nkowankowa, Greater Tzaneen, Limpopo Province

An Independent Evaluation conducted by the HSRC

Final Report

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Project Managers
Dr Evans Mupela
Stewart Ngandu

Contact
Dr Evans Mupela,
Research Specialist, EPD
emupela@hsrc.ac.za
+27 12 302 2257
Human Sciences Research Council
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The findings reported in this study are those of the independent evaluators and do not necessarily reflect the views of any other party.

Research Team: Dr Evans Mupela; Stewart Ngandu; Khanyisa Mkhabele; Sam Hlangwane; Israel Nelwamondo; Mmantsha Seshibe; Lineo Sakoane; Samantha Senosha; Sinazo Nkosi; Maria Molokomme; Alexandra Mhula Links; and Kgabo Ramoroka
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<td>African Center for Economic Transformation</td>
</tr>
<tr>
<td>CV</td>
<td>Curriculum Vitae</td>
</tr>
<tr>
<td>DAFF</td>
<td>Department of Agriculture, Forestry and Fisheries</td>
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<td>DST</td>
<td>Department of Science and Technology</td>
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<td>DTI</td>
<td>Department of Trade and Industry</td>
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<td>ECD</td>
<td>Early Childhood Development</td>
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<td>FAO</td>
<td>Food and Agricultural Organization</td>
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<td>FGD</td>
<td>Focus Group Discussion</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>HSRC</td>
<td>Human Sciences Research Council</td>
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<td>IFAD</td>
<td>International Fund for Agricultural Development</td>
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<td>LED</td>
<td>Local Economic Development</td>
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<tr>
<td>NDC</td>
<td>Nkowankowa Demonstration Centre</td>
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<td>SEIP</td>
<td>Socio-economic Innovation Partnership</td>
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<td>TOC</td>
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<td>UNIDO</td>
<td>United Nations Industrial Development Organzation</td>
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Concepts and definitions

**Agro Processing:** a subset of manufacturing that processes raw materials and intermediate products derived from the agriculture sector.

**Beneficiary:** Households which directly benefitted from the factory by way of employment, either on a permanent or seasonal basis.

**Non Beneficiary:** Households in Nkowankowa who did not have a family member work for the factory between 2013 and December 2015.

**Household:** A group of persons who live together and provide themselves jointly with food and/or other essentials for living, or a single person who lives alone. In this report household refers to NDC-beneficiary and non-NDC beneficiary households.

For the purposes of this study: The persons who occupied a common dwelling unit (or part of it) for at least four nights in a week, on average, during the past four weeks prior to the survey interview, sharing resources as a unit. Other explanatory phrases can be 'eating from the same pot' and 'cook and eat together' (Stats SA 2015)

**Supplier:** Anyone who supplied fruit to the Nkowankowa Demonstration Centre (NDC) factory regardless of whether they had a formal business venture or not. People who brought fruit to the factory in buckets or wheel burrows are also regarded as suppliers. In this report three categories of suppliers are identified, that is, bucket and wheel barrow suppliers, commercial farmers, backyard suppliers, and smallholder farmers.

**Entrepreneurs:** Refers to the fifty-two entrepreneurs who were trained at the beginning of the project as part of the NDC activities in Nkowankowa. Specifically, these entrepreneurs were trained in the manufacturing of bath soaps; marketing, financial & business management, selling and knowledge of cosmetics products. There also received stocks of pills and boosters for resell.

**Food Security** exists when “all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (Food and Agricultural Organization, FAO 2010:p8).

**Outcome** is defined as the direct benefit accruing to a particular group of people as a result of sustained outputs from an intervention in a specified location.
*Income Generation* is a widely used term for a range of productive activities by people in communities aimed at generating an income. (UNESCO, 1993)

*Targeting* is any mechanism that identifies individuals to whom an intervention is directed. (DFID, 2000)
Executive Summary

This report sets out the results of an independent evaluation carried out by the Human Sciences Research Council (HSRC) as commissioned by the Department of Science and Technology (DST), between November 2014 and October 2016.

Purpose of the study
The purpose of the evaluation was to determine the outcomes of an investment in a pulp and drying fruit factory set up in Nkowankowa by the DST and the European Union in October 2011 to help create jobs and alleviate poverty in the community.

Focus
The evaluation focuses on three of the five criteria that is used to evaluate an intervention namely, effectiveness, relevance and sustainability.

Unit of analysis
The units of analysis for the evaluation were the factory itself, the factory workers, the suppliers to the factory, households in Nkowankowa, and a group of entrepreneurs who were trained in business and marketing skills at the beginning of the Nkowankowa Demonstration Centre (NDC) project. The factory was part of the project and is now commonly referred to as the NDC project. The households in the study were divided into two groups namely households who benefitted directly by way of a family member working at the factory, whose family members were not working in the factory between January 2013 and December 2015.

Methodology
The evaluation used a theory based mixed methods approach which included in-depth interviews, focus group discussions (FGD’s), surveys (households, suppliers and entrepreneurs) and key informant interviews (KII’s) to investigate outcomes and emerging impacts of the operation of the factory in the Nkowankowa location of Tzaneen. When an intervention does not have an experimental design, such as this one, theory based evaluations have certain advantages over the latter, they are able to evaluate fairly complex interventions in assessing, how and why, an intervention is supposed to work by defining causal pathways and the assumptions behind the theory.

Findings
Overall the results of the evaluation indicate that the intervention has generated some positive outcomes with respect to employment, poverty and inequality. There have also been positive outcomes accruing to suppliers, although somewhat skewed to the more established players. However, the findings highlight the temporal nature of the benefits from the factory as well as the low wage nature of the employment opportunities created. Evidence of the performance of the factory is encouraging even though the findings reveal issues with respect to the management of the factory. Although positive outcomes are observed, the impact of seasonality is to weaken the efficacy of some of the pathways outlined in the theory of change. The following highlights key findings against the evaluation criteria.
Relevance

- In general, agro processing in Nkowankowa and the whole province is seen by many as key to the future economic development of the area due to the abundance of primary fruit produce in the area, the dominance of agricultural activities and the presence of commercial white farmers, who are seen as the major drivers of the industry in Limpopo.

- Although the intervention fits the context, certain issues with respect to access remain with the evaluation finding that it is very difficult for young black farmers and entrepreneurs to break into so-called "white business circles" that are doing extremely well by virtue of their support for each other. It is thought that young black entrepreneurs in the area should form their own networks of support and compete with the white commercial farmers. These views need to be verified independently, however. Given the developmental objectives of the NDC the intervention has the potential to address entry in the industry by marginalised groups through an inclusive procurement policy.

Effectiveness

- There is evidence that there was an increase in job opportunities, improvements in food and nutritional security outcomes across a number of indicators, improved access to schooling etc. due to the workers participating in the factory.

- There is evidence to show that there was a significant decrease in poverty levels as a real benefit from the operation of the factory. This positive outcome of the intervention is further complemented by decreases in both the depth and severity of poverty amongst the factory workers. However, these positive outcomes should be seen in terms of the temporal/seasonal nature of these benefits. The latter is consistent with strong sentiments that efforts should be made to find ways to make the employment more permanent and let people work throughout the year.

- The study also found significant decreases in inequality amongst the beneficiary population as a result of them working for the factory.

- Ignoring seasonality issues and given the employment creating nature of the intervention and its poverty reducing effects together with the decrease in inequality these findings show that the intervention has the impact of addressing South Africa’s triple challenges.

- Households seem to have benefitted from increased incomes although many respondents held the view that the money was not enough. Again the seasonal nature of the operation of the factory dampened these gains in income for most households.

- The factory was and still has the potential to be a very successful business. The relatively high turnover during the last five years is a true story of success.

Emerging impacts

Two poverty lines, NDP R418 and StatsSA R620 food poverty lines, were used to assess changes in the households’ socioeconomic status before and after they had started working in the factory.

- The study found that the poverty levels for NDC beneficiaries were relatively high before they started working in the factory, with 83% of households living below the R620 poverty line. The prevalence of poverty then fell to 58% at the time of the survey. At the same time we see that the depth of poverty also decreasing from 48% to 32%; together with the severity of poverty (from 33% to 21%).
• Using the R418 line we also see decreases in the prevalence, depth and severity of poverty. Since this poverty line is lower than the upper bound poverty line it shows that the intervention was able to pull poorer households out of poverty.

• The evaluation also found that if the benefits are to be sustained they could have the impact of reducing the amount of time it takes for poor households to transition out of poverty.

Sustainability

• It is evident that in its current seasonal nature some of the emerging benefits that accrue to the community appear not to be sustainable. However, given that it has always been the intention of the DST to have the factory operational throughout the year. There are possibilities to operate a factory throughout the year, this would require extra investment but supporting a complete cycle from growing fruit to the finished juice product would help to increase the stability of incomes in the community and sustain the positive outcomes throughout the year, potentially for many more households. Diversification into fruits other than mangoes could also help reduce the seasonal bottleneck.

• With respect to sustainability of the factory as a business entity the results indicate that the intervention managed to create a profitable enterprise and with the correct model and management it could continue to generate a stream of benefits to the local community.

Governance and management

• There seem to have been issues with the model adopted at the factory with respect to adherence to policies and management oversight. It appears as if there was poor adherence to a well targeted recruitment criteria that would, as per the theory of change, guarantee that the unemployed are recruited. Issues of working conditions that do not comply with the basic conditions of work where flagged together with the general ill-treatment of workers.

• There was no coordination between the local municipality and the management of the factory. This led to the factory struggling with waste disposal, water, electricity, rates and rental space for the operations.

• There were hygiene issues reported at the factory. The FGDs revealed that many factory workers were HIV positive and they were allowed to use knives in their daily work without gloves. The researchers had no way to verify this claim but the fact that it was mentioned makes it necessary to consider ways in which measures may be taken to avoid this potential health risk.

Recommendations

The recommendations from the evaluation include:

• The seasonality context of the factory that leads to the temporal nature of benefits could be addressed by constructing a juice processing plant, adjoining the pulping factory, to enable year round production and consider the addition of fruits other than mangoes for processing.

• Related to the latter is the need to consider broader support of the complete agro-processing value chain from growing fruit to the finished product, i.e. juice.

• Although systems around the working conditions at the factory appear to have been in place, there is a need to explore ways to increase employee benefits, especially for those in low paid manual labour positions, e.g. share options, pension scheme, etc.
• To avoid local tensions with respect to the extent to which members of the immediate local community are benefiting there is a need to revisit the factory's approach to recruitment with consideration being given to prioritising employing local people for all positions within the factory, including management.

• The development of a suitable training programme for the NDC factory workers can be done in conjunction with the Agricultural Sector Education and Training Authority (AgriSETA). This would contribute towards Outcome 5, Output 1: Increase access to programmes leading to intermediate and high level learning by providing young people and adults with foundational learning qualifications (FLC).

Conclusion
The revised version of the NDC intervention from the original demonstration centre to the agro-processing factory seems to have created positive outcomes with respect to its intended objectives. Ignoring the impact of seasonality on the flow of benefits; the findings indicate that the intervention has the potential of making a meaningful contribution towards addressing the country's triple challenges of poverty, unemployment and inequality. The intervention also has elements that contribute to three of the 12 outcomes, that is, Outcome 4 on decent employment through inclusive economic growth; Outcome 5, A Skilled and Capable Workforce to Support an Inclusive Growth Path and Outcome 7: Vibrant, Equitable and Sustainable Rural Communities and Food Security for All: Outputs and Measures.

See section 7 for the overall assessment of the evaluation based on the evaluation criteria.
1 Introduction

The Bill of Rights in the South African constitution makes provision for the right of all citizens to the freedom of trade, occupation and profession and to the right to human dignity. South Africa today is burdened by rising unemployment and unacceptably high levels of poverty and inequality in both urban and rural areas of the country. These problems are some of the biggest threats to the Bill of Rights for the modern South African citizen. In trying to protect these rights the South African government has, through successive development plans from 1994, prioritized addressing the challenges posed by poverty, inequality and unemployment that confront this young democracy (National Planning Commission, 2012).

The World Bank has acknowledged the progress that South Africa has made through implementation of a battery of legislative, policy and programme redistributive measures, focussing on strengthening the livelihoods capabilities of the poor and the gradual expansion of an extensive social protection programme, (World Bank, 2014). Despite this progress, the National Development Plan notes that South Africa remains a “highly unequal society where too many live in poverty and too few work” (National Planning Commission, 2012: p14).

The South African government, through the Department of Science and Technology (DST), has recognized the essential role that technology innovations can play in poverty alleviation through job creation in the country, especially in rural areas (DST National Research and Development Strategy, 2002). A focus of government in the last decade has been the deliberate effort to strengthen the National System of Innovation and spread technology and innovation activities into rural areas in order to achieve the illusive concept of inclusive development. It is in this light that the DST created a focus on Science and Technology for Social Impact, now referred to as Innovation for Inclusive Development. Under this focus the DST, through local and international partnerships with knowledge institutions, funds innovative technology solutions for the beneficiation of local natural resources.

The DST seeks to measure the increase in human capacity, reduction of poverty and general improvement of the lives of the local people in Nkowankowa as a result of its investment in an agro processing factory in the area. The factory was established in 2011 with the intention of extracting oils for local beneficiation in the cosmetics industry, but it was soon realised that the factory could be more sustainable and profitable if it served the need for bulk processing of local fruit grown in the area. Hence the Nkowankowa Demonstration Centre (NDC) fruit processing factory was established with the aim of meeting the market gap for pulping and drying of bulk local fruit produced in the Tzaneen area.

The DST identified a need for an evaluation since the project had been implemented for five years and there was a need to establish whether the project had served the intended beneficiaries and what outcomes had been achieved. The outcomes evaluation of the NDC was thus incorporated in the DST Evaluation Plan 2015/16-2017/18 and the DST appointed the HSRC as independent evaluators to undertake the evaluation.

It is expected that after five years of operation, certain local level outcomes should have been realised and should be visible within the community. It is these outcomes that this study endeavoured to
unearth and report as consequences/results of the operation of the NDC factory in the community of Nkowankowa in the Greater Tzaneen municipality.

1.1 Aim, Objectives and Evaluation question

Aim
The main aim of the evaluation was to assess how agro processing and the entrepreneur aspects of the operation of the factory influenced the different dimensions of poverty in Nkowankowa and the surrounding areas. Specifically, this outcomes evaluation assesses the extent to which the NDC intervention has had an effect on beneficiaries and to propose a suitable business model for the future operation of the factory. The evaluation is meant to assess whether the intervention is meeting its objectives. Generally, an outcomes evaluation can be conducted once an intervention has made contact with beneficiaries. This is in line with the National Evaluation framework which requires ongoing evaluation of government interventions for the purposes of improving the performance of the intervention, improving accountability, enhancing the quality of decision making and creating a body of research that can be used to inform similar interventions. (Department of Performance Monitoring Evaluation, 2011)

Objective 1
- To assess the socio-economic outcomes of the operation of the factory in relation to people’s resources, capabilities, opportunities and standard of living.

Objective 2
- To propose a suitable business model for the future operation of the factory that is compatible with the social reality and business environment in Nkowankowa.

1.2 Focus of the evaluation

The focus of this evaluation is to assess relevance, effectiveness, emerging impacts and sustainability.

1.3 Evaluation question

The main evaluation question was to determine:

- To what extent has the operation of the factory contributed (if at all) to the quality of life of beneficiaries and their household members in Nkowankowa?
2. Literature Review

Due to the agrarian nature of most African countries, agriculture has always been a dominant sector on the continent. In some African countries, the agricultural sector contributes up to 60% of Gross Domestic Product (GDP) (United Nations Industrial Development Organization (UNIDO), 2012). In addition to its economic importance, agricultural activities, mainly in the form of subsistence farming, are a vital source of survival for poor people (African Center for Economic Transformation, ACET 2014). The extent and nature of the evolving structure of demand for agricultural produce presents enormous opportunities for diversification and value addition in agriculture, more especially so in developing countries. This is according to the Food and Agricultural Organisation (FAO) of the United Nations and the United Nations Industrial Development Organisation (UNIDO, 2009). The transformation of agricultural sector is essential if we want to fight hunger, malnutrition and poverty around the world, particularly in developing countries. Modernizing the agricultural sector into a vibrant, efficient and innovative sector is by far one of the best solutions to some of the current socio-economic challenges.

The traditional separation of agriculture and industry appears to be no longer applicable since the industrialisation and development of agriculture and agro-processing industries have emerged over the years. Notably, the role that the agro-industry plays has been changing over time and its distinction from other sectors is becoming less clear with the presence of technologies that cut across sectors, for example in the biotechnology sector (Henson & Cranfield 2009). It is acknowledged that agro-industrial development, even at a small industry level, is critically important to the expansion and diversification of the agricultural sector (Lambert 2001). Agro-industrial development is important for developing countries because it can significantly contribute to transformation of the agricultural sector as well as transformation of rural and marginalised communities (ibid.). Furthermore, agro-industrial development offers an array of opportunities in terms of export performance and food safety (Henson & Cranfield 2009). Due to their forward and backward linkages, agro-industries have a high multiplier effect in terms of job creation and value addition (da Silva, C.A., Baker, D., Shepherd, A.W. & Jenane 2009).

However, as indicated by Silva et al. (2009) agro-industrial development poses certain risks in terms of equity, sustainability and inclusiveness if there is an unbalanced market power in agro-industry chains whereby this power is concentrated amongst a few chain participants. In order to avoid this possible negative impact of agro-industrial development, it is imperative to ensure sound competition in terms of costs, prices, operational efficiencies, product offers and other associated parameters in order to ensure that small-scale farmers are not left out of the value chain. This can only be done through policies and strategies that promote inclusive, sustainable and equitable agro-industry development.

2.1 Definitions of Agro processing

In broad terms, agro processing can be defined as a process of manufacturing through the transformation of agricultural raw material (Food and Agricultural Organization, FAO, 2014). Another more precise definition is provided by UNIDO, the International Fund for Agricultural Development (IFAD) and FAO (2008) who define agro-processing as “the processing, preservation and preparation of agricultural production for intermediate and final consumption.” Mhazo et al. (2012: p1608) expand
this definition by adding the importance of technology and innovation in agro processing: “Agro processing could be defined as a set of techno-economic activities carried out for conservation and handling of agricultural produce to make it usable as food, feed, fibre, fuel or industrial raw material”. Henson & Cranfield (2009) further add that agro-processing is a component of agribusiness which broadly includes suppliers of inputs to the agricultural, fisheries and forestry sectors as well as distributors of food and non-food outputs from agro-industry.

2.2 Classification of Agro Processing

Agro processing is a very diverse sector and covers a range of activities such as preservation that involves simple sun drying, for example, to more capital intensive activities such as the production of textiles, pulp and paper (FAO 1997). According to Henson & Cranfield (2009) the key defining attribute of the agro-processing sector is the perishable nature of the raw materials employed in its processes. Therefore the United Nations International Standard Industrial Classification (ISIC) has categorised which products fall under agro-processing. The Department of Agriculture, Forestry and Fisheries (DAFF) follows this standard classification of the agro-industry as summarised in Table 1 (DAFF 2012).

<table>
<thead>
<tr>
<th>1.</th>
<th>Food products</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Beverages</td>
</tr>
<tr>
<td>3.</td>
<td>Tobacco</td>
</tr>
<tr>
<td>4.</td>
<td>Textile</td>
</tr>
<tr>
<td>5.</td>
<td>Wearing apparel</td>
</tr>
<tr>
<td>6.</td>
<td>Leather and leather products</td>
</tr>
<tr>
<td>7.</td>
<td>Footwear</td>
</tr>
<tr>
<td>8.</td>
<td>Paper and paper products</td>
</tr>
<tr>
<td>9.</td>
<td>Wood and wood products</td>
</tr>
<tr>
<td>10.</td>
<td>Rubber</td>
</tr>
<tr>
<td>11.</td>
<td>Furniture</td>
</tr>
</tbody>
</table>

*Source: Department of Agriculture, Forestry and Fisheries (2014)*

Each of these categories is divided into various sub-categories. For example, the food products category comprises food, coffee and tea, dairy products, fats and oils, fruit and vegetable products, meat and meat products, etc. The food category is often the largest agro-processing sub-sector as well as the largest employer within the sector (Pieters 2011).

The agro processing sector, which is a sub-sector of the manufacturing industry, has been identified as an important role player in promoting economic growth as well as in the creation of jobs, mainly because it is a source of labour intensive growth (Department of Trade and Industry (DTI) 2014).

2.3 The Rise of Agro Processing

The rise of the agro-processing sector in most developing countries, including South Africa, can be attributed to one key factor: increased demand for processed food. With increased migration to urban areas, changes in consumption patterns in favour of more convenient processed food, as well as general population growth, have all significantly impacted the demand for processed food (Louw et
al. 2008). In particular, agro processing is now being recognised as an important engine for rural development. As argued by Mather (2005), agro processing has the potential for generating demand amongst smallholder farmers, upgrading primary production through small-scale food processing, and improving food price stability and food security. Importantly, unlike any other stream of the manufacturing sector, agro processing plants are not always scale dependent, thus small plants can operate as efficiently as large plants, which can take advantage of economies of scale (Ibid.). This phenomenon presents an opportunity to expand this sector in such a way that it has contributed to inclusive development of countries.

Agro-processing has been identified as one of the most labour-intensive sectors in South Africa (DTI, 2014) and its contribution to the national economy is of high significance. In 2013 it was estimated that agro-processing contributed R7.7 billion to the South Africa economy, which approximates to 16% from the manufacturing sector to the national GDP (DTI n.d.). Furthermore, the food processing industry was identified by the DTI (ibid) as the largest employer in the manufacturing sector with a total of 207 893 people employed in 2013. The same document indicates that the food processing industry’s contribution to the GDP was a significant 3.1% in the same period. Thus the food processing industry takes the largest share of the manufacturing sector with regard to its contribution to the national economy (Jordaan 2012).

With regards to some trade indicators, the agro processing industry’s average contribution to domestic fixed investment and export was 28.5% and 13.6%, respectively, in 2013 (DAFF, 2014). This illustrates its significance as a sector that can potentially assist in achieving micro-economic objectives and justifies why it also forms part of the Industrial Policy Action Plan (IPAP), the New Growth Path and the National Development Plan (ibid).
2.4 The Agro Processing Value Chain

The agro-processing value chain begins with the harvesting stage and continues to the point where the products reach consumers in their final form (Mhazo et al. 2012). The diagram below presents core phases in the agro-processing cycle.

**Figure 1: Different Phases of Agro-processing activities**

![Diagram of agro-processing value chain]

*Source: Adapted from the Department of Trade and Industry (2006) and Thindisa (2014)*

According to this diagram, the agro-processing value chain comprises three key phases. The primary agro-processing phase, with examples being crop drying, shelling, cleaning, etc., is often carried out on the farm and only transforms the product into a slightly different form (Mhazo et al. 2012). The secondary phase of agro-processing entails increasing or adding market value to the product (Ibid.). During this phase, as explained by Mhazo et al. (Ibid.), the product is changed quite drastically from its original form, for example grains are changed into flour, groundnuts into peanut butter, or fruit into fruit juice. This phase also includes a packaging component, which often takes place at a factory where the processing takes place but not exclusively. The advanced phase of agro-processing often requires high-tech equipment that can, for example, extract aromatic compounds for perfumes, or produce bakery, confectionary or beverages. In terms of market presence, this phase is dominated by large multinationals and also requires large capital investment.

It is evident from this diagram that there is a high degree of interdependence with forward and backward activities in the agro-processing value chain (Department of Labour South Africa 2008). In a developing country context, there is a common understanding that the most significant contribution
from agro-processing towards poverty alleviation and economic inclusion is associated with the primary phase. This happens through increased demand for primary produce from small-scale farmers, upgrading primary production through small scale food processing and improving price stability and food security (Department of Labour, South Africa 2008). Entrepreneurship skills are of high importance when it comes to establishing small and medium enterprises for agro-processing.

2.5 Agro Processing, Entrepreneurship and Employment

Agro-processing has been identified as a potential source of entrepreneurial opportunities (Cardoso 2000; Saasa 2000; Mhazo et al. 2011). There is also common agreement that agro-processing is a significant source of employment creation. Kindness & Gordon (2001) have noted that agro-processing creates employment at low levels of investment that make effective use of local resources. This process creates vertical linkages with farmers that supply inputs (Overseas Development Institute, 2005, as cited in Kuwornu, Bashiru, Dumayiri 2014). A report of the DAFF (2007) adds that growth in income of households is achievable through agro-processing (Kuwornu et al. 2014).

Agro processing acts as an extension of primary agricultural activity in rural areas in developing countries. This contributes to the diversification of income sources for poor households in rural areas. Researchers have attempted to identify drivers of livelihood diversification and they have principally underscored the role of socio-demographic, economic and communication factors as main determinants of rural livelihood choice. Factors that are normally highlighted include educational status, household’s size, gender, age, marital status, income, access to credit, membership of an organization and distance to the market (Kuwornu et al. 2014). A study conducted by Alwang et al. (2005) found that households that depend on agricultural activities alone are worse-off than those that diversify. It was also more likely for better educated and male-headed households to be involved in diversification.

Rao (2006) points out that farming does not provide sufficient income for sustenance among rural households. Taking into account the seasonality of farming activities in most parts of the developing world, rural households have to rely on different options for their livelihood at different times of the year (Ward et al. 2004 as cited by Kuwornu et al. 2014). Therefore rural households can use agro-processing as a form of livelihood diversification. Rural households also use non-agricultural strategies to diversify their incomes such as migration and non-farm employment.

South Africa’s agro-food complex includes food and beverage manufacturing. Agro-food markets can be divided into four categories based on size, players and the produce on offer, namely local, national, regional and international(DAFF 2012). As business moves from one category to another the level of sophistication also increases in terms of the products, transactions, infrastructure, business management and logistics. According to Vermeulen (2008), a few large companies dominate the national food industry. This includes National Brands, Tiger Brands and Nestlé South Africa.

An interesting feature of the agro-processing sector in developing countries identified by Henson and Cranfield (2009: p12) is the “coexistence of the informal and formal sectors”. They argue that while most developed countries ignore any economic activities in the informal sector, in developing countries the informal sector is strong, especially in term of employment and entrepreneurship. In the agro-processing industry there are informal enterprises and individuals who are often involved in
business activities that can operate seasonally, or even change from hour to hour. This provides an opportunity to promote a secondary economy in poor rural agricultural setups.

### 2.6 Agro Processing and Technology

It is predicted that the demand for food will double by 2050 (Dennis, Aguilera & Satin 2009). The extent to which agricultural and food industries can meet this growing demand in the future will for most part depend on the use of existent technologies as well as exploitation of new technologies and innovations (Dennis, Aguilera & Satin 2009). However, the increased demand for food is not the only reason for high reliance on innovation and technology. Increased competition in markets in general is forcing agro-industry to develop new technologies and innovation. For example, new technologies such as biotechnologies are increasing gaining attention as better option for crop production given changing climate, soil as well as processing condition (United Nations 2008).

FAO and UNIDO (2009) further illustrate new developments in this industry that may influence the way agro-processing is carried out. There are many such developments, some of these include those that are taking place in material sciences, and it is said that these will continue to facilitate the production of new packaging materials, with likely importance being put on biodegradable materials in line with the sustainable agenda. Another important development that is still taking place is that happening in automation and robotics, and it is said that this enables (will enable) greater incorporation and automation of highly value-added, large-scale processing lines. The Nkowankowa Demonstration Centre also shows a novel and relatively easy to implement innovation that has allowed greater participation of the local economy in agro-processing. This has involved adding an additional step to the pre-processing of raw materials which involves the washing of mangoes with chlorine in a way that has satisfied the Hazard Analysis and Critical Control Points requirements.

### 2.7 Agro Processing and Gender

Women contribute between 60% - 80% of the labour involved to produce food for either household consumption or sale (DAFF 2012). According to FAO (1994) “Many studies in Africa show that the poor achievement of the agricultural goals on the continent in terms of efficiency, sustainability and equity is due to the predominant practice of directing training and resources to men only” as cited in (Department of Agriculture 2012). This has led to gender issues becoming prominent feature in the agricultural sector.

Hence many African governments understand that in order to increase productivity of the agricultural sector the conditions women work in need to improve especially in rural and semi-urban areas (Department of Agriculture 2012). Women are already almost universally responsible for preparing food for their households and thus for the nutritional well-being of household members. Women can contribute significantly to the development of the food processing industry and help to solve the persistent problem of malnutrition and poverty in the rural and semi-urban communities.

### 2.8 The Role of Government in Promoting Agro Processing

The Department of Science and Technology’s (DST) vision is to increase wellbeing and prosperity through science, technology and innovation; and the mission is to provide leadership, an enabling
environment, and resources for science, technology and innovation in support of South Africa’s development. It executes its mandate through the implementation of the 1996 White Paper on Science and Technology, the National Research and Development Strategy (NRDS) and the Ten-Year Innovation Plan (TYIP). In addition to that, there are also numerous core policies and legislations underpinning rural inclusive development in South Africa and more particularly agro processing, namely the New Growth Path (NGP), National Development Plan (NDP), Medium Term Strategic Framework (MTSF), Industrial Policy Action Plan (IPAP), Integrated Growth and Development Plan (IGDP) and Agricultural Policy Action Plan (APAP) and various Acts. The DST endorsed its commitment to promoting agro processing and inclusive rural development through the adoption of the abovementioned policies and legislations.

The Industrial Policy Action Plan (IPAP), the New Growth Path and the National Development Plan of South Africa identify agro-processing industry as a key sector for economic growth and job creation (DAFF website). The Minister of Trade and Industry, Bob Davies, emphasised the importance of agro-processing thorough its added-value to country’s agricultural production by saying that “agro-processing is important because when you have an existing agricultural activity and you add value to the crops produced through agro-processing, that’s where the real income and real job opportunities lie” (SAnews 2014).

To support the agro-processing industry, a Directorate was established at the Department of Agriculture, Forestry and Fisheries (DAFF) in 2011 which supplements already existing support to this industry by various government departments such as Department of Trade and Industry (DTI). The main objective of the Directorate is to oversee the development of various sub-sectors in agro-processing by providing strategic interventions to increase production and competition and grow exports (Ibid.). In this manner, the Directorate will provide timely information regarding agro-processing which will assist in monitoring the sector’s performance and provide an insight into the effects of economic policies and exogenous factors (DAFF 2011). As a result, from the first year of existence the Directorate began to publish regular annual and quarterly economic reviews to evaluate the performance of the agro-processing sector.

The DTI is not the only department committed to the government’s mandate to prioritise poverty alleviation and job creation through various programmes, other government departments, such as the DST have incorporated various programmes that address poverty, inequality and unemployment. One of the key programmes that contribute to the achievement of these objectives is the Socio-Economic Innovation Partnerships which aim to implement targeted Science and Technology based interventions and develop strategic innovation partnerships with other government departments, industry, research institutions and communities (DST 2011). A key component of this programme is Innovation for Inclusive Development, formerly known as Science and Technology for Social Impact. It focuses on using science and technology-based innovation to tackle poverty, create sustainable employment and wealth opportunities, build sustainable human settlements, and enhance the delivery of basic services (DST White Paper on Science and Technology 1996; DST National Research Development Strategy 2002).

The Sustainable Livelihoods Directorate is a directorate of Innovation for Inclusive Development which focuses exclusively on rural areas and natural resource sectors (demonstration agronomy, aquaculture and agro-processing), located in KwaZulu-Natal, the Eastern Cape, the Northern Cape, the Free State
and Limpopo (South African Government 2015). It aims at creating jobs for communities by helping to establish small, medium and micro enterprises (SMMEs) while promoting sustainable livelihoods in rural communities (Patel 2012). In particular, it makes use of technologies which can add value to SMMEs and makes these accessible to communities. In addition, it ensures sustainability of these SMMEs by offering skills development and training. The Sustainable Livelihoods Directorate started as a unit implementing small-scale community-based poverty alleviation projects in rural areas. It is now responsible for a set of rural enterprise development projects that are implemented by Science Councils and other organisations within the National System of Innovation (Government of South Africa 2015).

There are three key areas of technological assistance offered by DST through the Sustainable Livelihoods Directorate (Government of South Africa 2015):

- **Aquaculture**: Communities are trained to farm indigenous fish as a business. They receive technology in terms of infrastructure (production cages) and training to manage a fish farm, including disease control and harvesting.
- **Essential oils**: These are valuable oils that are extracted from the leaves and flowers of plants. Communities benefit from skills development and training and their businesses are linked to the local essential oils market.
- **Indigenous medicinal plants**: Communities are taught to grow indigenous herbs commercially. These plants have medicinal properties which have been scientifically proven. Communities receive training in farming methods and in how to start a commercial enterprise and their businesses are linked to local markets.

There are four key initiatives that the Sustainable Livelihoods Directorate is running, namely:

- Demonstration Agronomy;
- Aquaculture;
- Agro-processing;
- Waste Beneficiation.

One of the key projects in agro-processing was the Plant Oils and Extract Beneficiation for Cosmetics project which initiated in 2010/2011 in partnership with SASOL-ChemCity. However, a year later it was realised that the agro-processing centre could be more sustainable if it undertook bulk processing of fruit grown in the Tzaneen area and the scope of the project was then changed to fill this market gap. This led to the establishment of the Nkowankowa Demonstration Centre (NDC) in Tzaneen, Limpopo Province, the object of this evaluation.

Governments **Outcome 4** speaks to skills development and aims to create decent employment through inclusive growth and to provide a skilled and capable workforce to support an inclusive growth path (Government of South Africa, 2010a), this is echoed in the DST’s Medium Term Strategic Framework (MTSF) (2014-2019). The main objective of the DST funding the NDC factory that had an innovative agro processing component was also to create job opportunities, improve the socio-economic status of both beneficiaries and the immediate community and whilst also capacitating local entrepreneurs.
3  Methodology

3.1  Evaluation Framework

An outcomes evaluation assesses the degree to which the intervention is having an effect on the target population, see figure below. It tells us whether the intervention is being effective in meeting its objectives. It is driven by a conceptual framework which informs the shape and design of the evaluation. The framework provides an overview of the rationale for the approach and methods adopted in the assessment of outcomes. It comprises the logic framework and the theory of change, the dimensions of assessment and the mix of methods used to assess the outcomes of the intervention.

Figure 2: NDC Logic framework

The impacts of an intervention are related to the overall development objectives that arise from the realisation of the project outcomes. The latter refers to the interim results the flow to the target population as the direct result of achieving the interventions outputs, see Figure above. This study therefore focused on an evaluation of outcomes as a result of the operation of the NDC factory in Nkowankowa.

3.2  Theory based evaluation

The implementation of the NDC did not factor in an experimental design, which would have required the creation of baseline data and the randomisation of participants for employment into the factory. This design is often regarded as the gold standard in impact evaluation and requires the selection of a control group. This type of design addresses a critical requirement in evaluations which is the need to understand causality. However, when an intervention does not have an experimental design, such as this one, alternatives have to be found. In some cases this involves the implementation of quasi-experimental designs that attempt to create a counterfactual using some matching approach. Despite the ability of experimental designs to unpack causality there is widespread recognition that a theory based evaluation (TBE) has certain advantages over the former. TBEs are able to evaluate fairly complex interventions by assessing, how and why, an intervention is supposed to work through the definition of causal pathways and the assumptions behind the theory of change.
The Treasury Board of Canada Secretariat (TBCS) (2012) argues that "Experimental and quasi-experimental evaluation designs can be quite powerful and should be undertaken when appropriate ... However, there are several shortcomings associated with these designs, in particular: Practicality: In many contexts, experimental designs, especially the more sophisticated ones, cannot be implemented... Seeing interventions as black boxes: Experimental designs, even when feasible, are not aimed at understanding why and how the observed results occurred." The TBCS goes on to note that, "A theory-based approach to evaluation can help address these shortcomings. In the absence of an overall experimental design, it provides a way to assess the extent to which an intervention has produced or influenced observed results. It also opens the black box, examining what role the intervention played in producing the observed results."

According to Weiss (1997) "the idea of theory-based evaluation is plausible and cogent, and promises to bring greater explanatory power to evaluation. However, problems beset its use, including inadequate theories about pathways to desired outcomes in many program areas..." To address the latter potential pit fall of TBEs the NDC theory of change is fleshed out in the next section with pathways being defined from context to outcome, this will be used to form the basis of the evaluation.

3.3 Theory of Change: Framing the logic for the NDC factory outcome evaluation

A theory of change (ToC) is a road map which outlines how the operation of the factory in Nkowankowa as an intervention was expected to enhance the socio-economic outcomes for factory workers, suppliers and the general households in the area. It maps out the causal pathway of what is required from a programme (inputs, activities) in order to achieve planned outputs and bring about change or achieve a given long-term goal or outcome. It holds implicitly the notion of a change for the better, with a range of mixed outcomes recorded including less poverty and greater inclusion socially and economically.

As indicated earlier, the program logic for the operation of the factory as an intervention was not explicitly developed at inception of the project. Therefore, a ToC model to guide the evaluation was constructed according to the following principles.

- Regardless of whether an explicit theory of change was constructed at inception or not, assessing a project in the absence of one is difficult with respect to determining whether outcomes were achieved in a manner consistent with the intended aims and objectives;
- Constructing a ToC helps to define specific questions, particularly in respect of those elements of the ToC for which there was no substantive evidence; defines the variables for inclusion during data collection; and it highlights contextual factors which must be taken in account during data collection and analysis.

The following is the theory of change narrative that accompanies the typical ToC flow chart in Figure 3.

*If the DST funds the establishment of the NDC factory, and uses a pro-poor agro-processing technology, then mangoes will be procured from suppliers (backyard, bakkie and farmers) who do not have market access due to agricultural standards. The factory will then create direct*
jobs during the mango season, which will then transfer skills to workers, improving their future employability. Indirect jobs will be created at farms due to the increased demand to supply mangoes to the factory, which will benefit local suppliers. The direct and indirect jobs will then contribute to the reduction of unemployment. Wages paid to factory workers will then contribute toward household incomes which will enhance the socio-economic status of beneficiary households, this will then have an impact on poverty and inequality in the local community. Inclusive procurement will also address the market gap through the development of pro-poor value chains, as well as addressing the challenges faced by suppliers who are unable to participate in the market due to high standards. The success of the factory will then generate a stream of benefits to the community thereby ensuring the sustainability of the impact of the intervention thereby contributing to South Africa’s triple challenges.

The ToC flow chart below is self-contained, it highlights the context in which the intervention is being implemented, the inputs and activities that will be funded by DST and the short-term and intermediate outcomes, together with the long-term impacts that will address the challenges identified. Important assumptions are made explicit, as they influence the validity of the theory, whilst both the direct and indirect linkages are mapped out. The advantage of the ToC flow chart is that it makes the causal pathways through which change will be achieved explicit. This will play an important role in the design of the data collection instruments and the analysis of the evaluation results. Although there are common pathways to change, it must be recognised that this theory based outcomes evaluation focuses on multiple levels and hence the pathways to change have been articulated for individual beneficiaries and their households, suppliers to the factory, and the factory’s management. Each of these pathways is outlined below.
Figure 3: Theory of Change - NDC Intervention

Source: Authors
The pathway out of poverty through income generation is premised on increasing productivity and increased access to markets. These will reap benefits of increased producer/farmer enterprise income and non-reliance on external support for wealth generation. This eventually leads to increased household income and that will contribute to household wellbeing.

3.4 Evaluation Criteria

Internationally accepted criteria for evaluating an intervention include relevance, effectiveness, efficiency, impact and sustainability (Organisation for Economic Co-operation and Development, 1991; Roche, 1999).

Impact, was not included because it would have required examination of a wider area and would need to include outcomes in a much wider community of non-beneficiaries. Outcomes were therefore evaluated using precursors of emerging impacts of the intervention.

Efficiency was not part of the terms of reference and specific data that would have enabled an evaluation of efficiency at the factory was not collected.

Each of these criteria is briefly defined as they provide guidance in the development of the outcome assessment framework and methodology:

- **Effectiveness** measures the extent to which the programme has met its objectives. It also explores the factors contributing to the achievement or non-achievement of set targets.
- **Sustainability** is focused on measuring the extent to which the benefits accrued from participation in a programme continue after the DST funding has ceased. Here the study sought to propose a suitable operating model for the plant to transition from the project to a business.
- **Relevance** This aspect of the evaluation speaks to the relevance of the operation of the factory in the area. In this case, how relevant is the processing of mango fruit to the livelihoods of the local population?

As the study was meant to evaluate the main outcomes of the operation of the plant on the local population, the evaluation focussed on considerations of outcomes, **effectiveness**, **relevance** and **sustainability** of the NDC plant. Using the above theory of change and consistent with a theory based evaluation, the evaluation questions were developed, these were mapped on to the evaluation objectives to produce the evaluation matrix that linked the latter to the evaluation criteria. By identifying the data sources and the method of analysis the evaluation matrix would then be used to assess whether the intervention achieved its intended outcomes as outlined in the ToC. Table 2, below gives details of the NDC outcomes evaluation matrix.
<table>
<thead>
<tr>
<th>NO</th>
<th>EVALUATION QUESTIONS</th>
<th>NDC OBJECTIVE</th>
<th>EVALUATION CRITERIA</th>
<th>SOURCES OF DATA</th>
<th>METHODS OF ANALYSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective 1</td>
<td>To assess the socio-economic outcomes of the operation of the factory in relation to people’s resources, capabilities, opportunities and standard of living.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assumption</td>
<td>The objectives of the NDC were well defined and are relevant to the identified development problem. There is evidence of plans and systems to support and monitor the achievement of objectives.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>What problem was the NDC designed to resolve?</td>
<td>All Objectives</td>
<td>Relevance</td>
<td>Desktop Review, Literature review</td>
<td>Thematic analysis</td>
</tr>
<tr>
<td>2.</td>
<td>Are the objectives of the NDC clear and do they present a realistic pathway towards addressing the identified development problems as per ToC?</td>
<td>Objective 1</td>
<td>Relevance</td>
<td>Desktop Review, Literature review, Evaluation Quantitative and Qualitative Data</td>
<td>Thematic analysis</td>
</tr>
<tr>
<td>3.</td>
<td>Do the objectives of the NDC remain relevant?</td>
<td>All objectives</td>
<td>Relevance</td>
<td>Desktop Review, Literature review, Evaluation Quantitative and Qualitative Data, FGDs and KII</td>
<td>Thematic analysis</td>
</tr>
<tr>
<td>4.</td>
<td>What training has been provided to the workers and to what extent does it increase the employability of the workers?</td>
<td>Objective 1</td>
<td>Effectiveness</td>
<td>Evaluation Quantitative and Qualitative Data</td>
<td>Quantitative and Qualitative Analysis</td>
</tr>
<tr>
<td>5.</td>
<td>How many jobs were created?</td>
<td>Objective 1</td>
<td>Efficiency</td>
<td>Evaluation Quantitative and Qualitative Data</td>
<td>Quantitative and Qualitative Analysis</td>
</tr>
<tr>
<td>6.</td>
<td>What are the emerging impacts of the additional income to beneficiary households?</td>
<td>Objective 1</td>
<td>Effectiveness</td>
<td>Quantitative and Qualitative Data Collected, FGDs and Case Study</td>
<td>Quantitative and Qualitative Analysis</td>
</tr>
<tr>
<td>7.</td>
<td>Did working for the factory lead to better socioeconomic outcomes, reduction in poverty, inequality, food and nutrition security outcomes for beneficiaries?</td>
<td>Objective 1</td>
<td>Effectiveness</td>
<td>Quantitative and Qualitative Data Collected, FGDs and Case Study</td>
<td>Quantitative and Qualitative Analysis</td>
</tr>
<tr>
<td>Objective 2</td>
<td>To propose a suitable business model for the future operation of the factory that is compatible with the social reality and business environment in Nkowankowa.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assumption</td>
<td>The NDC model is the most appropriate model for achieving the intended development objectives.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>How appropriate is the NDC business model? Were the planned activities, outputs and outcomes consistent with the objectives of the NDC?</td>
<td>Objective 2</td>
<td>Sustainability</td>
<td>Desktop Review, Literature review, Interviews with factory officials, Net Present Value Analysis</td>
<td>Quantitative and Qualitative Analysis</td>
</tr>
<tr>
<td>NO</td>
<td>EVALUATION QUESTIONS</td>
<td>NDC OBJECTIVE</td>
<td>EVALUATION CRITERIA</td>
<td>SOURCES OF DATA</td>
<td>METHODS OF ANALYSIS</td>
</tr>
<tr>
<td>----</td>
<td>--------------------------------------------------------------------------------------</td>
<td>---------------</td>
<td>---------------------</td>
<td>-----------------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>2.</td>
<td>To what extent did the factory’s pro-poor technology lead to an inclusive procurement policy?</td>
<td>Objective 2</td>
<td>Effectiveness</td>
<td>Supplier survey</td>
<td>Quantitative and Qualitative Analysis</td>
</tr>
<tr>
<td>3.</td>
<td>To what extent has the training and capacity building initiatives improved the business management of the entrepreneurs?</td>
<td>Objective 2</td>
<td>Effectiveness</td>
<td>Entrepreneur Case Studies</td>
<td>Qualitative Analysis</td>
</tr>
<tr>
<td>4.</td>
<td>Was the NDC able to participate in the local agro-value chain?</td>
<td>Objective 2</td>
<td>Sustainability</td>
<td>Key informant interviews</td>
<td>Qualitative Analysis</td>
</tr>
</tbody>
</table>

**Overall assessment**

To what extent has the NDC achieved its objectives?

**Assumption**

*There is sufficient and appropriate evidence to assess the effectiveness of the NDC and to identify areas for improvement*

<table>
<thead>
<tr>
<th>NO</th>
<th>EVALUATION QUESTIONS</th>
<th>NDC OBJECTIVE</th>
<th>EVALUATION CRITERIA</th>
<th>SOURCES OF DATA</th>
<th>METHODS OF ANALYSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>How effective has the NDC intervention in achieving its intended objectives?</td>
<td>All objectives</td>
<td>Effectiveness</td>
<td>Findings from all sources</td>
<td>Summarised from all findings</td>
</tr>
<tr>
<td>2.</td>
<td>What are the main lessons learnt from the implementation of the NDC?</td>
<td>All objectives</td>
<td>Effectiveness</td>
<td>Findings from all sources</td>
<td>Summarised from all findings</td>
</tr>
<tr>
<td>3.</td>
<td>What are the main improvement recommendations for the NDC?</td>
<td>All objectives</td>
<td>Sustainability</td>
<td>Findings from all sources</td>
<td>Summarised from all findings</td>
</tr>
</tbody>
</table>
3.5 Evaluation Methods and Instruments

3.5.1 Mixed Methods

To improve the quality, validity and reliability of the evaluation, a mixed methods design that combines findings from both qualitative and quantitative design approaches, referred to as triangulation, was used (Rossi, Lipsey & Freeman 2004; Denzin 1978). Broadly defined, triangulation refers to the use of multiple methods both qualitative and quantitative for assessing a particular dimension from different perspectives with the aim of enhancing the credibility of the study findings. There is recognition that mixed method approaches create complementarities that enhance our insights and understanding about the nature of the phenomena under investigation (White, 2002).

The survey used, also asked retrospective questions regarding beneficiary experiences, before and after the intervention. Although retrospective indicators are susceptible to issues such as recall and misclassification biases, they have also been found to produce useful results within the context of program evaluations (Callow-Heusser, 2016 and Raidl, 2004). The retrospective questions are also used to compute transition probabilities that allow us to track specific household level changes in outcomes over the reference period. A transitions probability matrix shows shifts in household/individual positions from before the time they were working at the factory to the current period. They allow us to assess and count the number of households whose position either worsened or improved between the reference periods. Together with direct questions that ask the respondent whether the change was as a result of working at the factory it gives us a relatively good indication of the extent to which outcomes can possibly be linked to the intervention.

The retrospective questions in the household survey introduce elements of a retrospective pre-post testing, largely to resolve the issue of the non-availability of baseline data. According to Klatt and Taylor-Powell (2005) "the retrospective pre-test has gained prominence as a convenient, valid method for measuring self-reported change". Furthermore, "it has been shown to reduce response-shift bias of which randomised experimental designs are prone to, it is also convenient to implement, provides comparison data in the absence of" pre-intervention data and is appropriate in this context.

The statistical software STATA was used for all the quantitative data analysis, that is, the statistical and descriptive results for all surveys. Where appropriate results where disaggregated by participant type (i.e. whether NDC factory worker/beneficiary or Non-NDC respondent), gender of head of household for the latter two types of respondents, with associations, were appropriate, being tested by the Chi-squared test statistic by reporting the p-values. The rationale for using the gender of head of household is consistent with development theory and arises from an understanding of the role that the head plays in influencing development outcomes within the household. This is due to the fact that the household head is the person who is responsible for making the key decisions in the household especially those that are related to resource allocation. For this study the criteria used to identify someone as household head was that that the individual had to be recognised as such by all household members.

The evaluation focused on the outcomes of the NDC intervention, exploring emerging impacts on households, enterprises and suppliers in Nkowankowa. Consistent with this mixed method approach,
Table 3 maps out the different instruments, types of data collected and the participants who were interviewed.

**Table 3: Evaluation Methodology Framework**

<table>
<thead>
<tr>
<th>Methodology</th>
<th>Data collection instrument</th>
<th>Types of information collected</th>
<th>Sampling Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Document and literature review</td>
<td>Literature searches</td>
<td>Review of policies, programme reports, training manuals, international and national evidence on agro processing.</td>
<td></td>
</tr>
<tr>
<td>Household Survey</td>
<td>Household Survey questionnaire</td>
<td>Explore demographic, socio-economic and labour market characteristics of beneficiaries (workers) and non-beneficiaries.</td>
<td>Individual workers households, both current and past. Non Beneficiary households</td>
</tr>
<tr>
<td>Community focus groups (non-beneficiaries)</td>
<td>Focus group schedules</td>
<td>Community socio-economic challenges</td>
<td>Community within the vicinity of the factory</td>
</tr>
<tr>
<td>In-depth interviews</td>
<td>Interview schedules for different groups</td>
<td>Qualitative information of supplier experiences</td>
<td>Suppliers, trained entrepreneurs</td>
</tr>
<tr>
<td>Key Informant Interviews</td>
<td>Key informant interview schedules for Site Manager and External Stakeholders</td>
<td>Assess understanding of purpose of factory beyond the business; Explore experiences and perceptions of effectiveness and as well as community outcomes</td>
<td>Site Manager Provincial Limpopo LED official Local Municipality LED official Factory manager of similar factory</td>
</tr>
<tr>
<td>Net Present Value Analysis</td>
<td>Project level instrument</td>
<td>Cash outflows and cash inflows of the plant; fixed and variable cost information</td>
<td>Project/Site Manager and finance person</td>
</tr>
<tr>
<td>Case study/Case histories</td>
<td>Interview schedule for entrepreneurs</td>
<td>Changes in personal, social, economic and political circumstances of the beneficiary</td>
<td>Case study subjects were interviewed on site during the in-depth interviews</td>
</tr>
</tbody>
</table>

### 3.5.2 In-depth interviews

The in-depth interviews were conducted with households, suppliers to the factory and entrepreneurs in Nkowankowa.

**Enterprises**: 52 entrepreneurs were trained at the beginning of the NDC project. There was no intention of them eventually becoming business partners to the factory. They were trained in general business and management skills to help them raise income to meet their daily needs. Out the 52 who were trained, only 10 could be contacted during the field work. The responses from these 10 entrepreneurs are included as case studies in section 4.2.2.
Suppliers: a list of suppliers to the factory was sourced from the factory records. A random sample was selected from this list for in-depth interviews according to availability of the particular supplier.

3.5.3 Key informant interviews

Five key informants were interviewed to gain their specialized views of the operations of the NDC plant in Nkowankowa. These included a former factory manager, an official from the Limpopo Provincial Department of Local Economic Development (LED), an official from the local municipality, a manager of a similar fruit processing factory in Nkowankowa and the current caretaker manager of the factory (current as of March 2016).

3.5.4 Focus Group Discussions

Focus group discussions were used to assess household livelihoods by understanding sources of employment in the community, levels of participation in agro-processing activities and the perceived role and influence of the factory on the households in the community.

3.5.5 Household Survey

A household survey instrument was administered to two sets of households in Nkowankowa. One set included the households in which at least one household member was employed in the NDC factory on a permanent or seasonal basis in the period 2013-2015. The other set consisted of households in which no family members had worked in the NDC factory between 2013 and 2015. The information on these households was sourced from GIS mapping data in the HSRC GIS database. The selection of the houses is described in the next section.

Based on the Terms of Reference, the dimensions of assessment shown in Table 4 were identified. The dimensions have been clustered into homogeneous groups. The research questions were centred on these main themes and the relevant indicators were developed and mapped on to each dimension to ensure that the research responds to each dimension of the evaluation.

This evaluation used the Household Food Insecurity Access Scale (HFIAS) developed by the Food and Nutrition Technical Assistance (FANTA) Project (2004). Robustness and reliability assessments have found the scale to be fairly accurate at distinguishing food secure households from those that are food insecure as well as being applicable across different cultural contexts. The 10 indicators from the HFIAS were adapted for this study and together assess food consumption patterns, nutrient availability and household food intake.

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### Table 4: Dimensions of Assessment

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Outcome Indicators</th>
<th>Sources of Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>The socio-economic outcomes of the project.</td>
<td>Changes in employment status, wage income, grants, capital income, subsistence farming</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Demographic composition of households</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Employment status of household members</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Levels and sources of household income</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Expenditure patterns of households</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Health status of households</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Asset status of households</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Nutritional and Educational status of children in households</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Households ability to manage poverty risk over time</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Correlation with other income generating or subsistence activities</td>
<td>✓</td>
</tr>
<tr>
<td>Entrepreneur development</td>
<td>Small enterprise development, Local retail entrepreneurship, Market demand/customer base</td>
<td>✓</td>
</tr>
<tr>
<td>Employment</td>
<td>Full-time/ part-time/seasonal, self-employment, formal/informal, length of time unemployed</td>
<td>✓</td>
</tr>
<tr>
<td>Training</td>
<td>Formal and informal training of workers, entrepreneurs and others</td>
<td>✓</td>
</tr>
<tr>
<td>Procurement</td>
<td>Procurement of raw materials, products for the entrepreneurs</td>
<td>✓</td>
</tr>
<tr>
<td>Technology and skills transfer</td>
<td>Changes in equipment and facilities established, changes in access to products and services</td>
<td>✓</td>
</tr>
</tbody>
</table>

3.5.6 Sampling

The sample for this evaluation was drawn from the different categories of participants who were directly involved with the factory or were likely to be affected by its operation. These are the factory workers, the suppliers of fruit to the factory, competitors in the area and entrepreneurs in and around Nkowankowa. Households within a radius of two kilometres of the NDC factory, which had no members employed directly by the factory, formed the comparison group and were labelled ‘non-beneficiaries’. The households in the sample frame were identified from available GIS data. All the permanent staff at the factory and as many of the seasonal workers as possible were interviewed.
As of June 2014 there were 380 farmers registered as suppliers. Using the Research Advisors sample size table, a sample size of 189 suppliers was selected as sufficient for a 95% confidence interval and a 5% margin of error. Three Focus Group Discussions of about 10 participants were formed, one with factory workers and two with the communities.

A simple random sampling approach was applied to the households in the catchment area using Arc Geographical Information System (ArcGIS) software. This is a Geographical Information System (GIS) software package that allows researchers to link their sample variables to geographical landscapes. It has embedded geographic information that can be used for various research purposes like sampling, mapping and geographic analysis.

Simple random sampling refers to any sampling method that allows a sample number of objects (n = sample from a given population) to be selected from a total number of objects (N = Study population), where all n selected objects have an equal likelihood of being selected. Figure 4 gives a pictorial view of the selected households in Nkowankowa where 400 households were selected from a total of 1670 households in the catchment area near the factory. This sample size was also arrived at using the Research Advisors sample size tables.

Figure 4: Nkowankowa Household Catchment Geographic Area

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2 http://www.research-advisors.com/tools/SampleSize.htm
Factory workers, Entrepreneurs and Suppliers

Names and contact numbers for factory workers and suppliers, between January 2013 and December 2015, were provided by the factory manager. For the factory workers, suppliers and entrepreneurs, the approach was to talk to as many of them as possible. This was because numbers could have changed and people could have relocated since 2013. To draw a sample from the list would have been extremely limiting and could have led to difficulty realising a reasonable response rate. A list of 148 factory workers was provided by the factory manager dating back to 2013. All the permanent staff currently employed at the factory were also included in the list as well as seasonal workers.

<table>
<thead>
<tr>
<th>Respondent Type</th>
<th>Population</th>
<th>Planned Sample</th>
<th>Realised Sample</th>
<th>Response Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Households (Non Beneficiaries)</td>
<td>1670</td>
<td>400</td>
<td>301</td>
<td>75%</td>
</tr>
<tr>
<td>Factory Workers (Beneficiaries)</td>
<td>148</td>
<td>148</td>
<td>88</td>
<td>59%</td>
</tr>
<tr>
<td>Suppliers</td>
<td>380</td>
<td>189</td>
<td>63</td>
<td>33%</td>
</tr>
<tr>
<td>Entrepreneurs</td>
<td>52</td>
<td>52</td>
<td>11</td>
<td>19%</td>
</tr>
<tr>
<td>Focus Group Discussions</td>
<td>-</td>
<td>3</td>
<td>3</td>
<td>100%</td>
</tr>
<tr>
<td>Key Informant Interviews</td>
<td>-</td>
<td>6</td>
<td>6</td>
<td>100%</td>
</tr>
</tbody>
</table>

Implications of the realised sample sizes

The realised sample size for the households still gives a margin of error of 5%, with a confidence interval of 95%, which is acceptable. Although the total population of workers was 148, the realised sample was 97 which gave a response rate of 65%, this is also an acceptable rate of response, although this means the margin of error drops to 10%, this still has one of the conventional confidence levels of 10%. Reasons for not achieving the targeted sample were related to the non-availability of workers in general and more importantly the non-availability of seasonal workers at the time of the survey.

The sample frame for suppliers only had the first name of the contact and a cell phone number and the latter proved too unreliable with calls going to voicemail or reflecting as number no longer listed. Several call-backs were made to try and secure as many respondents as possible but the quality of the sample frame made it difficult to achieve this. This raises issues as to whether the realised sample is representative or not, this is more so in a situation where the composition of the actual supplier population might be different to the realised profile. Similar challenges were experienced regarding the entrepreneurs. The original plan was to conduct a survey with all 52 of them but the inability to get in touch with most of them meant that the 10 who were recruited would form case studies. This actually allowed for more detailed and qualitative responses that still allowed us to respond to the evaluation questions.

Despite these sampling issues the comprehensive data collection interventions employed for this evaluation mean that we do not have to rely on one source.
3.5.7 Comparison Group

The comparison group was the total number of respondents from the households who had not worked for the factory. The approach was therefore a comparison of outcomes between factory worker households (beneficiaries) and non-factory worker households (non-beneficiaries). This design framework was prompted by the fact that there was no counterfactual factored into the design of the intervention from the beginning and measuring change without a plausible comparison would make the exercise totally dependent on the recall capabilities of respondents.

This approach lends a legitimate pathway to a plausible comparison between those households which directly benefited from the factory, by having a household member work for the factory, and those which did not.

The strategy employed was the administration of the same household questionnaire to both groups of households. The assumption is that the differences observed in the two groups may be attributable to having a household member work for the factory in a given period of time. This is of course very approximate and it is obvious that we may not see any differences in certain dimensions of assessment. This does not however invalidate the approach as it should uncover differences attributable to work participation in the factory that would otherwise be lost.

3.6 Research Ethics Approval

All research with human subjects requires ethical approval. The study applied for and was granted ethical approval from the HSRCS Research Ethics Committee in May 2015 [Ethics references number: REC 10/20/05/15]. The ethics approval letter is dated 14 October 2015. This means respondents only participated after voluntarily agreeing and signing informed consent.

3.7 Pilot study

Pilot studies are a fundamental component of any primary data collection exercise. The objectives of conducting this pilot study were:

- To assess the challenges of recruiting beneficiaries, particularly for the entrepreneurs who were trained and the suppliers who had supplied the factory between 2014 and 2016.
- To test the adequacy of the various instruments, namely the household questionnaire, the suppliers questionnaire, and the entrepreneurs questionnaire schedules, and focus groups guides.

The pilot study was conducted over one week in October 2015. It brought to the fore a number of critical issues that needed to be addressed in respect of the logistical arrangements for fieldwork and amendments to the instruments. Details of the pilot findings were reported in the pilot study report dated November 2015. The findings of the pilot study fed into the finalization of the instruments and logistics for the main study whose results are reported in section 4.
3.8 Data collection and Analysis

3.8.1 Quantitative Data

Quantitative data was collected using hard copy questionnaires, administered by a team of experienced field workers conversant in the local language in Nkowankowa. The data was collected between the 29 February and the 18 March 2016.

Most of the data cleaning, preparation and analysis was conducted using the statistical package STATA. Appropriate relevant statistical tests were conducted on key variables and tests of association were conducted on categorical variables.

3.8.2 Qualitative Data

Qualitative data was collected from focus groups and key Informant Interviews. The interviews and discussions were captured using digital audio recordings. They were then translated (where necessary) and transcribed into Microsoft word documents. The qualitative data was analysed by the research team to make sense and meaning of the thematic content and more importantly to sort data by thematic areas linked to the study dimensions of assessment. This type of data is always a challenge to analyse, filter and categorize. This was particularly challenging due to the multiple variables being assessed and the cross cutting nature of the issues being explored.

3.8.3 Limitations of the evaluation

As mentioned earlier the survey used retrospective questions regarding beneficiary experiences, before and after the intervention, these are susceptible to issues such as recall and misclassification biases due to the time lag between the occurrence of the event being assessed and the time of the survey.

Although the theory based mixed method approach was motivated by the fact that this intervention did not have an experimental design, it meant that we could not rely on quantitative evaluation techniques that utilise statistical methods to compare project outcomes between project beneficiaries and a control group, before and after the intervention. It should therefore, be noted that this approach does not allow us to draw conclusions regarding causality, the least that this approach can do is provide some level of association between the intervention and outcomes. However, as mentioned above, theory based evaluations still help us to answer a number of the evaluation questions as they do not have some of the black box weaknesses of experimental designs.

The poor quality of some of the sample frames made recruitment of study participants difficult. The issue with sample frames is indicative of the poor record keeping at the factory and is something that can be addressed by keeping a more detailed database of suppliers by category and demographic details of workers. Other limitations with respect to sampling were discussed in section 3.5.6.
4 Results

4.1 Suppliers

The target was initially to track all suppliers to the factory in the period January 2013 to December 2015. Out of 189 suppliers listed in the DST data files we were able to contact 63 (see Table 6 and Table 7 below). That is approximately one third of the target population. Response rates of between, 25% to 75%, have been found to be representative in the literature. There is no gold standard for an acceptable response rate as it has also been found that surveys with low response rates yielded more accurate results than surveys with higher response rates (Visser, Krosnick, Marquette & Curtin 1996). The response rate in this case was influenced by completely random events out of the control of the evaluators and the responses given by the respondents seem to converge at 30%, leading one to assume no added advantage at higher response rates.

Table 6: Suppliers by Gender (N = 63)

<table>
<thead>
<tr>
<th>Gender</th>
<th>Freq.</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>19</td>
<td>30%</td>
</tr>
<tr>
<td>Male</td>
<td>44</td>
<td>70%</td>
</tr>
<tr>
<td>Total</td>
<td>63</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: HSRC-DST NDC Supplier Survey 2016

The objective of the Suppliers analysis was to uncover or affirm expected outcomes of their involvement with the NDC factory over the last five years. The thrust of the instrument used for the in-depth interviews with the suppliers was towards uncovering patterns in their supply activities as well as frequency and regularity of payments for their products. Lifestyle changes, employment and diversity of supply activities were also probed.

Table 7: Race of Suppliers

<table>
<thead>
<tr>
<th>Race</th>
<th>No.</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>African</td>
<td>55</td>
<td>87%</td>
</tr>
<tr>
<td>Coloured</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>White</td>
<td>4</td>
<td>6%</td>
</tr>
<tr>
<td>Unknown</td>
<td>3</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>63</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: HSRC-DST NDC Supplier Survey 2016

4.1.1 Demographics

Only 28% of the NDC suppliers surveyed were female. When analysed by type of supplier, 76% of the females were backyard suppliers and only 6% of them were small holders. Amongst the males, only 35% of them were from the backyard suppliers, the rest were either commercial farmers or smallholders. This signals an imbalance of commercial and smallholding activities in the area towards the males. The opportunity to trade with the factory seemed to have been embraced more by the female population from the backyard suppliers in the area (Figure 5.)
Ninety per cent of suppliers that participated in the survey were African, 2% classified themselves as coloured while 8% were white. All the white suppliers in the sample were commercial farmers. This demographic was to be expected as the location is mainly a black African settlement area, while the white community mainly resides in the suburbs and on the commercial farm areas.
The dominant home languages spoken amongst the suppliers were Tsonga and Sepedi. Afrikaans and English together made less than 10% among the realised suppliers as home languages, (Figure 6:)

Figure 7: Age range of Respondents

Most of the suppliers, about 60% of the realised sample, were aged between 20 and 49 (Figure 7:). The official definition of ‘youth’ in South Africa is 15 to 34 and only 38% of the suppliers in the sample were youth.

Seventy-six per cent of the females in the sample were backyard suppliers, only three of them were commercial farmers and only one was a black smallholder. Sixty-five per cent of the males were either smallholders or commercial farmers. This demographic speaks to the reality of female household heads working to feed the family.
Only a third of the realised sample of suppliers said they had grade 12 matriculation certificates and less than 10% of them had NQF level 5 education or higher (Figure 8).

4.1.2 Business Activity

The main business activity of 97% of the supplier respondents was wholesale supply of fruits, only 3% were dealing in vegetables. About sixty-two per cent of all suppliers sell their produce to agro processing companies, while the rest of the customers are either walk in customers or bulk purchasers. This marks the importance of agro processing companies in the area. The placement of processing plants close to where the people do their farming is therefore likely to increase participation in the agro value chain leading to higher economic benefits for the local people. The NDC factory’s location is ideal for local suppliers and gives easy access to an agro processing facility.
Sources of information about the factory

The response from the Suppliers who already supplied for the NDC

Table 8: How did you hear about the NDC factory?

<table>
<thead>
<tr>
<th>Quotes from Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I heard people from Tarantaal advertising stating that NDC wants mangos”</td>
</tr>
<tr>
<td>“I saw the board and I took the contact numbers then I started supplying them.”</td>
</tr>
<tr>
<td>“The NDC came to see me with regards to mangoes and asked me to supply them with mangoes”</td>
</tr>
<tr>
<td>“I saw other cars delivering mangoes and I followed them to the factory”</td>
</tr>
<tr>
<td>“I heard people talking about the factory and I also went there”</td>
</tr>
<tr>
<td>“It is around my place because I stay in Nkowankowa”</td>
</tr>
<tr>
<td>“There are signs all over Nkowankowa, and we have a small market on the side of the road so we saw the sign”</td>
</tr>
<tr>
<td>“They contacted us to ask if we have mangos”</td>
</tr>
<tr>
<td>“I heard from the Minute Maid factory that there is a nearer factory, NDC, that is when I decided to take the mangoes there”</td>
</tr>
</tbody>
</table>

The most common ways of hearing about the factory among the suppliers were word of mouth and billboards; word of mouth, mainly from relatives; other suppliers; and workers at the factory (The response from the Suppliers who already supplied for the NDC

Table 8). Another important channel was the advertising and recruitment done by the factory management itself. A number of commercial farmers were specifically targeted and requested to supply mangoes to the factory.

Figure 9: Categories of Suppliers (n = 55)

Source: Evaluation Study, NDC Fruit processing Tzaneen study survey (2016).

Figure 9 shows that 48% of the suppliers were subsistence farmers - these are the ‘bucket and wheel barrow, backyard suppliers’. Thirty-three per cent were local commercial farmers and 19% were black smallholder farmers. Thus the bulk of the mangoes processed at the factory come from the community or from the commercial farmers. This has the implication that the effect of the interaction with the
factory in the community should be big enough to make a meaningful change in the household status of local residents.

**State of business activity before and after NDC**

**Figure 10: How was business before you started supplying the NDC? (n = 52)**

![Bar chart showing business status before supplying the NDC](chart10.png)

*Source: Evaluation Study, NDC Fruit processing Tzaneen study survey (2016).*

Most of the suppliers indicated that their businesses were good before they started supplying the NDC (Figure 10). Only about 30% reported that their businesses were bad or very bad before they started supplying the NDC. This indicates an already thriving industry in the area before the factory started operating.

**Figure 11: How did business change after you started supplying the NDC? (n = 58)**

![Bar chart showing business change after supplying the NDC](chart11.png)

*Source: Evaluation Study, NDC Fruit processing Tzaneen study survey (2016).*
Nearly 47% of suppliers indicated that their businesses changed a lot, for the better, after starting to supply the NDC factory; 27.6% saw little change in their businesses and 24.1% observed no change at all (Figure 11). Only about 2% reported having experienced a change for the worse after starting to supply the NDC. Reasons for this were not clarified in the interview.

Table 9: How did business change after you started supplying the NDC by type of supplier?

<table>
<thead>
<tr>
<th>Nature of change</th>
<th>Local supplier (commercial farmer)</th>
<th>Black smallholder farmers (groups or coops)</th>
<th>Backyard (subsistence farmers)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No change</td>
<td>2</td>
<td>1</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>11%</td>
<td>10%</td>
<td>38%</td>
<td></td>
<td>23%</td>
</tr>
<tr>
<td>Little change</td>
<td>9</td>
<td>2</td>
<td>5</td>
<td>23</td>
</tr>
<tr>
<td>50%</td>
<td>20%</td>
<td>21%</td>
<td></td>
<td>31%</td>
</tr>
<tr>
<td>Changed a lot for the</td>
<td>6</td>
<td>7</td>
<td>10</td>
<td>23</td>
</tr>
<tr>
<td>better</td>
<td>33%</td>
<td>70%</td>
<td>42%</td>
<td>44%</td>
</tr>
<tr>
<td>Became worse</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>6%</td>
<td>0%</td>
<td>0%</td>
<td></td>
<td>2%</td>
</tr>
<tr>
<td>Total</td>
<td>18</td>
<td>10</td>
<td>24</td>
<td>52</td>
</tr>
<tr>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

When disaggregated by type of supplier, a picture emerges where most of those who reported no change were actually the backyard suppliers (38% of those who said there was no change). This same group is in the majority of those who reported a lot of change for the better (42%). One commercial farmer reported a change for the worse but it is unclear whether the respondent understood the question properly because the other responses he gave are in conflict with business becoming worse. Overall, the commercial farmers were the bulk of those who saw little change in business fortunes after they started trading with the NDC.

**Business outside the Nkowankowa Industrial Park**

Seventy-three per cent of the suppliers only did business with NDC factory. The convenience of the factory’s location was the main reason cited for this dynamic followed by the impression that the NDC factory was reported to have been paying higher rates than similar factories in the area. Lethaba Fruit was specifically mentioned because it is also in the vicinity. When the NDC started operating most of the suppliers in the area left Lethaba Fruit and started to supply the NDC because of the higher rates that the NDC was offering. This brought on a fierce rivalry between Lethaba and the NDC which was still simmering at the time the survey was conducted.

**Training and skills development**

The great majority (93.5%) of the suppliers never received any training as a result of dealing with the NDC. The rest received some form of training. This makes sense because most of the training given by the factory was targeted at improving operations efficiency of the factory workers. However, the few suppliers who benefitted from training became skilled in product grading and post harvesting techniques. There were no suppliers who indicated that they received training in the form of product development, brand packaging, quantity management or any other form of business management.
training. This means that none of the 52 entrepreneurs initially trained as part of the NDC programme actually became suppliers to the factory.

This is most probably because the type of the training reported by these entrepreneurs (discussed in the next section) was not relevant to becoming suppliers to the factory.

Procurement of raw materials

NDC suppliers were classified into three types: farm suppliers, bakkie suppliers and walk-in suppliers (buckets and wheelbarrow). Different suppliers procured their raw materials from different places. Figure 12 shows that 46.7% of suppliers got their mangoes from small scale farmers around Tzaneen. These are usually the bakkie suppliers who go around with their bakkies collecting mangoes from small scale farmers in order to sell on to the NDC. About 28% of suppliers get their raw materials from their own farms. These are most likely commercial farmers who have contracts with the NDC for supply of mangoes during the season. Eight per cent indicated that they get their mangoes from commercial farmers and then sell them on to the NDC. Only 5% of suppliers get their raw materials from their own home gardens, these include backyard gardens or suppliers with 2 or more mango trees at the back of their yard, and these are likely to supply NDC with buckets and wheelbarrows of mangoes. The other 12% of suppliers get their raw materials elsewhere.

Figure 12: Where do you buy your raw materials from?

**Distance traveled to supply raw materials**

NDC suppliers were from different areas around Tzaneen, some were from Nkowankowa, and others from the neighbouring communities in Nkowankowa, such as Mudjaji, Dani, Lenyenye and Nw’a-Mitwa and other neighbouring villages. Figure 13: shows the relative distances travelled by suppliers in order to deliver mangoes to the NDC. The majority of suppliers (71.7%) travelled more than 10 KM from their location to NDC; this is likely to be people residing outside Nkowankowa, who are from Modjadjji and Nw’a-Mitwa. About 22% of the suppliers travelled between 5 and 10 km and are likely to be people residing in Dani and Lenyenye, which are neighbouring locations to Nkowankowa. Only 6.7% of the suppliers travelled less than 5 km. These suppliers are more likely to reside in and around the Nkowankowa location. Distance and location have an effect on suppliers, in terms of transport costs, which include bus fares and petrol for their bakkies. Suppliers also have to wake up very early depending on how far away they live in order to join the queue when they deliver their mangoes at the NDC.

**Figure 13: How far do you have to travel to deliver mangoes to NDC**

![Bar chart showing distances traveled to the NDC]


**Price paid by the factory**

The rate given by a wholesale purchaser of products can be used to gain a competitive edge over rivals bidding for the same products in any industry. Fifty per cent of the suppliers were aware that the price the NDC was paying for their mangoes was higher than what other factories were paying and this was given as a reason for supplying the NDC. Twenty-three per cent of suppliers said the price was not higher than other factories, while about 27% indicated that they did not know if NDC was paying a higher price or not, Figure 14:. This points to a lack of information among 27% of the suppliers about the price levels in the business.
Figure 14: Does the NDC pay higher prices for your merchandise? (n=61)


For most of the supplier respondents the motivation for supplying the NDC factory was the better price for their products. Proximity was another incentive for supplying the NDC because the factory is closer to the community than other factories.

Comparison of the NDC to other factories

Figure 15: Is there any difference between NDC and other factories in the area?


When asked if they felt that NDC was the same or different from other factories in any way, about 48% of the suppliers indicated that it was different (Figure 15). The fact that NDC was said to be paying more for the merchandise is most probably one of the reasons for this; other explanations are the reported good service provided by the NDC and reduced transport costs associated with supplying the
NDC factory. However, 5% of the suppliers felt that NDC was just as good or as bad as the rest of the factories in the industry. A surprisingly high proportion, 47% of the suppliers, indicated that they were not quite sure if NDC was different or not. A possible explanation for this may be that these suppliers were only supplying to NDC and did not have any information about other factories.

**Activity in the last six months**

Close to 60% of the suppliers indicated that they had not supplied the NDC with their products in the last six months before the survey. The rest indicated having supplied the NDC at least once during this period. Some of the stated reasons for this were drought, suppliers relocating to other areas in Limpopo or being out of the province, lack of transport and the factory having been closed for business for close to four months by the time of the survey.

In addition to these three main drawbacks, there were a few suppliers who were not happy with the service offered by NDC. One of the suppliers’ main reasons for not supplying to NDC anymore was that:

> “The mango intake of NDC is too weak. If you can supply them with many they cannot process all of them, they will turn others back while other factories in the area are capable of buying everything you supply as long as it is quality”.

It is important to note that the opposing view to this reason was cited by other suppliers as the reason why they preferred to supply the NDC, i.e. that they could take all their produce and were not turned back with their produce by the NDC. There is no ready explanation for these contradictory views.

**Employment Outcomes**

Of the 62 who responded, the study reveals that just a little more than half (52%) of the suppliers have employed other people to work in their business, the rest have not employed anyone. These are most probably the commercial and small scale farmers who need labour for picking, sorting, packing and delivery activities. The bucket and wheel barrow suppliers usually need no assistance for their operations as they are most likely to use family members if they need extra labour. This is a modest contribution to job creation by local entrepreneurs in the area.

**Market Environment**

The suppliers are price takers rather than price setters in the business. They go by what the buyer dictates is the price for their produce. Most of the suppliers indicated that it was actually NDC, together with other factories, who used various valuation techniques to determine prices. Fifty-four per cent of the suppliers said that information on prices was not readily available to them.

About 52% of the suppliers thought that the market was not highly concentrated while 48% seem to think that there are a few dominant players in the industry. Some of the dominant players mentioned were Minute Maid, the NDC and the commercial farmers.

**Perception of Quality of Own Product**

Figure 16 shows responses to a question about the quality of their products compared with other suppliers. Forty-three per cent indicated that they believed their product was of higher quality than their competitors, 25% thought their product was no better than other suppliers’, while 33% did not know.
When disaggregated by type of supplier, most of the commercial farmers thought they had better products than their competitors, while most of the backyard suppliers did not know whether their mangoes were of higher quality (Table 10). This is not surprising because the backyard suppliers have no means of determining the quality of their product before they supply to the factory.

<table>
<thead>
<tr>
<th>Supplier type</th>
<th>Commercial farmer</th>
<th>Black small holder</th>
<th>Household Supplier</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>12</td>
<td>7</td>
<td>5</td>
<td>24</td>
</tr>
<tr>
<td>No</td>
<td>4</td>
<td>2</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>Don't know</td>
<td>3</td>
<td>2</td>
<td>14</td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>11</td>
<td>26</td>
<td>56</td>
</tr>
</tbody>
</table>

4.1.3 Discussion of findings

There was a large degree of concurrence in supplier responses, the data is thus said to converge. Most of the suppliers were already participating in the agro-economy, and as such the NDC intervention appears to have created an additional source of demand. Furthermore, the factory seems to serve the needs of local suppliers in Nkowankowa and surrounding areas. It would appear that once the NDC was opened, a significant number of suppliers only supplied the NDC, 73%, and this was in part due to the proximity of the factory to the suppliers. The main reason was the higher price offered by the NDC with 50% of the suppliers indicating that the price offered was relatively higher than that paid by other factories.

With respect to the supplier - employment causal path identified in the ToC, this appears to be creating the anticipated outcome, with 52% of the suppliers indicating that they had employed at least one person in their business. This result should be assessed within the context of the finding that 73% of the suppliers only supplied the NDC.
There is also evidence to show that the factory was actively advertising to attract suppliers thereby speaking to the inclusive procurement approach required by an intervention of this nature.

With more than half of the suppliers being backyard sellers, it means that the benefits to the local community should be relatively large. This is collaborated by key informant evidence that estimated that almost half of the cash injection used to purchase mangoes was being retained in the local community.

The addition of the NDC into the local community’s value chain appears to have improved the business of nearly 47% of the suppliers, who indicated that their business had changed for the better ever since they started supplying the factory. Both the black smallholder farmers and the backyard traders had relatively larger numbers of suppliers who experienced a significant change in their business as a result of supplying the factory (70% and 42% respectively). The benefit to the rest of the suppliers’ categories was marginal and consisted mostly of extra revenues that stabilised their earnings.

Backyard suppliers with a few mango trees only experienced marginal changes, mostly in the form of supplemental income that allowed them to afford more basic purchases and pay school fees.

It is however important to note that the notion of substantial changes is also very relative. While few respondents characterised the increased ability to pay for school fees as substantial, a larger number considered this a small change. The significance of change is thus bound to the perspective of the respondent and does not reflect a quantifiable level of benefit.

Likewise, the level of education plays no visible role in determining the beneficiation process, probably as a result of the fact that an overwhelming majority of respondents have a more or less similar level of educational attainment, with only one in ten having more than a National Senior Certificate (high school diploma).

4.2 Entrepreneurs

Fifty-two entrepreneurs were trained at the beginning of the project as part of the NDC activities in Nkowankowa. Different training programmes were offered to different groups of entrepreneurs in and around Tzaneen. It was expected that the skills acquired during these training sessions would help them manage their businesses better and help them take advantage of the opportunities created by the establishment of another fruit processing plant in the area. Of the initial list of 52 participants in the training sessions, only 10 were contactable. Generalizations of the outcomes in the group is difficult because of the small number of respondents and the analysis in this section should therefore be taken more as an indication of how the group picture would have been rather than an indication of the general behaviour of the group.

One thing that is certain though is that there was very little, if any, participation in the NDC factory from this particular cohort of trained entrepreneurs. The reason for this is that it was not the intention of the training for the entrepreneurs to do business with the factory afterwards. The training was aimed at general business practice and enabling trainees to market and sell the health products that were given to them.
4.2.1 Demographics

Eight of the eleven entrepreneurs who were contacted were females between the ages of 30 and 50. The rest of them were male, two of them aged between 30 and 45 and one above 50, Table 11. Eight of the eleven speak Sepedi at home, the other three speak Tsonga. Tzaneen is dominated by Tsonga and Sepedi speaking people so this is not surprising.

Table 11 Age and Gender of respondents

<table>
<thead>
<tr>
<th>Age</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-45</td>
<td>2</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>46-50</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Above 50</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
<td>8</td>
<td>11</td>
</tr>
</tbody>
</table>

Table 12 Highest level of Education by Gender

<table>
<thead>
<tr>
<th>Highest level of Education</th>
<th>Gender of Respondent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 9</td>
<td>Female 2</td>
<td>Male 0</td>
</tr>
<tr>
<td>Grade 10</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Grade 11</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Grade 12</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Diploma / Advanced certificate</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 12 shows the highest level of education by gender. Four of the eleven respondents had reached matric while only one respondent had some higher education. Three of the females went up to grade eleven and did not complete. This is probably indicative of the usual problem of young females failing to complete their education due to teenage pregnancies. This of course was not probed in the research and separate evidence would have to be solicited to corroborate this statement.

4.2.2 Business Activity

Most of the entrepreneurs had been operating for less than five years by the time they received training from the NDC. Of the eleven, only two had registered companies. These were both registered as Proprietary Limited companies.

At the time of conducting the survey, only two of the respondents indicated that their businesses were still operating.

When asked “What kind of skills have you learned from the training?”, the entrepreneurs acknowledged various types of training that were offered to them by NDC in order to enhance their businesses. These include:

- Manufacturing of bath soaps;
- Marketing, financial and business management skills; and
- Selling concept and knowledge of various products.
Because of the low number of respondents, the rest of this section gives a case by case analysis of the business activities of some of the entrepreneurs interviewed. The names in the narratives are not their real names. One case was discarded as it emerged that the entrepreneur had actually not participated in the training.

**Case 1, Masha.**

Masha is a 46 year old widow from Nkowankowa B section. She has a grade 12 matric certificate and had been in business less than five years at the time of the interview. Her business was not registered and was not operating at the time of the interview. When she was trading, she was selling vetkoek, mageu, achar and fish before she heard about the NDC training. After the training she started selling medicinal herbs, gels and energy boosters. This line of business was introduced to her at the NDC training by the manager of the factory, who gave her training on symptoms of disease and how to prevent them. She was taught that “people who have HIV must drink the energy boosters and follow treatment”.

Masha heard that there were jobs at the new factory so she went there to get a job. She submitted her curriculum vitae (CV) and started training. She was selected for the course on selling herbs. This was not what she was looking for but since the opportunity arose she took it and started selling the herbs. She explains that there was lot of travelling involved in order to sell the products and the manager would call and ask when they would come and buy more products.

> “The problem was that while busy selling the products they were given the phone and asked when is she coming to buy new stock. So, in a way, it’s like the business is not theirs. She was selling for the lady who trained them” [Field worker’s interpretation from the questionnaire]

Masha explained that the skills she was given did not help her improve her business operation because her husband was very ill, so she could not run the business well until he passed away.

The training was, however, beneficial to the community because people who were sick felt better after drinking the herbs and boosters but they got sick again once the herbs were finished. For her the problem was that she was not given a salary from her sales. Her salary was more products to sell from which she could keep the money. It was not always easy to sell these extra products and sometimes they just expired in the house. She still had a lot of them in the house and but she cannot sell them because they have expired.

Masha thinks the factory was very beneficial to the community because they hired a lot of people during the mango season and these people were working and earning money.

**Case 2, Hlamla**

Hlamla is a 38 year old single woman from Tzaneen. She has a grade 12 matric certificate and had no business before receiving training from the NDC. Hlamla was unemployed and got involved with the NDC training programme after she saw an advertisement saying they needed people. She submitted her CV, after which she was called for an interview and she thought she was being interviewed for a job. Hlamla was selected to attend training at the factory and was told that she was going to be trained
as an entrepreneur. She received training on selling concepts and product knowledge. Hlamla viewed the training as useless because after training she was on her own without assistance.

**Case 3, Khanyi**

Khanyi is a 40 year old married woman from Burgersdorp village in Tzaneen. She attended school up to grade 11. Khanyi did not have a business at the time that she heard about the NDC factory. She took her CV to the factory, after which she received a call asking her to attend training. She was trained on how to run a business and how to treat customers. She had never received any other kind of training before.

Khanyi went on to start a business selling bath soaps, camphor cream, Acqua cream, Roll on, perfumes and pills. She managed to employ one person for her business and even started stocking her products in Johannesburg. Business was good and she managed to add towels and bags as additional products to her business. Khanyi's business thrived and made enough profit to support her children. She managed to send one of her children to a Further Education and Training college with the money she was making from the business which became her main source of income.

Everything went well until her supply of products was exhausted. The factory cut off the provision of the products which caused her business to collapse. She had a lot of customers who are still coming to her place looking for the products.

Khanyi is of the opinion that the training that was given by the NDC was beneficial to the community because people were able to place orders and do business themselves. She also thinks that the NDC fruit processing factory is beneficial to the community as the factory workers are able to provide for their families.

**Case 4, Lungelo**

Lungelo is a 45 year old single woman from Tzaneen. She has a matric certificate. Her business, which she had been operating for less than three years at the time of the interview, was no longer operating. Lungelo had previously been trained as a security officer.

She was looking for a job when she heard about Christos who was selling tablets (pills) in bulk. She bought some stock from him and he told her about the training at the NDC. She was very excited and decided to join the training. She started selling the pills and immune boosters after the training at the NDC.

She managed to hire 9 men and 11 women after receiving the training, who helped her sell the products. Lungelo managed to extend her business and purchase additional equipment. The profits increased after the training and the skills she learnt from the NDC training helped her improve the operation of her business.

**Case 5, Maggie**

Maggie is from Lephephane village in Tzaneen. She is 48 years old and is not married. She attended school up to grade 11 and had been in business for less than three years when this interview was
done. Her business was not registered but she was operating just to make ends meet. Maggie was already selling tablets before receiving the NDC training.

Maggie had 2 male and 2 female helpers in her business before receiving the NDC training. She had already been trained in marketing, financial, and business management before her involvement with the NDC. After the training at the NDC, Maggie did not employ any additional staff in her company. She spent less than R10,000 on wages and salaries for her employees. She didn’t purchase any additional equipment with the money she made on her business but she built a house since her business was making a lot of profit.

Maggie expanded her business after receiving the NDC training. The management and marketing skills she learnt from NDC helped her improve the operation of her business the business generated sustainable income. She was selected to the training because of the high sales she made and the high stock she was ordering the factory.

The skills she learnt from the NDC training helped her to know what was needed for her customers and market the products she was selling. The additional marketing skills acquired in the training helped her to develop a marketing strategy to get many customers and increase her profits.

**Case 6, Betty**

Betty is a 44 year old widow from Babanana Village (Nwamitwa area) outside Tzaneen. She attended school up to Grade 9. Betty had been in business for less than three years at the time of the interview. Her business was not registered and not operating at the time of the interview. Her business had mainly involved selling vegetables and snacks by the road side.

She didn’t have any partners in her business nor did she employ any one.

During the NDC training she learnt how to manufacture bath soaps and how to buy and sell products. She was spending nothing on wages and salaries as she did her business alone.

Betty managed to expand her business after the NDC training by purchasing additional products such as bath soaps, perfumes and cracks removal oil. Her profits were better after receiving training but after a while things got very bad and the business struggled to survive.

Although the training helped her to understand the running of a business and how to manage it, the business eventually folded and she stopped trading.

The bad part of the business after the training was that she felt she was not selling for herself. She felt was selling for the woman in the factory by the name of Creshma. She was paid by receiving additional products from the woman to sell for herself as payment. Her business eventually collapsed because she didn’t have money to sustain herself and the operation as the products that she was paid with expired before she could sell them.

She felt like she had been used by the factory during the selling of the products because she was just making money for the NDC and not for herself. Everyone who went there to look for jobs was taken for the training. No one was turned down.
Betty thinks that the factory was beneficial to the community in terms of providing work opportunities and saving people’s time going to the chemist to buy facial and bath soaps or perfumes.

**Case 7, Kiseto**

Kiseto is a 54 year old married man from Nkowankowa unit A. He went to school up to grade 10 and had been in business for less than five years at the time of the interview.

Kiseto’s business is a registered Proprietary Limited company and it is still operating. He indicated that before he received the training from the NDC he used to have a spaza shop where he sold soft drinks and chips. After the training he expanded his business to include electricity and phones.

When Kiseto was selected for the training, he said they were selecting people with spaza shops and he thinks that the selection was fair.

Kiseto has 2 employees in his business, one was employed before the training and the other after. Both the employees are women. He explained that the business has expanded as a result of the skills he learnt from the NDC training, which included managing a business, financial skills and self-management.

Kiseto explained that after receiving the training he was able to buy a mobile printer for electricity vouchers and he further explained:

“with the electricity I get much [greater] profits as compared to NAVITA products because the NAVITA products expire”

However, Kiseto does not think this income is sustainable. He explained that his business is very slow and the only time it gets busy is at the month end. He stated that he does not think that the training was beneficial to the community and that the factory is not benefiting the community in any way.

**Case 8, Maria**

Maria is a 40 year old woman from Nkowankowa. Maria is not married, but she lives with her male partner. Maria went to school up to grade 9 and has been in business for less than a year. Maria’s business was not registered and it is not operating anymore.

Maria was one of the people who received training from the NDC and she thinks that the selection was fair. She explained that she was told by a family member that there is employment at the NDC. She went to the factory and was chosen to attend the training. During the training, she was told that she was going to sell medication and energy boosters and she would not receive any salary but will receive commission in the form of stock comprising medicine and energy boosters.

The training she received was on how to sell energy boosters and medicine to HIV infected people. When she started selling the medication and energy boosters the products didn’t belong to her but she would receive her own stock to sell afterwards.

Maria explained that the skills learnt through NDC training did not help her in any way because, first, the business was not hers. She stopped selling the NDC products and is now just selling cold drinks at
home. Maria explained that the income generated by the business was not sustainable and the additional products (medication and energy boosters) that were given to her as commission were not sold by the time they expired and she could not sell them anymore.

She thinks that the training was not beneficial to the community because the medication and energy boosters she received from NDC expired. However the factory is benefiting to the community because people go there to sell their mangoes.

Case 9, Onele

Onele is a 50 year old widow from Nkowankowa, Dan Lusaka section. She had a National diploma and had been in business less than three years at the time of interview. She was operating an unregistered business that was no longer active at the time of interview. This had been a sewing business. She added the selling of health products to her business after the training from the NDC. This line of business was introduced to her by the NDC, where she was given training on how to sell and market her products and how to manage her finances. Onele had received training from the Skills Education Training Authority (SETA) and the Greater Tzaneen Economic Development Agency (GTEDA) before attending the NDC training.

She heard about the NDC from her husband who was working there at the time that the NDC was looking for people to hire, so she went there to get a job. She submitted her CV and started training. She was selected for training in selling health products such as body lotions. Onele indicated that the skills given to her by NDC helped her to improve the way she operated and managed her business which enabled her to sustain her sewing business. However she was not able to expand her business, in fact she ended up quitting the business of selling health products. A factor that contributed to her stopping the selling of health products was that she did not feel the sense of ownership as she was not selling for herself.

“NDC taught me how to sell their products. They were trying to manipulate us into working or selling their products. They were not empowering us but they wanted us to sell their products. They wanted us to be their sales people.”
[Field worker’s interpretation from the questionnaire]

Onele indicated that she did not see how the training offered by the NDC was beneficial to the community as whole, but felt that the existence of the factory created jobs for some people who were not employed in the community, even if it was to a limited extent.

“The community benefited because it is people from the community who were working there, though they are not benefiting much, but it is better than nothing”
[Field worker’s interpretation from the questionnaire]

Case 10, Andisa

Andisa is a 55 year widow from Nkowankowa. She does not have a matric certificate and had been in business for more than ten years at the time of interview. Her business was not registered but she was operating at the time of the interview. She indicated that her only business activity before receiving any training from the NDC was designing. However, after receiving training from the NDC
she started selling bath soap, perfumes and body lotion. This line of business was introduced to her at the NDC, where she was trained on how to make soap. The new business also helped her to make more profit which enabled her to sustain her old business as well.

Andisa heard of the NDC from people that were working at the new factory so she went there to get a job. However when she got there it was made clear to her that the new factory was not necessarily employing people but actually empowering people to start their own business.

“When I went there I was looking for a job and the person who was there told us that he is not employing people, but only want to help us start business and make money”
[Field worker’s interpretation from the questionnaire]

Andisa also indicated that the skills given to her by NDC helped her to improve the way she operated and managed her business, even though she failed to expand her business. Andisa was not certain if the training received from NDC, or the existence of factory, was beneficial to the community.

4.2.3 Discussion of Findings

More than half of the entrepreneurs were of the opinion that they had better business after getting the training.

They all seemed to be happy with the selection process for the training with most of them agreeing that the selection process was fair.

In general, the respondents were of the opinion that the income generated was not sustainable. The reasons cited were that when the stock of pills and boosters ran out, they had nothing else to sell. This seems to have been a big issue because, as explained earlier, most of the trainees had not expected to be given this kind of training. They had gone to the factory to look for jobs. These products were introduced to them at the factory.

The situation was made worse by the fact they were paid in kind, instead of cash. They got stock as payment for their work, which was hard to sell, so they ended up with no money. This payment stock would also expire, leaving them with no stock and no money.

It needs to be highlighted that the training activities for which the 52 entrepreneurs were recruited were not aligned to the operation of the factory. The cases described above and the general sentiment conveyed by the respondents seems to confirm that this indeed was the case.

The outcomes of income generation, employment creation and poverty alleviation were temporarily achieved in a few cases but were not sustainable.

4.3 Household Outcomes

A household questionnaire was administered to a total of 389 households. As explained in section 3.5.7, the strategy behind the household evaluation was to administer the same instrument to households that had a household member working at the factory (beneficiaries) and households that did not have a member work at the factory (non-beneficiaries) during the period under investigation.
The most direct way of identifying households with a member working at the factory was to administer the household instrument to the factory workers themselves. The following sections give a summary of the demographics and selected outcome indicators for both groups of households in the sample.

The comparison between beneficiaries and non-beneficiaries was necessitated by the lack of baseline data. This comparison is therefore not meant to act as a counterfactual, it is meant to negate the positive bias that would arise by simply focusing on the beneficiaries. As such, we acknowledge that the possibility of confounding cannot be ruled out. An understanding of how the beneficiaries’ outcomes were affected by their participation in the factory was therefore assessed by studying the pattern of responses across a number of outcome indicators. An attempt was also made to ask a number of retrospective and follow-up questions that directly asked the respondent to self-assess the extent to which an outcome was influenced by their work at the factory. Whilst there are limitations to this approach such as recall bias, in the absence of baseline data it is hoped that a fairly accurate picture of household outcomes will be deduced from triangulating the findings from the household survey with other research interventions, such as the focus group discussions and case studies.

Given that the main impact of employment is through the wages paid to the workers, the household instrument covered socio-economic dimensions that were most likely to be affected by changes in income. This approach is broadly in line with one of the core objectives of the evaluation which was to assess the socio-economic outcomes of the agro-processing factory on the local population.

4.3.1 Household Demographic Profile

This section gives a breakdown of the demographics of the households in the sample. Each household is represented by a respondent who was the contact person in each household. The demographics of the respondents are also analysed by sex, age, level of education and whether they were beneficiaries or not.

Number of Beneficiaries and Non-Beneficiaries households

Table 13: Respondents by beneficiary type

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beneficiary</td>
<td>24</td>
<td>72</td>
<td>97</td>
</tr>
<tr>
<td>Non-Beneficiaries</td>
<td>102</td>
<td>185</td>
<td>288</td>
</tr>
<tr>
<td>Total</td>
<td>126</td>
<td>257</td>
<td>385</td>
</tr>
</tbody>
</table>

Source: HSRC NDC Household Survey, Nkowankowa, Greater Tzaneen 2016

Four questionnaires were excluded from the analysis due to data collection inconsistencies in the field. This reduced the total number of respondents to 385 in the electronic sample. The 97 beneficiaries represent respondents who had worked for the factory, at least once, between January 2013 and December 2015. Table 13 shows that there were more females in each group than males.

Respondent’s Relationship to the Head of the Household by gender

Sixty-seven per cent (254) of the respondents were female. The respondents were asked to indicate their relationship to the head of the household they were part of. Of the 222 respondents who said they were either head or acting head of household at the time of the survey, 59% (130) were female.
Interesting is the result that there were no husbands of household head among the beneficiaries. All of the spouses were wives of the head of household. This seems to uphold the traditional South African norm, where husbands are the heads of the household. It would be a peculiar result to find a male respondent who describes himself as the husband of the head of household. This result may be paraphrased as “most heads of households are female, but not when they are wives”.

Figure 17: Respondent’s Relationship to Head by gender (n = 385)
Marital Status of respondents

Figure 18: Marital Status of Respondents (n = 385)

Source: HSRC NDC Household Survey, Nkowankowa, Greater Tzaneen 2016

Of the 385 respondents, 33.8% were single or never married, 30.1% were still married (15.8% in civil union and 14.3% in customary/traditional unions). 10.1% were living together, while 15.8% were widowed, Figure 18.

Out of all the female respondents, 36% were single or had never been married, 8.2% were divorced or separated and 17.5% were widows. The male proportions in all these categories are lower than the females. However, the males have higher proportions among those living together (but not married), those married by customary law and civil union.

The picture changes dramatically when the denominator is changed to each category of marital status, Figure 19. The figure reveals that 72%, 78% and 74% of all those who are single or have never been married, divorced/separated and widowed are females respectively. The proportions of females in the living together, married by custom/civil also overtakes the male proportions when the denominator is switched. This switch gives a more sensitive picture of the gender/marital status situation in the sample of respondents.
Figure 19: Marital Status by gender

![Marital Status by gender chart](chart.png)

Source: HSRC NDC Household Survey, Nkowankowa, Greater Tzaneen 2016

Level of education

Figure 20, shows the educational profile of working age individuals in the sample. Generally, non-beneficiaries have more education than their beneficiary counterparts with 71% of the latter having less than matric education (69% male and 72% female) compared with 46% of non-beneficiaries (48% male and 44% female). This is understandable considering that none of the jobs at NDC required post-secondary education, while the non-beneficiaries’ job profiles included professions like nursing and police work, which require some post-secondary training.

Figure 20: Level of education by beneficiary type and gender of head of household

![Level of education chart](chart.png)
This section discusses the demographic characteristics of the sample. Demographic pyramids enhance our understanding of key demographic characteristics of a given population. The demographic profile of a region gives a good indication of its stage of development and the pyramid below suggests that the study population (NDC only) has characteristics of a region that is in its expansive demographic phase. The relatively wide base of the pyramid is characteristic of a population that is in the lower stages of development. Its tapering head is indicative of a relatively short life expectancy, which seems to be relatively higher for males than for females. These observed differences in life expectancy would suggest the presence of more female-headed households and relatively high dependency ratios (see Table 14). The higher proportion of females in the population could be indicative of the factories employment profile which is skewed towards female although this wouldn’t necessarily account for the relatively larger number of females in the overall beneficiary population. Alternatively, the significant drop in the male population, especially after the 35-39 age cohort might be explained by a high outward migration rate amongst males. Empirically migration has been implicated in contributing to such gender imbalances (Fargome, 2007).

Figure 21: Age-sex pyramid NDC beneficiary study population 2016 (n = 461)

As inferred from the population pyramid, one notable difference in the demographic statistics of this sub-group is the relatively higher mean age of females, 28 years; with a relatively higher median age of 27 relative to their male counterparts, 20. The disproportionate sex ratio is also much higher at 1.44, that is, there are more females in the total beneficiary household population. Although it is the norm to have more females than males this particular sex ratio is somewhat higher in comparison to the national ratio of 1.07 (StatsSA, 2013).

This is a significant outcome as both the sex ratio and the fact that there are more female headed households, 63%, in the beneficiary population is consistent with most government employment creation programme policies that specifically target women, for example, Phase 3 of the Expanded...
Public Works Programme had a recruitment target of 55% women down from 60% in Phase 2 of the programme (Department of Public Works, 2014).

Table 14: Key study sample demographic statistics NDC only

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age</td>
<td>23.21</td>
<td>27.68</td>
<td>25.85</td>
</tr>
<tr>
<td>Median age</td>
<td>20.19</td>
<td>26.47</td>
<td>24.64</td>
</tr>
<tr>
<td>Sex ratio</td>
<td></td>
<td></td>
<td>1.44</td>
</tr>
<tr>
<td>Dependency ratio</td>
<td>68.75</td>
<td>54.55</td>
<td>60.07</td>
</tr>
<tr>
<td>Aging index</td>
<td>2.65</td>
<td>3.68</td>
<td>3.25</td>
</tr>
<tr>
<td>(%) 0-14</td>
<td>38%</td>
<td>32%</td>
<td>34%</td>
</tr>
<tr>
<td>(%) 15-34</td>
<td>39%</td>
<td>37%</td>
<td>38%</td>
</tr>
<tr>
<td>(%) 35-64</td>
<td>20%</td>
<td>28%</td>
<td>25%</td>
</tr>
<tr>
<td>(%) 65+</td>
<td>3%</td>
<td>4%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Source: HSRC NDC Household Survey, Nkowankowa, Greater Tzaneen 2016

4.3.2 Household Income Sources

This section looks at income patterns before and after the period of operation of NDC. Respondents were asked to identify their sources of income before the project started and currently, prompted by a list of 23 potential income sources. Table 15 shows that there is very little income diversification and that the profile of income sources is fairly similar for both types of study participants. There were three main sources of income, with salaries and wages being reported as the main source by most households for both periods, followed by the old age pension grant (rank 2) and the child support grant (rank 3). These three can be regarded as the most stable; as changes in other income sources start occurring thereafter.
Table 15: Sources of household income before NDC opened and currently (Percentages)

<table>
<thead>
<tr>
<th>Sources of household income BEFORE 2010 n = 354</th>
<th>Before</th>
<th>Sources of household income CURRENT 2016 n = 351</th>
<th>Current</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NDC</td>
<td>Non-NDC</td>
<td>Total</td>
</tr>
<tr>
<td>1 Salaries and wages</td>
<td>70</td>
<td>47</td>
<td>52</td>
</tr>
<tr>
<td>2 Old age grant</td>
<td>10</td>
<td>36</td>
<td>30</td>
</tr>
<tr>
<td>3 Child Support Grant</td>
<td>56</td>
<td>20</td>
<td>29</td>
</tr>
<tr>
<td>4 Disability Grant</td>
<td>5</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>5 Other</td>
<td>0</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>6 Income from formal business</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>7 Regular from pension previous employment/annuity funds</td>
<td>0</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>8 Foster Child Grant</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>9 War Veteran’s Grant</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>10 Care Dependency Grant</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>11 Income from part-time job</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>12 Maintenance and allowances from divorced spouse</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>13 Support from relatives e.g. remittances</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>14 Income from informal business selling achar</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>15 Income from informal trading selling vegetables</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>16 Income from informal trading selling vetkoek/magwinyas</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>17 Grant-in-aid</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>18 Income from informal trading selling fruit</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>19 Regular allowances from non-household members</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>20 Loans (cash loan, bank, etc.)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>21 Profit from business or commercial farming</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>22 Income from letting of fixed property</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>23 Income from subsistence farming</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Whilst 7% of households reported the disability grant as a source of income in 2010, this fell marginally to 5% in the current period, with 2% less NDC respondents reporting this as a source of income. With the exception of Income from formal business (ranked 6), Income from part-time job (rank 11), Income from letting of fixed property (rank 22), and Income from subsistence farming (rank 23), the rest of the 23 income sources experienced some shift in their ranks which might be an indication of their instability.

The low ranking of households indicating Income from informal trading selling fruit (rank 18, before and 20 currently) is surprising given the abundance of fruit trees in this rural community. But this result is probably because almost every household has a fruit tree, limiting the market for this type of informal activity. However, the low ranking of the former may also be because fruit is seasonal and therefore cannot be the main source of income. The low ranking of income from subsistence farming, although not surprising for a rural township community, challenges our understanding of how rurality is defined in South Africa.

Focusing on the three main income sources, there was a drop in the number of households indicating salaries and wages as an income source for both types of respondent’s and there were more non-NDC households reporting the old age grant as an income source in both periods (10 NDC vs. 32 Non-NDC). In contrast, more NDC households indicated the child support grant as a source of income, second only to salaries and wages. The largest change for NDC households was the number of households that indicated the child support grant as an income source (from 56% to 65%).

Although not presented here, sub-group decompositions by gender of head of household and participant type revealed that more NDC female-headed households (74%) indicated salaries and wages as an income source followed by NDC male-headed households (67%). There were more female headed households who experienced a decrease in salaries and wages as an income source at the time of the study, than their NDC male headed household counterparts. These decreases where more significant for NDC beneficiaries than non-NDC beneficiaries, which may reflect loss of jobs related to the factory by NDC beneficiaries.

4.3.3 Household Income Diversification

Income diversification is not only important in helping us to understand the different sources of livelihoods that are available to households. Within the context of an evaluation, knowledge of the diversification of income allows us to understand the contribution that income streams from working in the factory have on the household’s socioeconomic status. That is, it also allows us to get a better understanding of the wage to household income causal pathway outlined in the theory of change.

In order to understand the level of income diversification at the household level, a basic summative income diversification index for both years was created. Figure 22, shows, for each type of household, the income diversification score before working for the factory and at the time of the survey. Out of the 23 sources of income that were presented to respondents, the household with the most diversification had four income sources. Only Non-NDC households reported not having an income source before or currently. On average, the majority of households had only one source of income 59%, before, which fell to 54% at the time of the study. An interesting finding is that NDC female-headed households have greater income diversity relative to any other sub-group in both periods. Income diversification for NDC female-headed households increased from 48% to 57%; an increase that was largely driven by increases in the number of female-headed households indicating the child support grant as a source of income at the time of the survey.
These findings on income sources and diversification have an important bearing on the type of interventions the Socio-Economic Innovation Partnerships (SEIP) DST programme should be investing in. The limited income diversification and reliance on wages and grant income underscores the importance of employment creating interventions. This is important given the instability of non-farm and farm incomes.

The low ranking of subsistence farming in a rural local municipality indicates that none of the respondents engaged in these activities previously or currently. Households in these communities do not seem to be using typical or expected farm and non-farm activities as a way of diversifying their incomes. This is particularly true for the activity that is meant to be supported by the NDC intervention, namely, the selling of fruit. Similar interventions should therefore try and find ways to leverage alternative income sources as a way of diversifying away from grant income. This can be done by investing in interventions like the NDC that include non-seasonal farm or non-farm activities that can provide sustained income throughout the year.

The potential of and the role that the factory is playing in the community in terms of providing a vent for household fruit produce has been recognised; and has provided a strong motivation of how the inclusive development objectives of the SEIP can be achieved. Whilst the benefits that accrue to the factory workers can easily be measured and verified; the benefits to the community through supporting household activities, such as the selling of fruit, do not appear to be having the desired outcomes through channels that they are supposed stimulate. This result could simply be driven by the seasonality of the activity.
4.3.4 Household income and changes in per-capita income

This sections looks at household income before the NDC project and at the time of the study. Table 16 and Table 17 show that mean household monthly incomes were significantly lower for male NDC beneficiaries in both periods.

Table 16: Total monthly household income BEFORE 2010

<table>
<thead>
<tr>
<th></th>
<th>$N$</th>
<th>$\text{Sum}$</th>
<th>$\text{Mean}$</th>
<th>$\text{Median}$</th>
<th>$\text{Standard Dev}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>NDC Male</td>
<td>31</td>
<td>R 62,765</td>
<td>R 2,025</td>
<td>R 1,751</td>
<td>R 1,393</td>
</tr>
<tr>
<td>NDC Female</td>
<td>45</td>
<td>R 102,272</td>
<td>R 2,737</td>
<td>R 1,251</td>
<td>R 2,593</td>
</tr>
<tr>
<td>Non-NDC Male</td>
<td>98</td>
<td>R 515,798</td>
<td>R 5,263</td>
<td>R 2,751</td>
<td>R 6,743</td>
</tr>
<tr>
<td>Non-NDC Female</td>
<td>92</td>
<td>R 336,296</td>
<td>R 3,655</td>
<td>R 2,251</td>
<td>R 4,308</td>
</tr>
<tr>
<td>Total</td>
<td>266</td>
<td>R 1,017,131</td>
<td>R 3,824</td>
<td>R 2,251</td>
<td>R 5,090</td>
</tr>
</tbody>
</table>

Source: Author Calculations

What is encouraging, however, is that these incomes increase by the current period and that this increase is significantly more for NDC female-headed households.

Table 17: Total monthly household income CURRENTLY 2016

<table>
<thead>
<tr>
<th></th>
<th>$N$</th>
<th>$\text{Sum}$</th>
<th>$\text{Mean}$</th>
<th>$\text{Median}$</th>
<th>$\text{Standard Dev}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>NDC Male</td>
<td>30</td>
<td>R 77,265</td>
<td>R 2,576</td>
<td>R 1,501</td>
<td>R 2,449</td>
</tr>
<tr>
<td>NDC Female</td>
<td>48</td>
<td>R 152,774</td>
<td>R 3,183</td>
<td>R 2,251</td>
<td>R 2,822</td>
</tr>
<tr>
<td>Non-NDC Male</td>
<td>99</td>
<td>R 540,299</td>
<td>R 5,458</td>
<td>R 2,751</td>
<td>R 6,431</td>
</tr>
<tr>
<td>Non-NDC Female</td>
<td>195</td>
<td>R 420,299</td>
<td>R 4,245</td>
<td>R 2,251</td>
<td>R 5,486</td>
</tr>
<tr>
<td>Total</td>
<td>276</td>
<td>R 1,190,635</td>
<td>R 4,314</td>
<td>R 2,751</td>
<td>R 5,293</td>
</tr>
</tbody>
</table>

Source: Author Calculations

In terms of trying to predict the poverty impact of an intervention the table shows average per-capita income and shows that whilst the results for Non-NDC are consistent with expectations of generally higher male-headed household per-capita incomes, for NDC beneficiaries, female-headed households had higher per-capita incomes in 2016. This finding is consistent with the finding in the previous section that showed that NDC female-headed households had more diversified income sources.

Table 18: Per-capita Income 2010/11

<table>
<thead>
<tr>
<th></th>
<th>$N$</th>
<th>$\text{Sum}$</th>
<th>$\text{Mean}$</th>
<th>$\text{Median}$</th>
<th>$\text{Standard Dev}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>NDC Male</td>
<td>31</td>
<td>R 16,361</td>
<td>R 528</td>
<td>R 350</td>
<td>R 549</td>
</tr>
<tr>
<td>NDC Female</td>
<td>45</td>
<td>R 23,677</td>
<td>R 526</td>
<td>R 344</td>
<td>R 560</td>
</tr>
<tr>
<td>Non-NDC Male</td>
<td>98</td>
<td>R 185,868</td>
<td>R 1,897</td>
<td>R 1,200</td>
<td>R 2,725</td>
</tr>
<tr>
<td>Non-NDC Female</td>
<td>92</td>
<td>R 109,474</td>
<td>R 1,190</td>
<td>R 584</td>
<td>R 1,525</td>
</tr>
<tr>
<td>Total</td>
<td>266</td>
<td>R 335,380</td>
<td>R 1,261</td>
<td>R 584</td>
<td>R 1,977</td>
</tr>
</tbody>
</table>

Source: Author Calculations
Table 19: Per-capita Income 2016 - Adjusted for inflation.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Sum</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>NDC Male</td>
<td>30</td>
<td>R 15,708</td>
<td>R 524</td>
<td>R 313</td>
<td>R 465</td>
</tr>
<tr>
<td>NDC Female</td>
<td>48</td>
<td>R 41,266</td>
<td>R 860</td>
<td>R 578</td>
<td>R 991</td>
</tr>
<tr>
<td>Non-NDC Male</td>
<td>99</td>
<td>R 186,739</td>
<td>R 1,886</td>
<td>R 1,251</td>
<td>R 2,673</td>
</tr>
<tr>
<td>Non-NDC Female</td>
<td>99</td>
<td>R 124,912</td>
<td>R 1,262</td>
<td>R 625</td>
<td>R 1,634</td>
</tr>
<tr>
<td>Total</td>
<td>276</td>
<td>R 368,625</td>
<td>R 1,336</td>
<td>R 732</td>
<td>R 1,978</td>
</tr>
</tbody>
</table>

Source: Author Calculations

4.4 Selection of beneficiaries

This section explores how beneficiaries were recruited to work at the factory. Not only will these findings help to incorporate better targeting designs in similar interventions, but they can also assist, in the context of this evaluation, in determining whether the poor/unemployed benefited from the NDC intervention. The way in which beneficiaries are recruited into development projects is important. There is consensus in the targeting literature that there is often a lack of clarity in the criteria and processes used to identify project participants (Morestin et al. 2009). Ideally, inclusive development interventions need to target those who are deemed to be most deserving and, in the context of employment creating interventions, it is important to find out how project beneficiaries learn about job opportunities. This information not only helps programme designers decide how best to target beneficiaries and which channels to use; but underpins an important assumption in the NDC theory of change, which assumes that the unemployed are targeted for factory jobs.

In order to understand how beneficiaries found out about work at the factory, respondents were asked to indicate who had told them about their current job. Figure 23, shows that generally, for both NDC and non-NDC beneficiaries, most people were told by friends and neighbours (47%). The results show that very few people in this sample found out about the job through other means such as municipal officials, councillors and government officials, social media, television, church or radio. A few indicated that no one had told them about the job while others had found out about the job in the newspapers. These results reveal that when it comes to access to information on employment, in this community, people rely heavily on social networks and engagements with friends, family and neighbours as compared to social media, television and other sources. This is consistent with the South African job search literature which finds that firms generally employ people through informal methods. Consequently, the way in which employers search for unskilled and semi-skilled workers may lead to an insider-outsider division within the labour market (Wittenberg 2002).
The figure also shows that more than half (58%) of the NDC beneficiaries indicated that they were told by friends and neighbours about work at the factory, as compared to just over a quarter (27%) for non-NDC beneficiaries. Only 11% of beneficiaries indicated that they found out about the job from newspapers and a few more revealed that no one told them about the job. These results show differences in the job search approach of these two groups, with NDC beneficiaries relying more on social networks than other conventional job search methods.

To find out whether these job search methods were the same at a community level, respondents were asked how people in that community generally found out about employment opportunities. The findings were similar to those reported at the individual level, with people in the community being said to generally finding out from neighbours (not related) or family members. Wittenberg (1999) and Wittenberg (2002) suggests that “contacts” may be important for obtaining access to jobs. The importance of contacts as a method of recruitment in South Africa was also noted in a study conducted by the International Labour Organisation which revealed that in recruiting workers, firms often used informal methods, with 41% relying on friends and relatives of existing workers, 26% used advertisements, 12% called on former workers, 7% came from direct applicants at the factory gate with only 0.3% from the “group’s data base” (Standing et al. 1996: p323).

**4.5 Recruitment Criteria**

One of the aims of the SEIP programme is to use interventions such as the NDC factory to target rural communities with the aim of creating employment for the poor and promoting economic benefits through
entrepreneurial support. This section specifically explores the recruitment criteria used to select people to work in the factory as a way of assessing whether the selection process was able to reach the poor.

**Figure 24: What recruitment criteria were used to select people for this job? (n = 77)**

![Graph showing recruitment criteria](image)

**Source: HSRC NDC Household Survey, Nkowankowa, Greater Tzaneen 2016**

Figure 24 shows that of the 77 NDC factory employees who answered the question, 73% indicated that they were randomly selected for the job. Although the socio-economic findings, together with the level of education seem to suggest that generally individuals with low income and low education status were recruited, this could have happened by chance, given the reported random nature of the selection process. In the absence of well-designed targeting criteria, there is a possibility that the non-poor might end up being recruited and in some instances they might benefit more than the poor (Domelen 2007). According to Coady et al. (2004), the leakage to the non-poor can be large, as they found that a significant number of development programmes in their study were in fact regressive with benefits being skewed towards the non-poor.

Respondents were also asked how they had been recruited and Table 20 shows a few of the self-reported ways in which people were recruited to work at the factory. An assessment of all the responses demonstrates the random nature of the recruitment process at the factory. The opened-ended responses clearly highlight the fact that the primary method of recruitment was recruiting people queuing at the factory gate followed by people being recruited through networks. There is a case where someone was already working as a cleaner and was told about the job at the factory by a friend and they were hired which is a form of job displacement. Ideally, employment creating interventions should target people who have relatively low probabilities of being employed elsewhere. This is usually measured by the duration of being unemployed.
Table 20: How were you recruited to work in the factory? (by gender)

<table>
<thead>
<tr>
<th>Gender</th>
<th>Method of recruitment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>I went there looking for a job and I was hired.</td>
</tr>
<tr>
<td>Male</td>
<td>I heard from one of the villagers, one sister told me that they need people here.</td>
</tr>
<tr>
<td>Male</td>
<td>Heard by community member that they are hiring.</td>
</tr>
<tr>
<td>Male</td>
<td>There was a white lady who was hiring at the gate and she needed people. I gave her my CV and then she took me in.</td>
</tr>
<tr>
<td>Male</td>
<td>I went there to market for the job. I found the security guard at the gate and I then asked him to call the white lady at the factory because I wanted to ask for a job that I knew I was being recruited.</td>
</tr>
<tr>
<td>Male</td>
<td>I went there to ask for a job with other people. We had to queue at the gate and that is how I was recruited.</td>
</tr>
<tr>
<td>Male</td>
<td>I was passing by on 19 December 2014. There were a lot of women I was the only men then they hired us.</td>
</tr>
<tr>
<td>Male</td>
<td>I was just passing by and the manager called me and offered me a job.</td>
</tr>
<tr>
<td>Male</td>
<td>I was going to market for the job and we met somebody who took our ID's and we got recruited.</td>
</tr>
<tr>
<td>Male</td>
<td>My neighbour told me to come.</td>
</tr>
<tr>
<td>Male</td>
<td>I heard neighbours say that they need people at the factory and went there to queue.</td>
</tr>
<tr>
<td>Female</td>
<td>I got a phone call from my friend that NDC need staff.</td>
</tr>
<tr>
<td>Female</td>
<td>My friend called me and told me that NDC is recruiting.</td>
</tr>
<tr>
<td>Female</td>
<td>I came to market because I was looking for a job. They were looking for people who were able to pick mangoes, I knew I couldn't do that, but I told myself I was going to try.</td>
</tr>
<tr>
<td>Female</td>
<td>My mother told me about the job.</td>
</tr>
<tr>
<td>Female</td>
<td>We were called and queued and we were employed in that way.</td>
</tr>
<tr>
<td>Female</td>
<td>I queued for work and I was given the work.</td>
</tr>
<tr>
<td>Female</td>
<td>We just came here to market and then I was recruited.</td>
</tr>
<tr>
<td>Female</td>
<td>I used to clean at the church and some friend told me that they were hiring at NDC I went and I was hired.</td>
</tr>
<tr>
<td>Female</td>
<td>She heard from a relative who has working at the factory.</td>
</tr>
<tr>
<td>Female</td>
<td>Was told by the supervisor who used to see me doing laundry to get food. Then she told me that the factory is hiring so then I came. That's how I got the job.</td>
</tr>
<tr>
<td>Female</td>
<td>Was told by my mom because the manager once worked with her.</td>
</tr>
<tr>
<td>Female</td>
<td>The[re] was someone working in the factory and she called me telling me that there are jobs available that's when I come.</td>
</tr>
<tr>
<td>Female</td>
<td>Random application and was employed.</td>
</tr>
</tbody>
</table>

Source: HSRC NDC Household Survey, Nkowankowa, Greater Tzaneen 2016

When asked what changes they would like to see in other similar interventions, NDC workers most frequently cited the selection criteria. This result suggests that there might have been issues with the recruitment criteria employed by the factory. Ideally, this kind of development intervention should factor in inclusive development principles in its design and implementation. It should aim for participatory and bottom-up approaches which take into account the needs of the community, rather than a hierarchical top-down approach.

Table 21, shows that the average employment duration at the factory was 18 months and that this differed for male and female workers. Male workers had an average duration of 20 months whilst women averaged 16 months. It’s not immediately clear why these duration of employment at the factory are different.
Table 21: Average duration of employment at the factory (Months)

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Sum</th>
<th>Mean</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>NDC Male</td>
<td>28</td>
<td>579</td>
<td>20.7</td>
<td>14.5</td>
</tr>
<tr>
<td>NDC Female</td>
<td>50</td>
<td>806</td>
<td>16.1</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>78</td>
<td>1385</td>
<td>17.8</td>
<td>15</td>
</tr>
</tbody>
</table>

4.6 Household and Personal Benefits from Working in the Factory

This section focuses on how NDC worker households benefited from them working at the factory. One of the core objectives of this development intervention is to create employment opportunities that will have an impact on the beneficiary's household, as well as the provision of sustainable livelihoods to the beneficiaries. The NDC intervention was meant to decrease unemployment and poverty, whilst creating more jobs that are sustained through social cohesion and equal value for all parties (Bredenkamp 2012).

The factory workers were asked whether they felt that their households had benefited from their working at the factory, and Figure 25, shows that of the 85 workers that answered this question, 90% indicated that their households had benefitted from their working on this job, with only 10% indicating that they had not.

Figure 25: Has your household benefited from you working on this job? (All n = 85)

Source: HSRC NDC Household Survey, Nkowankowa, Greater Tzaneen 2016

Respondents were then asked to indicate the nature of the benefits to the household. Of the 75 workers that answered this question, 92% said the benefit was through the provision of additional income to the household, whilst 8% mentioned access to employment as a benefit. This is directly linked to the first objective of the study which is “to assess to what extent, if at all, the operation of the factory contributed to the quality of life of beneficiaries and household members in Nkowankowa”. It is interesting to note...
that 90% of the respondents indicated additional income as one of the main personal benefits they had obtained from working at the factory. This was chosen amongst other options such as the job gave general training and skills development and working at the factory allowed access to better quality of life/wellbeing. The failure of the workers to identify skills development and training as a benefit is a bit surprising and might point to the relatively low skill requirements of their jobs or the absence of any structured and meaningful skills transfer and training.

4.6.1 Benefits to specific sub-groups and the community

A secondary objective of the study was aimed at observing the changes in the community related to other dimensions of the factory such as entrepreneur development, training, and access to a market for the immediate community. The workers were asked to identify who else they felt had benefited from the factory. Figure 26 shows that of the 68 NDC beneficiaries that responded to the question, 20% indicated that the other people who benefitted from the factory were the unemployed, 18% felt that the entire district had benefited, 17% identified the immediate community at ward level, 14% linked benefits to the poor in the community and 14% selected other.

Figure 26: Who else benefited from the factory? (NDC Only n = 68)

Source: HSRC NDC Household Survey, Nkowankowa, Greater Tzaneen 2016

Respondents were also asked whether they felt that the poor and the disadvantaged had benefited from the factory and in both cases about a third agreed. These low percentages with respect to workers from the factory identifying community benefit, might arise from the failure of factory workers to understand the indirect ways in which benefits from the factory accrue to the community. It could also be related to the existence of weak linkages between the factory and the recognition of indirect community level benefits.
4.7 On the Job Training

There is evidence to suggest that exposure to employment increases one's success in the labour market, this is in part mediated by the skills acquired on the job (Nordman & Pasquier-Doumer 2014). As such, on the job training becomes important in facilitating this skills transfer. In order to understand the level of on the job training at the factory, workers were asked whether they had received any training and Figure 27 shows that 69% of the workers indicated receiving some form of training.

Figure 27: Did you receive any training on this job (Factory workers only n = 86)?

![Pie chart showing 69% Yes and 31% No](Image)

Source: HSRC NDC Household Survey, Nkowankowa, Greater Tzaneen 2016

The results also indicate that training was mostly unaccredited and furthermore it was largely 'skills training' which within the context of the study was defined as training that is related to the things the worker would actually need to know to perform their respective job (see Figure 28).
With respect to the quality of training, respondents were asked to assess the extent to which it met their expectations. Of the 27 that responded to the question, 11% and 81% felt that it exceeded or met their expectations, with only 7% saying that the training had not met their expectations.

It’s also important to understand the extent to which the workers felt that the skills gained whilst working at the factory would assist them in looking for employment as it will determine the nature of job search behaviour. Figure 34 shows that the results are relatively mixed, albeit with 43% of the 54 respondents...
indicating that the skills acquired would have a positive value on job search and employment whilst 41% indicated no value to minor value.

**Figure 30:** What value has the SKILLS development or training received been for job searching and employment? (n = 54)

Respondents were asked to elaborate on their responses and Table 22 shows some of the reasons given. Generally it would appear that those who felt that the skills acquired had little value in job search and future employment seemed to ignore the importance of experience; choosing rather to focus on the perceived simplicity of the job as an indicator of the value they could derive from the job. Those that assigned a higher value seemed to recognise the depth of knowledge of fruit processing and some were able to make the connection of how the value of such knowledge can be useful in a similar fruit processing plant.

**Table 22: Value of skills acquired & reasons for response**

<table>
<thead>
<tr>
<th>Value of Skills Acquired</th>
<th>Reason for response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 No Value</td>
<td>I can’t go to the labour market with this skill looking for a job</td>
</tr>
<tr>
<td>2 No Value</td>
<td>It cannot help me in anything because I was not accredited</td>
</tr>
<tr>
<td>3 No Value</td>
<td>Picking up papers is something anyone can do</td>
</tr>
<tr>
<td>4 Minor Value</td>
<td>I can get a job in a similar factory</td>
</tr>
<tr>
<td>5 Minor Value</td>
<td>It was an easy job anyone can do</td>
</tr>
<tr>
<td>6 Neutral</td>
<td>If I got another job in a factory like this it will be an added advantage</td>
</tr>
<tr>
<td>7 Neutral</td>
<td>I came here knowing how to peel</td>
</tr>
<tr>
<td>8 Neutral</td>
<td>There are no jobs, if there were, I think the skill could be vital</td>
</tr>
<tr>
<td>9 Moderate Value</td>
<td>I can operate the machine when making a juice</td>
</tr>
<tr>
<td>10 Moderate Value</td>
<td>I can go and work at another fruit processing company</td>
</tr>
<tr>
<td>11 Moderate Value</td>
<td>I know the ripe mangoes</td>
</tr>
<tr>
<td>12 Moderate Value</td>
<td>I can look for a job is some factory if they are hiring</td>
</tr>
<tr>
<td>13 Major Value</td>
<td>I am learning a lot and when I am at home I can do that myself although I don't have machine</td>
</tr>
<tr>
<td>Value of Skills Acquired</td>
<td>Reasons response</td>
</tr>
<tr>
<td>-------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>14</td>
<td>Major Value</td>
</tr>
<tr>
<td></td>
<td>I learned a lot about mangoes</td>
</tr>
<tr>
<td>15</td>
<td>Major Value</td>
</tr>
<tr>
<td></td>
<td>I know how to dry mangoes</td>
</tr>
</tbody>
</table>

Given the existence of other fruit processing plants in Limpopo and the fact that, whether accredited or not the factory appears to have transferred some skills to the workers that can be meaningfully leveraged to find work elsewhere. Although the elementary nature of those skills would suggest that the advantage that the skills confer might be limited. It is hoped that the acquisition of a specific skill set would still contribute to more proactive job search into similar occupations in a way that broadens the range of options the worker has. Given the large number of workers who reported finding out about the work opportunity from friends and neighbours it is also hoped that proactive job search will increase the success of labour force participation.

4.8 Emerging Impacts of factory operations

To find out whether there were any perceived negative outcomes of the factory the beneficiaries were asked if there was anyone who was negatively affected by the factory operations

Figure 31: Was anyone negatively affected by the operations of this factory (NDC Only n = 86)

![Graph showing the number of people affected by the factory operations](image)

Source: HSRC NDC Household Survey, Nkowankowa, Greater Tzaneen 2016

Of the 86 NDC Beneficiaries that responded to this question, 60% indicated that no one was negatively affected by the operations of the factory, with 13% stating that they were people negatively affected, and just above one quarter (26%) said they don’t know and/or were unsure if anyone was negatively affected by the operations of this factory (Figure 31).

To understand how people were negatively affected, those that answered yes (13%, 12 workers) were asked to identify who and how the people had been affected. Almost all of those identified as having being negatively affected were employees of the factory, and all cases were related to ill treatment of workers. Some of the responses included being forced to work every day without a day off, employees being fired
without warning, and one respondent cited a case where someone was hit with a forklift and was not compensated or taken to the doctor. These findings, although raised by relatively few workers, do point to the failure of the factory management that existed at the time of the study, to adhere to regulations regarding employment guidelines and the enforcement of the Basic Conditions of Employment, as promulgated by the Department of Labour.

4.9 Self-assessed intervention changes

The implementation of development interventions is never perfect and in some cases the best way to understand how similar interventions can be improved is to ask project beneficiaries. Of the 57 respondents that answered this question, 32% said they would like to see improved selection criteria for employees, a few (19%) agreed that better project management was needed, 14% identified more training and 9% said that nothing needed to change and that the project was well implemented, and 2% said they would like to see assistance with access to markets (Figure 32).

Figure 32: Changes beneficiaries would like to see with regard to how such projects are implemented in the future. (Percent of cases n = 82)

Source: HSRC NDC Household Survey, Nkowankowa, Greater Tzaneen 2016

With respect to improved selection, changes can include better access to information about the availability of jobs in the factory and a clear eligibility criteria regarding who can apply for such jobs, as well as how people get appointed in the factory.

4.10 Other Fruit Processing factories in the community

The funding of the NDC by the DST was done under the assumption that the pre-cleaning phase that allowed the procurement of fruit directly from the community was a unique innovation. To understand the nature and level of the possible impact on the community it is important to isolate the influence of the
NDC from other factories in the local municipality. In order to get a sense of how unique the NDC intervention was, respondents were asked whether they were aware of similar factories in this community that were being run in a similar way.

Figure 33: Awareness of similar factories/companies in this community (NDC Only n = 87)

Of the 87 workers, 71% said that they are aware of similar factories in the community, with 29% saying that they are not aware of any such factories.

The isolation of possible impacts also requires assessing the extent to which other family members are employed in other factories. To this end, beneficiaries were asked whether any of their family members in their households worked for other factories. Of the 63 respondents, only 17% had family members in their household working elsewhere.

Of those who said that they or their family members had not worked for similar companies, there was a convergence of views with respect to the reasons why they have not worked there. Most respondents said that they could not get a job elsewhere, because to get a job a bribe or some form of payment was required. Furthermore, there was a convergence of views with respect to people indicating that they never heard of any vacancies in the other factories. Some also stated that they did not know about the others until they started working at the NDC. Interestingly, very few said that they were not interested in working for these factories or that the other factories did not employ similar people to NDC. This latter response provides a justification for this kind of intervention as it shows that individuals who would have otherwise gone unemployed had found jobs. More importantly, the few that indicated that they did not know of the other factories until they started working at NDC, represents the conclusion from the skills section that participation in the NDC factory could possibly broaden the range of employment options for beneficiaries.

4.1.1 Discussion on Benefits & Selection

This section focused on outcomes around the selection and benefits to beneficiaries as a result of working in the NDC factory, as well as the benefits to the community at large. The findings on selection criteria help
us understand the extent to which the recruitment might have conferred benefits to the non-poor. This is important for improving the design of similar interventions. Understanding how people find out about employment is vital to assess people’s access to information about job opportunities and the nature in which job search information is shared among community members. The latter is important for targeting purposes and the design of appropriate selection criteria. Furthermore, an understanding of the nature of the benefits that people and their households experience from working in the factory is essential to understanding the direct and indirect socio-economic outcomes and the possible impacts of the intervention.

Consistent with other studies, this evaluation found that there were no clear selection criteria with respect to who was recruited to work in the factory. The process was largely viewed as being random and although this increases the risk of selecting the non-poor, the socio-economic findings would suggest that this might not have been the case and that the NDC was able to recruit relatively deserving beneficiaries. This is more so when one looks at the educational profile of the beneficiaries relative to the non-beneficiaries. The lower levels of educational attainment might suggest potential challenges in accessing employment through conventional channels. This would explain why relatively fewer beneficiaries used the newspaper for job search. Although the role of networks in job search found in this study is corroborated by the empirical evidence, it also poses a challenge in terms of designing appropriate selection mechanisms. This is more so if the initial round of those who are successful is skewed to the non-poor, in as far as people of the same socio-economic status associate together, it means there is greater potential of recruiting less deserving workers.

One of the key recommendations based on the above findings from the study and from literature is that development interventions of this nature should have clear selection criteria and processes for identifying the poor to ensure that the most deserving people benefit from the intervention. Thus, better targeting mechanisms need to be in place to maximise benefits for the poor, thereby to achieving the objectives of the NDC and to avoid regressive outcomes. The relevant selection criteria will depend on the targeted sub-population that is consistent with the inclusive rural development objective of the SEIP. This can be as simple as specifying the gender, educational level, age and place of residence of who would qualify to work in the factory. Such criteria would also make it easier to monitor and assess compliance and, more importantly, will have the effect of ensuring that the relevant target population is reached.

The findings also highlight that one of the most important channels through which benefits are transmitted, both at the household and individual level, is through the wages that are received by the beneficiaries. This was shown by respondents indicating that the most significant benefit at both levels was the additional income to the household. The importance of the income channel as reported in this section can be triangulated to the findings in the income and expenditure sections of this report that report how respondents used wages from their employment in the factory.

Respondents were generally not able to identify negative outcomes of the factory at the community level. However, the few workers who cited negative outcomes, through the ill treatment of other employees at the factory, underscores the need for stricter monitoring and adherence to guidelines as set out in the basic conditions of employment legislation. These also can be integrated in the design of the intervention as guidelines that can be monitored.
4.1.2 Expenditure outcomes and quality of life

4.12.1 Expenditure Patterns of Households

One of the potential vectors of impact of a job creating intervention occurs through the wages that beneficiaries receive. In order to gain an understanding of the extent to which household expenditures changed as a result of their involvement in the factory, this section looks at expenditure patterns across a range of categories. Figure 34, shows results for respondents who indicated that their current job had made buying a given expenditure item more affordable. With respect to NDC beneficiary households, 54 (56%) indicated that working in the factory had made it easier to purchase certain goods and services, relative to 88 (31%) for the comparison group. The figure also shows a ranking of how they were spending their income, with food, utilities, clothing and education being selected by most respondents. It’s also important to note that across the top five household expenditure items, there were slightly more NDC beneficiaries reporting greater affordability on each expenditure item except for education.

**Figure 34: Percentage agreeing that working in their current job made buying this expenditure item more affordable.**

The findings on affordability are further supported by another indicator that was included in the survey, which asked the respondents to quantify the extent to which spending patterns had changed since they had started working in their current job. Figure 35 shows that of the 88 NDC households that responded to the question, 47% indicated that household spending patterns had significantly changed, this is relative to 30% for Non-NDC respondents, with 47% of the latter reporting that they were no changes in spending patterns.
In order to understand the qualitative nature of the change in expenditure patterns, respondents were asked to elaborate how spending had changed. For NDC beneficiaries, from the qualitative responses, the following, as articulated by the respondents, were the commonest themes across the entire data set,

- Food Security and Clothing
- Asset Accumulation
- Education and early childhood development (ECD)
- Sustainable Livelihoods/Savings/Social cohesion
- Labour market participation/Sources of income
- Quality of life

The most prominent theme is **food security**, which confirms the results from the above quantitative analysis on affordability. Other important themes that emerged were around the use of income for **asset accumulation** and **education/ECD**. The theme around **labour market participation** and **sources of income** highlights the ability of an employment inducing intervention to switch the unemployed from low wage jobs and those in marginal subsistence pursuits, to relatively decent forms of employment. The theme around **sustainable livelihoods/savings and social cohesion** shows how the benefits from such development interventions impact different areas of an individual’s life in unanticipated ways. For example, there is a beneficiary who was able to reunite with his children due to having waged employment. It is generally known (see Winston, 2014; Martinez-Martin, et al. 2012 and Abbas et al. 2012) that access to health care and the type of dwelling have a bearing on a household’s quality of life. To this
end it is therefore encouraging to see quality of life as an emerging theme in the findings of this study as some individuals reported being able to access health care and making improvements to their dwellings.

In as far as these themes show areas of positive outcomes, there is also evidence of the extent to which these outcomes are not sustained once individuals are no longer employed. This is seen in responses from former factory workers, who can no longer buy food or pay for transportation for their children to go to school.

The following are some of the responses from the study participant’s that have been clustered according to the identified emerging themes.

**Food Security and Clothing**
- “I was able to buy household necessities such as uniform, electricity and food.”
- “When she was working at the factory in 2015 she was able to buy additional food and clothing for her daughter.”
- “We were able to buy a huge amount of food and we were able to also buy snacks for the kids.”
- “I go to bed with food on the table, I can now provide for my children.”

**Asset Accumulation**
- “I bought [a] TV for my family.”
- “I bought a TV with the NDC money.”
- “I was assisting in paying the fridge instalment.”
- “I paid cash for my fridge.”

**Education and ECD**
- “I was able to pay transport for my kids but now they are walking to school.”
- “Can afford the crèche.”
- “I can afford to take children to school.”

**Sustainable Livelihoods/Savings/Social cohesion**
- “I do stokvel and [am] able to buy groceries which will last for 12 months.”
- “I am able to save money”
- “I don’t ask [for] food from my neighbours.”
- “I was told not to see my children but after I got a job at the factory I was told to see them and reunited with [them].”
- “I am now able to send money to my brother who is not staying with me.”

**Labour market participation/Sources of income**
- “I am earning much better, it’s unlike the time when I wasn’t working.”
- “I don’t do fishing anymore.”

**Quality of life**
- “Better access to health care - I was able to take my mom to doctors since she has a problem with her legs.”
- “Pocket money for children.”
- “Building material.”
- “She managed to buy a building material and built a house.”
• “I bought cement.”
• “I build my house.”

4.12.2 Asset Accumulation

The evaluation also sought to understand the extent to which participation in waged employment would induce or contribute towards asset accumulation. Sixty-three respondents, 65% of NDC beneficiaries, indicated that working at the factory had contributed to their acquisition of some asset. The most commonly acquired assets were cell phones, 51%, television, 40%, and electric stove, 37% (Figure 46).

Figure 36: NDC Households indicating that working for the factory assisted with acquiring assets. n = 63

![Bar chart showing asset accumulation](chart.png)

Source: HSRC NDC Household Survey, Nkowankowa, Greater Tzaneen 2016

4.12.3 Subjective measures of poverty

Respondents were asked to say whether they felt their household was poor or not and Figure 37, shows that 72% of NDC beneficiaries felt that they were poor, relative to 48% for Non-NDC study participants. The association between beneficiary type and self-assessed socio-economic status was statistically significant at the 5% level. Subjective measures of poverty are usually based on an individual’s assessment across a number of factors and can be important in determining the socio-economic status of the household. This assessment, within the context of an inclusive development intervention, is important in ensuring that deserving beneficiaries have been targeted.
Figure 37: Do you consider your household to be poor?

![Bar chart showing percentage of households considering themselves poor](chart)

Source: HSRC NDC Household Survey, Nkowankowa, Greater Tzaneen 2016

In order to get a better understanding of how the self-assessed socio-economic status of the respondents had changed after they had started working, they were asked to imagine a six step ladder, where the poorest people in South Africa stand on the bottom or first step, and the richest people stand on the highest or the sixth step. Respondents were then asked to indicate on which step their household was before the beneficiary or head of household, for non-NDC beneficiaries, started working in their current job. A second question then asked them to rank on which step they felt they were at the time of the survey.

Figure 44 shows an improvement in the subjective poverty ranking of NDC beneficiaries, with the number of those who felt that they were at the bottom of the ladder, decreasing from 34% to 18%, a change that was statistically significant at the 5% level. Whilst the percentage of those who felt that their household was on the second rung did not change, the percentage of those who felt that their household was now on the third rung of the ladder increased from 18% to 32%. This is in contrast to non-NDC beneficiaries (not shown) who, although they experienced marginal gains, exhibited a profile that was largely similar before and after.
Figure 38: On which step of the 6 step ladder was your household before you started working and today in your current job?

Source: HSRC NDC Household Survey, Nkowankowa, Greater Tzaneen 2016

The above figure does not give us a good sense of the composition of the shifts in perceptions. To understand the nature of these transitions beneficiary responses where further decomposed using transitions probability matrices. Figure 39, shows that of the 95 factory workers that had responses for the two periods, 43% (41) experienced a positive change in their ranking, with 29% (28) experiencing a one-step movement up the poverty ladder and 14% (13) moving 2 steps up. Fewer NDC beneficiary workers (14%, 13) experienced a negative shift in their position, with 6% feeling that they had moved 1 and 2 rungs down, respectively. The figure also shows that they were no perceived changes in socio-economic status for 43% of the beneficiaries. When we net out those who experienced a positive transition vs. those who experienced a negative transition we find a net positive change of 29%. With 59% of beneficiaries reporting that they life had changed for the better due to working in the factory, it makes the association between these transitions in self-assessed socio-economic status outcomes more likely. This association represents a positive outcome arising from their participation in the demonstration intervention.
4.12.4 Objective poverty dynamics

Given the importance of income as a primary channel through which the NDC intervention impacts beneficiaries, it was important to complement the subjective analysis in the previous section with an objective assessment of the socio-economic status of the household. The degree of convergence between the two would then give us a better sense of the possible impact that the factory has had on the socio-economic status of beneficiaries. To do this assessment respondents were asked to give the total household income before they started working at the factory (2011) and to also report on their current total household income, these two amounts were then used in the analysis. The methodology section discussed at length, the rationale behind this approach, highlighted both the weaknesses and justification for this approach and will not discuss these in this section.

To take into account the effects of inflation, reported income from 2016 was deflated, to 2011 prices, using the relevant Statistics South Africa (StatsSA) consumer price indices. The headcount poverty index was then calculated using the StatsSA upper bound poverty line for 2011 which stood at R620 per month per capita consumption. This is the per capita income that would have been needed to keep each individual in the household out of poverty. Transition probability matrices where then calculated to assess how beneficiary households had fared between the two periods.

Figure 40, summarises the results from the transitions probability matrices, it shows that of the 97 beneficiaries, 75 had information for both years and where included in the analysis. From the figure we can see that 63% (47 households) had the same poverty status before and at the time of the survey, with 53% of them coming from female headed households. Of the households that did not change their status, 36 of them remained poor (48% of all households). With respect to those households that changed their poverty status, 20 households (27% of all households) managed to transition out of poverty. This positive

Source: Calculations Authors, HSRC NDC Household Survey, Nkowankowa, Greater Tzaneen 2016
change was offset by 8 households that transitioned into poverty. With the latter representing a smaller proportion (11% of all households) there was a positive net transition which represents 12 households.

Figure 40: Poverty Transitions NDC beneficiaries (n = 75)

These results appear to collaborate those of the subjective changes in socioeconomic status, since both are showing a positive net transition. However, there are notable differences in the magnitude of the changes with the self-assessed changes reflecting large transitions than the objective measures. If we simply focus on the net change, it might be tempting to conclude that the self-assessed measure overestimates the change in socio-economic status. However, we need to remember that the two measures are constructed differently, the subjective measure simply registers any movement up or down the socio-economic ladder as a positive or negative transition respectively. This means if a household moved from step 1 to step 2 we would count this as a positive change, even though it could be argued that this household is still poor. This is in contrast to the transition probabilities based on the headcount poverty measure that are simply telling us of movements above and below the poverty line. The self-assessed poverty status thus gives us a better sense of the gradient of change.

One of the reasons why we assessed the level of income diversification was to allow us to isolate the contribution that income from the factory made in facilitating these transitions out of poverty. Recall that from section 4.3.3, it was noted that the most significant changes in income diversification was seen in female headed households who witnessed an increase in grants as a source of income. This additional income could also be contributing to the higher number of them transitioning out of poverty, see Figure 40. It could therefore be tempting to conclude that the waged income from factory would have been insufficient to lift these households out of poverty. However, it should be recognised that the converse is
true, in the absence of the wage income from, the grant receiving households might not have transitioned out of poverty. This outcome shows the complimentary nature of a government intervention and state supported social protection.

To objectively understand the nature of the change below the poverty line, we need to turn to two other objective poverty measures. The poverty gap ratio which measures the depth of poverty, that is how far the poor are from the poverty line and the squared poverty gap ratio which measures the severity of poverty, how poor are the poor. These measures will then give us a sense of whether the lower graded positive transitions from the self-assessed poverty measure can be collaborate by a more objective measure.

The figure below shows the headcount poverty ratio which was used to calculate the above poverty transition probabilities, together with the poverty depth and severity measures. Two of sets poverty measures are reported using two poverty lines, the 2009 lower bound food poverty line of R418, as recommended by the National Planning Commission as the official poverty-line used in the NDP (NDP, 2011, p.3) and the 2011, R620 upper bound food poverty line as used by StatsSA as the official poverty line. The headcount poverty ratio shows the prevalence of poverty, and this is the popular headline poverty indicator that is used by most countries, including South Africa, to report on national levels of poverty.

**Figure 41: Poverty Measures Headcount, Depth and Severity: R418 Poverty-line (NDP) and R620 line**

![Poverty Measures Headcount, Depth and Severity: R418 Poverty-line (NDP) and R620 line](image)

*Source: Author Calculations, HSRC NDC Household Survey, Nkowankowa, Greater Tzaneen 2016*

The figure shows that the poverty levels for NDC beneficiaries were relatively high before they started working in the factory, with 83% of households living below the poverty line. The prevalence of poverty then fell to 58%. At the same time we see that the depth of poverty also decreased from 48% to 32%; together with the severity of poverty (from 33% to 21%). Using the R418 line we also see decreases in the prevalence, depth and severity of poverty. Since this poverty line is lower than the upper bound poverty
line it shows that the intervention was able to pull poorer households out of poverty. The latter would then collaborate the results from the subjective measure since the poverty severity measure is only sensitive to those who are furthest from the poverty line. We can therefore conclude that this outcome collaborates the lower graded positive transitions captured by the subjective measure of socio-economic status especially those at the lower end of the ladder. As motivated in the methods section, in the absence of baseline data this triangulation is important and the convergence of both the subjective and objective indicators allows to get a better sense of the extent to which we can link these outcomes to the intervention.

4.12.5 Exiting out of poverty
Poverty eradication has been an aspiration of many development frameworks both nationally and internationally. Most government interventions are aimed at either alleviating or eradicating poverty, furthermore the goal of poverty alleviation tends to be a long term impact of government interventions. To understand the poverty exit paths of beneficiaries before they started working and at the time of the survey we use the Watts index, a distributionally sensitive poverty measures, to estimate time taken to exit out of poverty. We do this by dividing the index with the growth rate, using per capita income during before and after they had started working at the factory (Haughton & Khandker, 2009). Figure 42, takes a number of growth rates to assess the average amount of time it would have taken NDC beneficiaries to exit poverty. Assuming everything else is held constant, with a 1% growth in per capita income, it would have taken 84 years for NDC beneficiaries to exit out of poverty before being recruited to work at the factory. Using the Watts index based on 2016 incomes, exits out of poverty drop to 50 years and with a growth rate of 2% exits out of poverty are halved to 25 years. Although 1% growth appears to be relatively low, the reality of the matter is that South Africa has had a lacklustre growth rate over the past three years, growing by 1.3% in 2015, down from 1.5% in 2014 and 2.2% in 2013. It is therefore important to understand that whilst a government intervention might have some impact on poverty, in the absence of complimentary growth poverty will remain fairly persistent. Nonetheless, this analysis helps to highlight a more dynamic outcome of the intervention that is often neglected in these kinds of evaluations, that is the extent to which an income generating intervention can shorten long run transitions out of poverty.

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4.12.6 Inequality

Inequality is one of South Africa's triple challenges, and to understand the level of inequality amongst NDC beneficiary households, before and after working for the factory, the Gini coefficient was computed. The table below shows that the Gini, which is often reported as a percentage, fell from 53% to 43% and these results are found to be statistically significant (p-value = 0.000***). This represents a drop in the level of inequality amongst beneficiary households. Together with the decrease in poverty levels and ignoring issues related to seasonality, this shows that not only does the intervention have a positive effect on the latter but it also has the ability to lower inequality.

|       | Gini | Std. Err. | P>|t|  | [95% Conf. | Interval |
|-------|------|-----------|-----|----|----------------|----------|
| Before| 0.53 | 0.0319    | 0.000| 0.465| 0.590           |
| After | 0.43 | 0.0171    | 0.000| 0.400| 0.466           |

Source: Author Calculations, HSRC NDC Household Survey, Nkowankowa, Greater Tzaneen 2016

4.12.7 Assessments of quality of life

This section directly assesses beneficiary perceptions of changes in their quality of life and tries to link the extent to which these changes can be attributed to them working at the factory. When respondents were asked to rate the overall quality of their lives, with respect to housing, food, water, and availability of work, there was a significant number who felt that life was currently less than adequate, 58%, NDC and 46% Non-NDC, see Figure 43. Error! Reference source not found. Adequacy refers to both quality and quantity and being relatively dissatisfied or finding both unacceptable might indicate that although people are generally happy that they are working at the factory, their current circumstances might not be...
commensurate with where they would want to be. This might not necessarily be a bad outcome in relation to the benefit that they might be deriving from working in the factory. The latter can be seen from the fact that when they were asked to make a direct comparison between the time when they were not working and at the time of the survey, 63% of NDC beneficiaries felt that they were better off relative to 33% of the Non-NDC (see figure below) and the association between respondent type and household status was statistically significant ($p = 0.001^{***}$). This also collaborates the changes in respondents’ subjective assessment of socio-economic status discussed in the previous section.

Figure 43: How would you rate your overall quality of life right now?

![Quality of Life Chart]

Source: HSRC NDC Household Survey, Nkowankowa, Greater Tzaneen 2016

Respondents were also asked to elaborate on the reason for the change and of the 46 beneficiaries that answered the question, 59% mentioned working in the factory as the main reason for the change (Figure 45).
Figure 44: Compared to your household’s situation before you started working in your current job, do you feel that you and your family is better off, the same or worse off?

Source: HSRC NDC Household Survey, Nkowankowa, Greater Tzaneen 2016

Figure 45: Main reason for change for the better NDC only

Source: HSRC NDC Household Survey, Nkowankowa, Greater Tzaneen 2016
Perceptions of changes in quality of life were further explored by asking respondents whether they were happier now compared to the time they were not working. More NDC beneficiaries were generally happier with their lives than the non-beneficiaries (Figure 46); with 54% indicating that they were happier compared to 34% of the non-NDC beneficiaries. The same proportion of respondents felt that they were actually less happy (38% NDC and 39% Non-NDC) than at the time they started working for the factory/or in their current job. For NDC beneficiaries it could be explained by the fact that they were some who were no longer working at the factory at the time of the survey. Further analysis revealed that happiness was strongly correlated to the employment status of the head of household, for both NDC and Non-NDC, with households with an unemployed head more likely to report being less happy. This result was statistically significant ($p = 0.012^*$) for NDC beneficiaries.

**Figure 46: Are you happier or less happy with life compared to the time when you were not working in your current job?**

![Figure 46: Are you happier or less happy with life compared to the time when you were not working in your current job?](image)

*Source: HSRC NDC Household Survey, Nkowankowa, Greater Tzaneen 2016*

Figure 45 shows that NDC beneficiaries thought working in the factory (25%) or having more money (10%) was the main reason for changes for the better in their houseold. For non-beneficiary households, having more money was given as the main reason for positive change. Non-NDC households also reported having smaller households now, as reason for being better off.

For beneficiaries, working in the factory and the ability to buy food and pay school fees were cited as the major reasons for the improvements in their families. While for non-beneficiaries, many referred to having their own money, which affords them the opportunity to own a house, as the major reason for improvement in the family.

When considering negative changes, more of those who were non-NDC beneficiaries thought that there were few jobs in their area (26%) than those who were working in the factory (7%). Beneficiaries’
unemployment made their families worse off than when they were working in the factory. Both unemployed beneficiaries and non-beneficiaries depend on social grants.

4.13 Health, Food and Nutrition Security Outcomes

This section looks at health, food and nutrition security which are indicators that show a strong correlation with poverty. Deprivation across this cluster of indicators generally represents exposure to extreme vulnerability. Wage income can have an impact on these deprivations as money has the potential to increase access to both food and health care (Sen 1981). The section on income and household expenditure has already highlighted that a number of the respondents reported being able to buy food as a result of wages from the factory. This section presents evidence of direct indicators that give us a better sense of how access to food changed before and after beneficiaries started working at the factory, as a way of showing whether food and health outcomes were affected by participation in waged employment.

4.13.1 Levels of extreme vulnerability

There is a strong link between child mortality and poverty, with evidence showing significant differences between infant mortality in rich relative to poor households. The differences in mortality between the two types of households can be as high as four fold (Reading 1997). Furthermore, children who live below the income poverty line for multiple years have been found to suffer the worst outcomes, for example, mortality and growth stunting (Brooks-Gunn & Duncan 1997). The link between income poverty and child mortality has also been found to be strongest in Africa relative to other parts of the world (Klasen 2008).

The results from this study show relatively high levels of child mortality within such a small population. The figure below shows that both types of households had experienced the death of a child under 5 within the last 12 months, with NDC beneficiary households being slightly lower (9%) than their Non-NDC counterparts (14%). These figures represent a rate of child mortality that is higher than the national norm (UNICEF 2015) and could indicate relatively high levels of vulnerability.

Figure 47: Death of a child under the age of 5 (n = 305)

Source: HSRC NDC Household Survey, Nkowankowa, Greater Tzaneen 2016
4.13.2 Food and Nutrition Outcomes

As indicated in the methods section the 10 indicators from the HFIAS where adapted for this study and together assess food consumption patterns, nutrient availability and household food intake. The HFIAS is ideal for this assessment because not only does it comprehensively capture issues around absolute food deprivation (i.e. hunger) and food and nutrition insecurity, but when asked retrospectively, pre and post intervention, it also assesses changes in the households’ access to food. The results in the expenditure section showed that expenditure on food increased as a result of NDC workers participating in the intervention. Furthermore, these increases in food expenditure where linked to direct involvement in the factory and some of the qualitative responses also showed accounts of respondents describing how they were able to purchase food. This analysis brings us full circle as it deepens our understanding of whether this increased food expenditure managed to contribute to beneficiary household food access and food security.

To operationalise the HFIAS respondents were asked the extent to which their family had experienced the following (i.e. Never, Sometimes and Always). The questions were framed as follows, was there a time when...

1. The family was worried that it would run out of food?
2. The family was unable to eat healthy and nutritious food? (More than 5 of the 9 food groups in a day)
3. The family ate only a few kinds of foods?
4. Some family members had to skip a meal?
5. The family ate less than it thought it should?
6. Your household ran out of food?
7. Someone in the family was hungry but did not eat?
8. Someone in the family went without eating for a whole day?
9. Did not eat healthy and nutritious foods because of a lack of money or other resources?
10. Was not given enough food because of a lack of money or other resources?

Respondent’s assessments were based on their experiences before they had started working for the factory relative to the time of the survey. In order to gain a better understanding of the shifts in food nutrition and the security status of households, before and after, we computed transition probability matrices for all 10 indicators. The results across all 10 show that whilst there are relatively small changes in the experience of the food insecurity status of non-NDC beneficiaries, they were more NDC households that experienced positive shifts in their status across all indicators.

The largest positive gains were experienced with respect to indicator 2 (The family was unable to eat healthy and nutritious food?) with 25% of households, who were previously deprived in this indicator, being able to eat healthy and nutritious food, see Table 24. Seven percent of the NDC beneficiary households experienced a regression with respect to this indicator. Sixty nine percent had no change in their status between the two periods, with 37% of them remaining food secure in both periods, 27% remained marginally insecure whilst 4% remained with this food deprivation in both periods (i.e. always experiencing this deprivation).

Most of the indicators that witnessed relatively small improvements in the status of the household were related to absolute deprivations, that is, either the lack of food in the household or running out of food. For example, 13% of households experienced a reduction in a household member skipping a meal, see
Table 24. This was offset by 8% of households that had at least one family member having to skip a meal, the latter gave the lowest net positive change of 5%.

Table 24: Transitions: Unable to eat healthy and nutritious & someone skipped a meal

<table>
<thead>
<tr>
<th>% 2. Transitions: Unable to eat healthy &amp; nutritious</th>
<th>n</th>
<th>% 4. Transitions: Someone skipped a meal</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>25% were now able to eat healthy &amp; nutritious food</td>
<td>22</td>
<td>13% experienced a reduction in meals skipped</td>
<td>11</td>
</tr>
<tr>
<td>7% were unable to eat healthy &amp; nutritious food</td>
<td>6</td>
<td>8% experienced an increase in meals skipped</td>
<td>7</td>
</tr>
<tr>
<td>18% represents positive net change</td>
<td>16</td>
<td>5% represents positive net change</td>
<td>4</td>
</tr>
<tr>
<td>69% had no change in their status between the two periods</td>
<td>61</td>
<td>80% had no change in their status between the two periods</td>
<td>70</td>
</tr>
<tr>
<td>37% remained food secure relative to this indicator</td>
<td>33</td>
<td>52% remained food secure relative to this indicator</td>
<td>46</td>
</tr>
<tr>
<td>27% remained marginally insecure (both periods)</td>
<td>24</td>
<td>23% remained marginally insecure (both periods)</td>
<td>20</td>
</tr>
<tr>
<td>4% remained with this food deprivation (both periods)</td>
<td>4</td>
<td>5% remained with this food deprivation (both periods)</td>
<td>4</td>
</tr>
</tbody>
</table>

Households which indicated that someone in the family had gone without eating (indicator 7) were asked about the main reason for going hungry. Across both the beneficiaries and non-NDC beneficiaries, insufficient funds to purchase food was given as the main reason someone went hungry and did not eat, as well as someone in the family going without eating for the entire day (indicator 8) (Figure 48). Further analysis suggests that 95% and 90% of these respondents were NDC male-headed and NDC female-headed households, respectively. The link between money and food deprivation further underscores the important role that wage income plays in the food security of the household, highlighting the importance of the waged employment of the NDC factory.

Figure 48: Main reason for hunger (NDC = 57 and Non-NDC = 81)

Source: HSRC NDC Household Survey, Nkowankowa, Greater Tzaneen 2016

To further deepen our understanding of the latter relationship, between employment and food insecurity, respondents were asked the extent to which their current job had helped to reduce incidences of hunger, see Figure 49.
The results of indicator 2 and 3 (The family ate only a few kinds of foods, see Appendix 1) and the beneficiary association of changes in food outcomes to their job at the factory, suggest that this intervention might have made a positive contribution towards, Outcome 7: Vibrant, equitable and sustainable rural communities and food security for all, and specifically, Output 2: Improved access to affordable and diverse food (Government of South Africa, 2010c). Furthermore, the positive net gains across all 10 indicators, suggests that working in the factory might have contributed to decreases in overall food and nutritional insecurity for beneficiary households, and thus also contributing to the food security dimensions of this outcome (see Appendix 1, for the results of the other 8 indicators). Despite these positive results it should be noted that the small changes seen in the indicators related to absolute deprivation and reported experiences of hunger, would suggest limits to the extent that the intervention can contribute to reducing levels of hunger.

4.14 Focus Group Discussions

4.14.1 Community Focus Group 1

Two focus group discussions (FGD) were held in March 2016: one comprised only women and the other both men and women. Participants were aged between 20 and 50 years of age and were randomly chosen by the area Ward Councillor, a woman. The participants provided input through group discussions only.

In line with the ToC which sees the factory transferring benefits to the community, the discussion was designed to gather information from participants with regard to the following issues:

- general knowledge of mango farming and processing in the area;
- knowledge about the existence and operation of the NDC factory;
- perceptions of the fairness of the recruitment process for the factory; and
- perceptions of the usefulness of the factory to the community.
General Knowledge of mango farming in Nkowankowa

- “Many homes in Nkowankowa have mango trees. Some of these trees are planted and cared for by the home owners, others are part of the natural vegetation of the area. This is a source of income for many people because they are able to sell the mangoes to the factories and get money for use at home.”

- “During mango season, these mangoes start to bear fruits, it then ripens so when we see that they are now ready for the market, we sell them.”

- “The raw mangoes are taken to the achar factories. The ripe mangoes are taken to the juice factories”

- “The money is useful to give children pocket money when they go to school and to buy some food and groceries.”

- “The mangoes are also used to make dry fruit which we call Muwhapa, which means dried fruits.”

- “You can eat that Muwhapa after mango season and it will still feel fresh.”

- “Sometimes people come with their bakkies to collect these mangoes; however it’s up to you if you then decide to give them for free or you sell them.”

Knowledge about the existence and operation of the NDC factory

The group was asked about their knowledge of the existence of the NDC factory. One respondent said she had never heard of the factory before. One member said she had never heard of this particular factory. Another said he knows about the factory and had taken mangoes there before.

“I once took my mangoes to the factory as well after I was introduced to the factory by someone I know. During the season when I had mangoes in my yard, I took them there. What they did is that when they weigh your mangoes, they also check the quality; they don’t just take any mangoes that they see.”

“All these factories that you see here, I know them because they are always looking for mangoes and since I have mangoes at home, I saw it necessary for me to know them. That is why I took my mangoes so that I can be able to get money and buy things that I want.”

Perception of the fairness of the recruitment process for the factory

The employment aspect of the factory was generally felt to be a problem in the group. The notion of the factory employing “foreigners” instead of locals was also widely repeated in the discussion. The concept of a “foreigner” here was understood to be anyone who does not come from the Nkowankowa area. People from Modjadji, for example, were particularly singled out as foreigners in the discussion. At the same time it should be noted that respondents appeared to making generalisations with respect to the hiring of foreigners at the factory.

“But when they want to employ, hey it is very difficult to know that they are looking for people to come and work and that annoys me very much”
“What has affected me a lot is that, this factory considers hiring only foreigners and excludes local community members, to my surprise is that, we are the ones supplying them with mangoes, but why do they not hire us.”

“They should also avoid hiring foreigners, because these people says yes to any job they are given because they want money, so they know that we South Africans we wouldn’t agree to do that kind of a job and be given R50. They should hire people who are qualified, and who will be able to hire people regardless of where they come from, because people who are working at NDC when they are told to recruit other members, they look for people who are not a threat to them or their relatives.”

Another issue with employment was the issue of qualifications. Some members of the group felt that the factory was afraid to hire people with qualifications.

“Another thing is that, sometimes when we submit our CVs, if they check your CV and see that you are over qualified for that job, they threw them away, and imagine CVs are expensive. They threw these CVs because they are afraid that you might take their jobs. Sometimes they just look at your CV and see that you meet the requirement they want, but they will choose their relatives who are under qualified.”

It was felt that the people who are benefiting the most from the factory are the ones who are working there. So it is not of much benefit to the locals here because very few of them work in the factory. The procedure used to hire people was reportedly very unfair because the factory asks the workers to bring their friends and relatives when they have jobs.

“What they do is that, if you are already working in the factory, they will tell you to come with a person or people you know that needs jobs to come and work. So if you are not friends or you don’t know anyone who is working in the factory, then it means you are not going to be hired.”

“only few members of the community have benefited from the factory, but it seems like they favour foreigners.”

**Perception of the usefulness of the factory to the community**

Part of the group was of the opinion that the factory was really helping because even when people do not work there, they can supply the factory with mangoes and still get something.

“Mango fruits are just a seasonal thing, so we only supply during that particular season. So when the season is over we have nothing to supply, so look what is going to happen to us? Because the majority of the people in the community are not working, about 90% of the community members don’t have jobs. I have completed my studies 15 years ago (matric) and I don’t have a job, 14 years I have been volunteering, and the community is looking up to me but I am not working. What I can say is that, at least if NDC can consider people like us it would have been much better. I also have a B in agricultural sciences.”

The biggest difference cited was the closeness of the factory to the community.

“Yes there is a difference, since NDC is situated in our area, it belongs to us. NDC assist in poverty reduction, but it is just for two to three months so what about the other 9 months. One month I was able to get R88 from one factory, so here at least I can sometimes get R200 for that period, but hey we are really suffering.”
The group was in agreement that there is poverty in the area. It was also agreed that the factory cannot cover all the people in the community. A suggestion from the group was that the factory should not be making pulp only; they should consider making juice as well, so that they can create more jobs. This way the community will gain more because they will also need people who are going to make juice and package their products until the new mango season begins.

**Perceptions on Management of the factory**

The group emphasized that management at this factory is not good mainly because of the way they hire people.

“I want the factory to consider and hire people who are supplying mangoes to them, those that supply with their wheelbarrows. They shouldn’t hire people who don’t even go there to supply, because these people are not even helping them with anything.”

“If NDC was managed by the community, we wouldn’t be having people coming out of Modjadji coming to work here before local members would be considered first. We would then avoid situations where five members from the same family are hired in the factory while others are not.”

One participant felt that the factory would not be profitable if it was managed by the community.

“I think if NDC is managed by white people it is much better. I think they know how to run the business. The issue is only on the way they hire people. I think it will be the same stories, nepotism, people will still consider their family members first.”

“People know their people and we believe that we have a share in the project since it is in our area, so yes white people know how to run their business but they should also include the community members, like the way it was done when RDP houses were built, every builder and mechanic in the community was included, so we all benefited.”

4.14.2 **Community Focus Group 2**

**General knowledge of mango farming and processing in the area.**

Mango farming was said to be very beneficial in the area because the mangoes help people get achar and juice. People are able to sell the mangoes to the firms and with that money they can provide for the basic needs at home. The mangoes were reported to be mainly for the production of juice and dry fruit, “mowapa”.

**Knowledge about the existence and operation of the NDC factory**

There were varied levels of knowledge about the existence of the NDC factory. The following are some translated views about the existence of the factory.

P: I have never heard about NDC before is only now that I hear about it.

P: It's not for the first time I hear about the firm but I don’t know its name, I just know it as a firm which makes dry fruits. “Mowapa”
P: I just know it as a firm which makes Juices and Achar, that’s what I know.

P: I went there looking for a job but the day they were employing people I was not there and that’s how I knew it. It is known as “Mowapeng”

P: For me what I know about it is that they produce juice and dry fruits. As far as jobs are concerned, I can simply say there are no jobs at all. The only way for me to benefit is only if I supply the firm with mangoes and they give me the little money and I will see what I do with the money.

Most of the time when I supply the factory with mangoes, the money they give me I use it to buy toiletries.

**Perception of the usefulness of the factory to the community**

P: I think it is good that it operates, while they are busy making Achar they should be able to deliver it and sell it even in Gauteng. The dry fruits and Juice can also be sold there in Gauteng.

P: I think it will be good if the firm can grow and be able to employ more people. At the present moment the factory is not able to employ a large number of people.

P: I can say some do benefit because they are employed there. So it is my wish to see it growing and create more jobs.

**Perception of the fairness of the recruitment process for the factory**

There seemed to be uncertainty regarding the employment of people at the factory. While some participants said it was just a matter of knowing when they are employing and then submitting your CV, other participants seemed to have had very different experiences and opinions about the recruitment process. The following are some translations of the general discussion around getting employed at the factory

P: I don’t really know how they employ people.

P: To be employed in that firm, you should have money, if you don’t have money they will never employ you. They want R200.

P: I don’t know the person but I have been informed that it is one of the senior staff who you have to pay.

P: Yes, most of them paid to get those jobs. If you don’t have money you can’t even enter the gate. So what you will do is just to sit outside the factory the whole day because you don’t have R200 to bribe the person responsible for employment.

P: If you don’t have money you can’t work, you will just stay at home because you don’t have a bribe.

P: It’s a very bad thing because no money no job, and where will you get the money if you are not employed? It is not fair on us at all.

P: I can say only few around Nkowankowa who got the jobs. Majority of them are not from here. The local people are the ones who supply the factory with mangoes and they should be the ones given the jobs.
P: The way in which they employ people through bribe is not a good thing. We expect the factory to grow and we are not happy at all. We want the factory to fix things and employ the people. Today we hear that jobs are for sale and if you are not employed you can’t afford to buy the job at the factory.

P: When it comes to employment they only call or inform their friends and neighbours and some of us we will only find out late that the factory wanted people. So if they don’t know you they won’t tell you about the job opportunity. If you don’t have connection then you must just forget it. You must have money for a bribe if you want to work there.

P. You don’t have a job, it is obvious you can’t afford to buy the job; everything is expensive starting with food.

P. They want our ID book and we insert R200 inside, and if you don’t put that R200 in your ID book then your ID will come back and you will be told to go home, those who have that R200 they are the ones who get the jobs.

P. The money goes to the one who employs people, it doesn’t go to “Mlungu” it goes directly to the person we give ID books.

P. It’s a very bad situation because if you don’t have that R200 bribe, you have to go and borrow from your neighbour then when you get that job you pay back the R200 that you borrowed from the neighbour.

P. I think it will be better for the factory if they want to employ people they should engage the councillors and the community leaders like “Indunas” [traditional leaders] so they can be able to get people who can work in the factory and that will reduce bribes and enriching one person. The community leaders do not want money. Community leaders can get people for the factory.

What we normally do is this, we have a process which is used by the community to employ people, if they want 20 people, we write on a piece of paper. We write 20 Yes and 20 No, the community members who are looking for jobs will come and pick one piece of paper from the basket, if you pick NO then there is no job for you, if you pick Yes it means you got the job.

We also have the other one which we use and this is what we do. Community members bring their ID books and we put them in a basket, then we look for a child who is 6 years old, then the child will go and pick an ID book from the basket, the one that the child picks is the lucky one and that person then is automatically employed. The community see this practice as a very fair one and even if people are a thousand, only 20 can be picked and they are happy with that.

Management

The general sense conveyed was that there seem to be management problems that are visible to the community members. None of the focus group discussants had actually worked for the factory at any point but they had the following to say about the management of the factory.

P: The management is not good because they don’t even involve the local leaders about what they do in the factory. In this firm the only people who benefit are the people from far and that includes also the foreigners because to the foreigners any amount of money is okay, they don’t mind at all.
Income Generation

It was generally felt that if you are able to get a job at the factory you would be better off in terms of income. The discussants seemed to think that those who work at the factory are well paid. The following are some of their sentiments about income from the factory:

P: Well they say the money is not bad because they are able to sustain their lives and be able to buy some of the things that they could not afford to buy before.

P: The little that they get is the one from supplying the mangoes.

P: Those who work at the factory benefit because they have income.

P: I am not sure but all I can say is that the little they get is better.

Poverty

There was general consensus that the factory has helped reduce poverty in the area to a certain extent.

P: I think it does a little bit because the factory is able to employ people. If you check now, more especially during the mango season, when the community supply their mangoes, they at least get something though it is not enough.

P: Only a few who work there are able to get something and buy food at home but for us who do not work at the factory it is difficult still.

P: I wish the factory can grow big and create more jobs so that the people around will be able to get jobs, people from Dan, Nkowankowa and Mokholoboto. We know it will not grow within a day but slowly.

P: People are suffering here in Nkowankowa and we want the firm to grow and be able to reduce poverty. Some of us are only get something from the factory during the mango seasons. If there are no mangoes then we don’t get anything. We are suffering. It only gets better when it is mango season. We want the factory to keep running even if there are no mangoes so that people will have a better life.

P: To be honest with you, on that factory I did not benefit anything. I only get the money when I supply the mangoes to the factory and it is not even enough. I can’t buy anything with that money, it will be better if they can increase the money. Things are very expensive now.

P: We want the money to be increased. When there is too much supply they reduce the money, but when there is a shortage they increase.

P: I want the factory to grow, if possible they can get enough storage so that we don’t work three months and stop and with that money you can’t buy anything.

P: While people are busy working there it is better if they increase their salaries, things are expensive. Some people use transport to go to work, some take their children to school and it is expensive.
4.14.2.1 Discussion of community focus group findings

The community focus group was able to confirm the relevance of the NDC in Nkowankowa as participants made reference to the high prevalence of mangoes in the area. Participants were able to link potential benefits of selling fruit to agro fruit processors. Furthermore, participants also agreed that they was poverty in the area an observation that further underscores the relevance of the intervention in the local municipality.

With respect to knowledge of the NDC, the responses were mixed, with participants not knowing about the plant whilst other indicating that they had once sold their mangoes to the factory. This would suggest that the factory does have a foot print that is recognised within the community. The issues of recruitment further highlighted the awareness of the community of the factory and more importantly the recognition that the NDC can offer jobs. This was evidenced by most participants who complained that their felt the factory did not have a fair recruitment policy.

One of the long term impacts of the NDC as highlighted by the ToC is that in the long-run the factory would continue to generate a stream of benefits to the local community. This pathway was recognised by participants who felt that the NDC really helped people. At the same time there issue of the temporal nature of the benefits also came through with one member pointing out that the benefits were seasonal.

The proximity of the NDC to the community was also acknowledged and was seen as conferring a sense of ownership of the factory by the community.

It was also interesting to note that they were perceptions of the management being seen as being unfair, however, this was largely due to their hiring practices. Contrasting views emerged between two participants with one saying that community ownership of the factory would increase the flow of benefits to the local community. Another participant felt that the factory would not be profitable if run by the community.

CHANGES IN MANAGEMENT AND PARTICIPANT RESPONSES

The findings in the next sections should be read with the understanding that at the time of the evaluation, the factory was under interim management. In some cases respondents make reference to ‘the manager’ whilst on some occasions, the participant makes it clear which manager there are referring to, in other instances it’s not immediately obvious. The change in management happened in September 2016 when the former manager was suspended by DST due maladministration. The new interim manager came in on the 15th of September 2016.

4.14.3 Factory Workers Focus Group

This focus group discussion was held on Monday 7 March 2016 at the factory premises. There were 10 people who had worked at the factory in the group, three males and seven females.

4.14.4 Worker profile: employment requirements

The participants started the discussion by introducing themselves to the group.
P1 is from Rhulane location. He is a husband staying with his wife and children. He went to school up to standard 8. He started working for the NDC factory on 19 December 2014 and his contract was terminated on 1 September 2015. He worked in the juice department.

P2 is from Giyani. He went to school up to standard 2. He started working at the NDC factory last year on 5 January 2015. He is in the juice department.

P3 is from Rhulane. He went to school up to matric, which he passed well. He started working for the NDC factory on 5 January 2015 as a packer. He is the breadwinner in the family.

P4 is also from Rhulani in Nowankowa. She started working at the factory in 2014 sorting, peeling and piling mangoes. She has since moved on to sorting and packing.

P5 is from Mandlagazi. She passed grade 12 and started working at the NDC factory in January 2014 sorting mangoes.

P6 is from Khujwane. She started working at the NDC factory on 2 February 2014 as a peeler.

P7 is from Giyani. She started working at the NDC factory on 5 January 2015 in the sorting section.

P8 is also from Rhulane. She started working at the factory on 6 February 2014 as a packer. She went to school up to grade 9.

P9 is also from Rhulane and started working in 2014 as a peeler but has since moved on to packing.

P10 is from Nwamitwa village. She passed grade 11 and started working at the factory on 8 January 2014 as a sorter.

Information about the NDC factory

The participants told their own stories of how they got to know about the factory and how they got employed. The following are translations of their stories.

P3. I was just walking around looking for job and I found people here waiting at the gate looking for a job also. I joined them and a white man came and told us to go away, we all left the place. I came back later alone and I told that white person “Mlungu” that I am desperately looking for a job, I have a single parent who is just a pensioner and she is not able to support me and my kids since I have no husband, I told him that my husband died, and I have kids to support. He said I must write my name down and bring my bank statement. That’s how I got the job.

P9. My mother called me and she told me that the white man that we use to work with at BMS has opened a new firm so she said that because he knows you and he knows that you know how to peel mangoes, just go and talk to him and ask for job. I came here and talked to him and he gave me the job immediately. Stefan worked with my mother before coming here and that is why it was easy for me to get the job here.

P5. Myself I got the information from my neighbour and she told me that the factory is looking for employees. So I came here and asked for the job and I got it.

What level/type of education or skills helped you to be employed in the factory?
To be honest with you, in this factory they didn’t want anything. They never said they want qualifications. They were only giving people jobs.

**Mango season and employment in the area**

There was agreement in the group that they were all seasonal workers on contract.

**P4.** We go somewhere and look for a job up until the next mango season. We just move around and look for jobs the rest of the year.

**P1.** It is very hard for us because sometimes you have to pay accounts and buy school uniforms and it is not easy at all, it is very difficult. Within those 3 months it is difficult to pay all your creditors. At some point you are forced to take the child grant and pay creditors.

**P8.** We stay at home and we support our kids who are at university and it is difficult. We are forced to take the child grant and send it to our children who are at university. Sometimes we even go to “Machonisa” loan sharks.

**P10.** Yes we do go to loan sharks. The work here at the factory helps us a lot but once it is finished then we are in trouble.

**Training at the factory**

Some of the workers join the factory without skills and are trained on the specific skills needed for the job like peeling and sorting. Others join the factory and use their experience from previous seasons and factories, but they do not get any further training. The following are some of the stories about training.

**P4.** We don’t get training here. Myself I was very fortunate because I knew how to peel because I worked somewhere before.

**P6.** There is a little training even if it is not formal training. When I came here they showed me how to sort mangoes in order. When they train you, you will know exactly which mangoes are for juice and which ones are for dried fruits.

**P3.** When I arrived here I didn’t know how to peel but they trained me on how to peel and pack the mangoes.

**Working conditions: compliance with the rules, institutions, etc.**

What are some of the positive aspects of working here at this facility?

**P2.** What is good is that at the end of the month we get paid. We are happy because the supervisor is very supportive (Respondent not clear about which supervisor). Every time when I am at home I feel like I can go to work at any time just because I enjoy the job. Last year it was very difficult for us. This year I really enjoy my work and even if they say the work is coming to an end I am so worried because I really enjoy working in this factory. And I am happy with the salary.

**P7.** I am very free and happy except that there is nothing I can do because the work is coming to an end. The money this year is good as compared to last year. We don’t want to stop working; we want to continue working here in this factory.
P4. I work very well and make sure that by 7 o’clock I am here. Our supervisor Suzan and Lynette treat us very well. I can tell you that I bought a fridge for cash at OK using the salary from this factory and I manage to buy some food for my children.

P5. This year is very much better as compared to last year. I used to get only 30 minutes lunch and there was too much pressure. I use to work overtime and knock off at 11 o’clock at night and there were no incentives or anything and if you ask about the money for extra hours he will tell you that he will show you the gate. I had to work because I had no choice. It was very hard for us last year, if you don’t come to work and the following day you bring letter from the doctor the manager will tell you that he doesn’t need the letter or anything from the doctor. Even if I was sick I was forced to come to work.

P1. We are very pleased this year.

P3. Last year I use to start work at 6 in the morning up until 11 at night and there were no financial incentives or increase. I would work from 6 till 11 at night and only get R2900 salary. So this year I start work at 7 and knock off at 4 and I am happy with the working conditions including salary.

How easy is it to find a job in Nkowankowa?

P6. "There are no jobs here in Nkowankowa, just NDC which at least employs local people." This response appears to be in contrast to that from the community focus group discussions which indicated that the factory appeared to be employing foreigners.

What kind of day to day rules does management lay upon workers?

P10. They just tell us how many trolleys they want a day and if they say they want 9 trolleys then we have to do it.

P4. They also tell us that we must work hard and free, and be serious about our job.

Do you think the rules create a better working environment?

P1. Yes it is very encouraging, sometimes we even do more than expected because we are very free and enjoy our work. To be free sometimes helps us a lot because we are able to do more and more without any fear.

P8. When we come to work in the morning we know that by 7 we are supposed to be at our working stations. No one is following you around. When you want to go and drink water or go to the bathroom there is no one who questions you. Last year the manager used to come to the bathroom and tell you that you are not here to go to the toilet, you are here to work. He would come and open the door while you are still inside doing your business. [Narration unsubstantiated]

Are there issues of theft among workers in the factory?

P3. No we don’t steal. At the gate they search us. We can’t steal because we know our jobs will be at risk.

Business Model/ Management and Ownership of the Project

P1. We just know it as the NDC factory. We heard also that there will be new management this year. We were under the impression that it belongs to the manager. But later on we were told that this is a
community project and it doesn’t belong to any person. It is even indicated in the pay slip that this is just a community project.

Does that affect you as workers?

P7. No

How much of the community benefits from the operation of the factory?

P4. People around benefit because we are able to support our families. We are able to buy food and school uniforms for our kids.

P6. The community of Dan and the surrounding area used to benefit a lot because they supplied the factory with mangoes. So it’s not only the Nkowankowa community which benefited, people all over including the people from Ga Modjadji, and these people were getting money. So the factory normally put some billboards on the main roads and says the factory needs mangoes and the people start supplying and that’s how the factory get people to supply mangoes.

Does the factory hire people outside Nkowankowa?

There was consensus that people who work here come from everywhere in the region. The examples in the group were people from Khujwane, Giyani and Ngwamitwa which are considered to be outside the area. This does not seem to worry the workers at the factory even though it was a big issue in the community focus group discussion. What do you think about how the factory is run?

P3. It is well run and there is no problem so far. So we are happy with management. Last year, to be honest with you, it was very difficult for us. Some people were even raped last year because we used to knock off late at night.

P5. The new management is well organised and very supportive. If you did not do something well they will tell you how to do things and do not shout at you.

P1. I am so happy because of the factory and we are happy with the change of management. We want to see the factory growing so it can continue employing the locals.

Do you think local traditional authorities and communities play a role in the operation of factory?

P6. No there is no part which they play. You will never know what people think regarding the factory’s growth.

Co-worker relational dynamics and well-being: How are the relationships between workers in the factory?

P3. We work very well together and we are like a team. It’s like we are brothers and sisters.

P9. Some people would come without food, more especially in January, and we are able to share what we have. If I had enough money I would buy some Simba and other snacks so I can be able to sell since the factory work is coming to an end.

Do differences in language affect work relations? Please elaborate

P5. Not at all. We understand each other very well.
P7. I personally do not have any problem at all because I stay with Tsonga speaking people and I speak Tsonga most of the time even though I am a Pedi speaking person. Here at work I use Tsonga most of the time and sometimes when I go home I even forget that I am at home and speak in Tsonga and my kids will ask me if I am a Tsonga speaking person these days.

P2. Look, it’s an advantage for us to have all these languages because we learn a lot from each other.

How has the establishment of the factory affected your standard of living? (Before being employed and while employed)

P3. I used to be very poor and now I think I am a little better off but it’s a pity because the factory or our work is coming to end soon. I managed to build a two room house and now it is complete.

P9. The factory helped me a lot because I used to go to clubs, taverns and look for men so they can give me money to buy food. So I use to go after men because I was poor. Today as we speak I work for NDC and I am no longer interested or follow men around because of money. I am today a born again Christian and I work very hard at the factory for my kids and I am happy.

P1. My life changed. I lost my father 7 years ago and I was supported by my mother who died in 2013 and I then came here and started working at the factory. Before my mother died, because I was not working, it was very difficult and I had to survive on the child grant, myself, my wife and kids.

P5. I also see a change in my life. Last year I managed to buy two beds and my kids now have a bed. I manage to buy some food at home and, believe me, it was difficult to buy a simple polony but now I can afford it. I even afford to buy the kids some cheese which I could not afford before. It really pains me a lot now that we are going to lose our jobs until next mango season.

P8. Last year I bought a bed.

How is the relationship between the workers and management?

P2. To be honest with you, this year things are very much better. The previous manager use to call us Baboons and there was nothing we can do because if you argue with her and tell her that you are not a baboon you will be fired.

P4. The previous manager was so bad in such a way that she would give men 15 minutes lunch and women 30 minutes.

P3. Sometimes if you make a mistake at work, you don’t get lunch; some people will go for lunch but you remain.

P2. The new management is good and very approachable, we are able to talk to her and even if we have problems she is approachable. We talk to her and she understands. If you have family commitment, the new management understands. The previous one was very problematic. In the previous management we were not allowed to go to funerals, if your family member dies, you will bury her/him and after the funeral you go to work. So the new management is good and understanding.

Recommendations for improvement: What suggestions do you have to improve the working environment here?
P2. Create more jobs. We don’t want the project to stop working, perhaps if we can do something else and don’t only rely on mangoes, maybe try some bananas or something else so that we don’t stop.

P8. Some of us have been working here for three years and I think it will be better if we can be employed as permanent.

What suggestions do you have so that many people can benefit from the factory?

P6. We want the factory to divert to other fruits other than mangoes only so that we can continue working.

P8. For example, if we use the bananas and papaws as well as pineapple, if the factory can do that it will be better. Remember, if the factory diversifies it will help a lot of people because some people will be able to supply their own fruits and get something and at the same time we as workers can continue working.

Is there anything else we haven’t discussed that you think is important?

P7. We want permanent jobs and we are happy with management but you will never predict what is in their mind. We also want to know or to have our workers’ rights so that we can be able to sit down with them and tell them our challenges without fear.

P5. For me all I want is just to work full time, and nonstop.

P1. I have a wife and kids and once the job comes to an end it will be difficult for me to support the family, they want food and they want to go to school and where will I get the money?

P6. Last year they said the factory has got financial problems, so the job is not guaranteed for us in the next mango season. Possibilities are that the factory might employ new employees and there is nothing we can do. If the factory decides to take it from us then those who do not get a job will have to look for jobs elsewhere or stay at home.

P2. So, one other thing that I would like to find out from you or the factory is that, since this year we are 20 and we are all casuals, what is going to happen next year if the factory decides to employ some other people?

4.14.4.1 Discussion of factory worker findings

The factory worker focus group triangulated well with the findings from the household survey, which highlighted the random nature in which people were recruited at the factory. This can also be the reason why they are perceptions at the community level that the factory seems to be recruiting foreigners. The relevance of this with respect to the NDC ToC, is that, there is an assumption that to maximise the outcome of the worker causal pathway to the poor/most deserving, the recruitment of workers at the factory needs to be targeted at the latter. As such, the practice of management recruiting just about anyone, threatens the poverty causal pathway and the extent to which it can contribute to the overall goal of the intervention of poverty reduction.

The issue of seasonality was also highlighted by the factory workers, who lamented the difficult of having to look for work after the mango season. All though most respondents generally agreed that there was very little training at the factory, a finding that is collaborated by the quantitative results. One participant indicated that they knew how to peel mangoes, having gained the skills whilst working at a similar factory. This highlights the fact that whilst training appears only to be related to the job, there is still an element
of skills acquisition that is identified in the ToC as one of the channels that will lead to increased employability.

The participants also made reference to how different working conditions were this year. Supposedly contrasting this to the period with the old management. However, in this discussion the issue of the temporal nature of the jobs was also flagged. Furthermore, just like the community focus group participants in this group were able to identify benefits that accrue to the community as a result of the factory. Respondents also spoke about the personal benefits that have accrued to them as a result of working at NDC.

Views from this focus group triangulated well with the results from the quantitative analysis, with respect to the request for permanent jobs. There was an awareness of the temporal nature of the benefits once they were no longer working at the factory.

4.15 Key Informant Interviews

4.15.1 Former Manager at the NDC Factory

- Agro-processing is very important in this part of the country because most of the land is agricultural land and there is a lot of farming activity going on in the area.
- The main driver of the development of agro-processing is the constant supply of agricultural produce in the area.
- The most influential players in the industry are B & S dry fruit and Woodspruit, but they are export oriented and they don’t take fruit from small farmers and households.
- That’s why the NDC factory became very big here. We took fruit from anyone because we were using a unique preservation method that is not standard but preserves fruit for longer. International markets that are accredited will not accept our products but the local market accepts the product.
- The big players are accredited with the Hazard Analysis Critical Control Point scale (HACCP). We were not accredited because we did not have a legal identity.
- So the NDC was the biggest in Limpopo for local fruit pulping and drying.
- Yes there was something special about our cleaning procedures but it is a different standard.
- We were never accredited because of the legal identity issue.
- The biggest problem at the factory was the operation procedures because the factory had no legal identity. This led to payment problems for suppliers.
- This meant decisions could not be taken as quickly as should be normal for a big operation like the NDC was.
- The impact on the community was huge: 4000 tons of fruit translated into roughly R12 million per season. This was enough to pull us through the year while we did maintenance on the machines.
- About half of that fruit was from Nkowankowa, so on a macro scale that is roughly R6 million pumped into the location every season.
- The factory operated 24 hours a day during the mango season with over 300 employees.
- The best way to operate this factory is through a cooperative system with community members. The problem with community members in this area is they want something for nothing. That is why community partnerships don’t work here.
4.15.2 Interim-Manager at the NDC Factory

- Employed whilst the former manager was on suspension
- I have been in the industry for a very long time now. I was a supplier to the NDC and now am caretaker manager of the factory.
- Agro processing is very important in this region because the whole province is the agricultural hub of South Africa.
- With a mango factory like this one you can provide employment for 12 months of the year because you start with achar, and then you go to juice pulp and dry fruit. Later in the year you can do actual mango juice production so the people can have a job the whole year in one place.
- There are a few big players in the industry here like B & S and Woodspruit. Mango Magic is big but they don’t do juice. They concentrate on achar.
- Yes we get fruit from the community but not last year because of the current internal problem. Most of the fruit processed last season came from one commercial farmer affiliated with the factory.
- The factory did not return any fruit from the community. We spray it here using our own mechanism, which is special to us. The other factories also have their own mechanisms.
- We encourage the community to spray their fruit before they bring it, but if they can’t we do not turn them away.
- The objective should be to teach the community how to spray their fruit so that there are few diseases going round. What I have learnt in the industry is that where you have a lot of fruits there are a lot more diseases than where you have a few trees. When you use fertilizers also you are bound to attract insects that bring diseases. That’s why the big farmers have to spray their fruit.
- Last year the NDC was number one in Limpopo and the fruit we collected was very highly rated by the laboratory in Pretoria. This was because of the new management system that I implemented.
- We need to establish a network of black farmers, suppliers and processors because there is this thing that if you take your fruit to a black owned factory you will not be paid.
- If you look around, the white community here is making a lot of money because they support each other, friends and family supply each other and make a lot of money. It is impossible to break into those circles. You have to make your own circles to prosper.
- At the end of the day we want a better life for the black community here, jobs throughout the year, good rates for their products and a good life for all the people.
- This factory is right now sitting on rented space. The rent, electricity, water and rates and taxes run into more than R100,000 every month. This is not sustainable for any business. To make this work, the factory must own its own space and water, because the operation uses a lot of water. The ideal is for the factory to have its own boreholes and use water from there.

4.15.3 Manager at a Mango Achar Factory

- The factory specialises in green mango and the production of achar. They are not involved in juice or anything else. Tzaneen is an agricultural town and most of our products are used for value addition in other parts of the country as well. Apart from that you can say that the main driver of agro-processing in Tzaneen is agriculture itself, but also the soil is good.
- I have been involved in a number of cooperatives in Tzaneen where they talk about the lack of advanced agricultural skills in the area. Most of our expertise in the region comes from the
surrounding towns like Venda, Nelspruit, and Polokwane. We don’t have an advanced agricultural school in Tzaneen.

- I am aware of a number of strategies and policies but the local commercial farmers are not involved in those policies. This is a mistake by government. You have to involve the big white commercial farmers, who leave their businesses to their children but they are not being supported by government.
- The most influential players in the business here are the big white farmers, predominantly it is still a white industry.
- Ninety per cent of the land claim farms have failed. Mamatolo farms used to be our biggest supplier. Right now we don’t get a single mango from Mamatolo.
- The government does not approach the growers associations and when they do, it is not perceived to be in good faith, because maybe they arrive with land claims people and the white farmers are not free to share their knowledge.
- Our relationship with the community is very good because we have been doing this for the last 26 years and we have been getting mango directly from the community.
- We were not aware of the demonstration centre but we started hearing a lot of stories about the factory about some money that went missing.
- The government must put up a facility like a trust fund that looks at the portion of the business that belongs to the community.
- The money generated can be used to build a crèche, a sports field or any other facility for the benefit of all in the community.
- LimDev [Limpopo Economic Development Enterprise] should be involved in something like this.

4.15.4 Local Municipality Economic Development Manager

- The local municipality mainly facilitates economic activities within the area; we do initiatives in agriculture, tourism and business. As we are the municipality, we are not looking at the profit but we rather engage the business and other relevant stakeholders for the advancement of the local economy. We have a Local Economic Development (LED) strategy that actually gives us direction in terms of what we must do, from that we derive daily activities.
- Agro processing is very important in Tzaneen but we are not doing well because most of our products are processed outside Tzaneen. We have the raw materials in Tzaneen but we are not processing as much fruit in Tzaneen as we should. We really need to expand local product beneficiation to actually take advantage of the benefits of the raw materials that we have.
- My perspective is that we do not have the necessary resources in Tzaneen to explore agro processing. There are private players in this industry with a lot of money, like Letaba Estates who are doing juice and Mokholoboto achar who are doing achar. We don’t have access to information on what they are doing so even though we have the LED strategy that is supposed to help us facilitate economic development within the area, it does not help the players in the business, it just remains a municipal tool. This should be a tool that every business person should know about and be able to identify opportunities in the LED and focus on them. They should focus on the LED strategy so that even when it comes to roads and electricity we are able to focus to those areas of development. So it’s unfortunate that people do come with their own things and some of them have so much money that they can do their own roads and have their own electricity without even
involving the municipality. They only come to us when they fail to maintain these things and they have problems.

- The main drivers of agro processing in any area are the local materials. If you don’t have these you cannot do agro processing. The other one is stakeholder relations because there must be a collaboration of stakeholders in terms of what they are doing.

- Cooperatives are a very good idea but we don’t use them enough. Because of this there is no coordination between production and consumption. Some farmers, especially emerging farmers, start looking for a market after they harvest their produce. You see this especially in the mango season. You find a lot of bakkies everywhere loaded with mangoes looking for someone to buy them. If we had an organized cooperative people would know how much mango to produce and who is going to buy it. They would also know whether to harvest for achar, juice or dry fruit, according to the market demand. Currently this kind of coordination does not exist.

- I do not know of any standalone policy regarding agro processing in the municipality. We depend on the LED strategy. One of the areas of focus in the strategy is agro processing.

- In the long term we need agro processing facilities that can do a number of different agro products not just mangoes.

- The biggest players in the industry are obviously the farmers, because they are the ones who know how to farm. Although the farmers are critical, government should also assist and come up with facilities that can assist them in agro processing. In Tzaneen we have some facilities that were used for packaging and are now locked up and not being utilized. As government we can do an audit of these facilities and come up with a plan to revitalize them. Every stakeholder is critical in this respect, including the community members. Community members are very important because they are the final consumers of the products and they decide what they want to consume and they don’t want to consume, so they are innovators in a way.

- The farmers must have a say in terms of the agro processing of farming or any initiative that the government might want to come up with. The reason I am saying this is that if we as government plan alone, we plan for failure because at the end of the day we will need those farmers to come and bring their produce at the facilities. The municipality has plans to set up an agro park just 8 kilometres out of Tzaneen. We are involving everybody from the onset, particularly the farmers because they are the one with the produce. We really need to involve the farmers.

- One of the biggest problems also is that the municipality does not allocate enough funding for local economic development. We allocate funding for infrastructure but we forget that the infrastructure can only be used if the local economy is circulating. Like if you build a road and no one is using it then the road is useless.

- I think everybody should be involved in the agro processing value chain, including schools, because agro processing is about agriculture, so schools as well must start teaching young people about agriculture, it must be a normal thing to them.

- We are not directly involved with the factory in Nkowankowa. I remember at one stage we went there, the Agricultural Research Council came here and that’s how we came to know about the factory. When we visited the project, we had to give a long explanation of why we were there and it seemed as if they were not comfortable with our visit. We couldn’t even go beyond the office, which was one thing we were interested in because it was during mango season and it was rumoured that the place is very dirty.

- As the municipality, I feel we should be involved in one way or another, because we can help with the waste management, and issues of water and electricity.
• There are a lot of cases, where projects have been brought to the municipality without engaging the municipality. We only come to know about them when there are problems. As government we still want to assist and be part of the solution because that is our job.

• As far as impact on the community is concerned I don’t have an idea, but my understanding would be that when they hire people, they hire people from the local areas and obviously the local people are the ones who would have more interest because I don’t think a person from far away would be interested because there are financial implications involved. My assumption would be when they start recruitment for labour, they would go for the locals. Also because it is a factory, I would assume a number of jobs were created. The only thing that we are worried about is the type of jobs created. Were these only manual labour positions or did they also have management positions for the locals?

• Though we are not directly involved we have information. We all know that it is a processing factory. I am just not aware of is where do they take their produce to after that processing.

• Successful? For me, if the project has managed to operate for at least 3 years or more it means there is value for money or there is something in it, otherwise they would closed down a long time ago. I am worried about the financial viability of the project. Can they expand on their own or are they going to continuously need money from DST to survive?

• We are looking at the sustainability of jobs on the side of our people; we don’t want the factory to collapse due to such things as electricity. We could even intervene so we try to ask the unit for such facilities as electricity and the like. Even if they come and talk to us about waste issues, we can still intervene and talk to our waste department that they help where possible.

• The concern is that we are not directly involved but at the end of the day, when the statistics on job creation are needed they are requested from the municipality. So is there a way maybe where you can make the two organisations to see the need to provide us with the information, because we really need it. We are not doing it to check on how many white people are hired and how many black people are hired but we are looking at does it have economic spill off, does it make any impact. Like I said, if our locals are only hired for labour, what about the other positions? Is there anything that we can do as the municipality?

• Is there a way that you can assist [so] that we are able to communicate with them that they give us the information, so that we are able to assist them wherever they need help?

• The reception was not very good when we visited the factory. I am not sure but it also looked like it is a family thing, people from the same family and then the attitude of the manager made us so uncomfortable but we didn’t know what to do because in the first place when the project was introduced we were not part of it. I am not saying this in a bad way; they are doing a good job and assisting our people but at the same time, we as government, need to be informed. I don’t know what you can do about the management but something needs to be done. I am not sure as to whether our people are being treated well but you could see an attitude from the way we were treated.

4.15.5 Provincial Local Economic Development Manager

• Agro processing is very important because it develops the Limpopo provincial agro-processing strategy. Last year we hosted the Provincial Agro-processing conference together with Department of Agriculture.
• Agro processing benefits the local people. If you look at that project in Nkowankowa, when fully operating, the community used to sell around R4 million worth of mangoes in the project. They used to employ more than 200 seasonal workers when things were normal.

• Yes we have policies and strategies related to agro-processing. We have a five-year industrial master plan. We also have a lot of National Government documents like the National Development Plan and the New Growth Path where agro-processing is identified as a priority sector.

• For the medium to long-term planning for agro-processing in Limpopo, we are currently looking at worker industry as the possible opportunity to expand agro-processing in the Province. That also relates to the establishment of agricultural parks.

• I think we should involve the private sector more in the industry because they know what is possible and what is not possible and you can also identify their needs. Like what barriers they face, why they are not processing more etc.?

• Basically, at the national level, the DPI circus podium of agro-processing it changes recently and we are the provincial arm. So it is part of the mandate of try to set development in the department because the department of agriculture is basically looking at the primary production site. In Agriculture, we are focusing more on the manufacturing side.

• We have been part of the Nkowankowa project as well as the BSP project in Giyani, where they are looking at the production of essential oils. We are currently assisting the private society to commercialize the project.

• Our role is mainly to produce business plans, cash flows, registering the companies, the price of funding, help to process applications for BPI chrome like the 12th IE. There is also a project of the chicken abattoir in Lebowakgomo which can slaughter 20 000 broilers per shift.

• There is also a farmer in the potato industry in Dendron for a French fries factory. There is constem glen pro-sector coming up, the guy wants to do Achar from pineapple. There is a tomato processing plant. They are struggling with imports from china. The Chinese are under-cutting them seriously.

• I don’t really know who the big players in the industry actually are. There is the factory which makes juice. Then there is a guy who is involved in tomato processing in Tzaneen. Tiger brands are operating in Musina, but they are not really big role players at this stage.

• They are running as commercial enterprises and that’s the bottom of it. I am not sure how much they can influence policy

• I don’t know who the players will be in the medium to long term but the challenge we are facing in some of the opportunities is that there is not enough primary produce available and there is nothing to process. So we can focus on stimulating the primary production of mangoes for example.

• We are not directly involved with the NDC factory. Basically just part of a steering committee

• Originally, the purpose of the factory was to test the model of an agro-processing plant and eventually to commercialize it.

• The factory has been very successful in making juice pulp. It was one of the better projects, but is not very well managed in my view. If I was the minister, I would invite the project manager to parliament to showcase the project to national parliament as an example of a project that was highly successful because they had a turnover increase from R500 000 in the first year up to more than R23 000 000 last year, of actually exported products which reached the international standard. I think that is quite an achievement.

• On the operational issues yes, very successful, but on the management side no.
• I was not involved with the new management but I was involved with the previous manager. The previous manager was subjected with a forensic order so we have to check the outcome of that and they have definitely improved in accounting and bookkeeping and also the management issues are better now.
• Previously, they were buying from the community. Local bakkie traders used to bring in about R4-5 million worth of mangoes, that’s a lot of income. There were about 200 seasonal workers working in the factory.
• It’s just the modelling of things, they must look for wide commercialized operations
• That is basically the way to go because it is clear, it is a huge opportunity that will turn to be a commercial success. I think that project is ready to be commercialized.
• I think it was a good example as it was one of the best projects in which we are involved for a long time and it is basically the model that you can replicate in other projects and their success depends on the project manager, the discredited project manager.
• We will see what the outcome of the investigation is and maybe we will talk again. They should commercialize the project so that it will operate properly in terms of proper buildings, equipment and start from scratch. It can be a bit more successful as a private enterprise, not as a government project, and there are examples of similar projects which are commercialized and became very successful.

4.15.5.1 Discussion of KII’s findings
The Key Informant Interviews (KII’s) also recognised the relevance of the NDC relative to the context; with references being made to agriculture being a dominate activity in Limpopo due to the constant supply of agricultural produce in the area.

An important theme also emerging from the KII’s is the success of the NDC intervention and the extent to which it is part of broader agro-processing value chain. Its contribution to employment also seems to resonate.

The management issues that plagued the factory were also highlighted by some of the KII’s.

5 Summary of Findings

1. The NDC is now seen as one of the four big players in the mango beneficiation process in Nkowankowa alongside Mango Magic (achar), B&S (juice and dry fruit), Letaba Juice (Juice pulp).
2. The B&S factory dealt mainly with the export market and did not collect fruit from the community.
3. Lethaba was collecting fruit from the community but was paying lower rates than the NDC. When NDC started operating they lost a lot of business because bakkie traders and the community preferred to supply to the NDC because of the higher rates. The rivalry between Lethaba and NDC has persisted.
4. The NDC is not the only factory collecting fruit from the community. Mango Magic has collecting fruit from the community for 26 years but only for achar and Lethaba Juice was doing it for juice. So in terms of spill-overs in the community from mango, these have always been there. The difference with the introduction of the NDC factory was mainly as a result of the scale of the mango intake and the higher rates offered to the smallholder, bakkie and bucket traders.
5. The NDC factory was and still has the potential to be a very successful business. The high turnover over the last five years is a true story of success. However, there seem to have been issues with the management model adopted at the factory.

6. There were reported issues of hygiene at the factory. It was heard after the FGDs that many workers were HIV positive in the factory and they were allowed to use knives in their daily work without gloves. The researchers had no way to verify this claim but the fact that it was mentioned makes it necessary to consider ways in which future operations may put measures in place to completely avoid a situation like this.

7. Waste disposal was another reported issue regarding hygiene. This was also an observation by the fieldworkers. The lack of coordination with the municipality probably exacerbated this particular problem as it was mentioned by the Key Informant at the local municipality as an area where they could help.

8. This lack of coordination between the municipality and the factory management is a point of concern because some of the problems reported at the factory would have been easily dealt with if the municipality had been involved in the setup of the factory and included it in their Integrated Development Plan. This was clearly articulated by the Key Informant from the factory.

9. The problems of water, electricity and waste management would have been better dealt with by consultation and coordination with the municipality. The lack of this coordination resulted in the operation paying very high bills for water and electricity and struggling with issues of hygiene on the premises.

10. One of the key concerns regarding management was that it seemed as though the locals were only used as labour and were not involved in any managerial functions. Management positions were reported to have been the reserve of a very small knit group of individuals closely related to the manager. The implications of this in terms of impact on the running of the factory are unclear and require further study.

11. In general, agro processing in Nkowankowa and the whole province is seen by many as key to the future economic development of the area due to the abundance of primary fruit produce in the area, the dominance of agricultural activities and the presence of commercial white farmers, who are seen as the major drivers of the industry in Limpopo. However, it was also reported that it is very difficult for young black farmers and entrepreneurs to break into these white business circles that are doing well by virtue of their support for each other. It was proposed that young black entrepreneurs in the area should form their own networks of support and compete with the white commercial farmers. The extent of these views needs to be verified independently, however.

12. None of the entrepreneurs interviewed, who were trained before the factory started operating, have been involved with the NDC factory in any way as suppliers or buyers of finished products. There seems to have been a disconnect between the trained cohort of entrepreneurs and the factory when it started operating.

13. The training provided does not seem to have been related to the activities of the factory. Most of the entrepreneurs report having been given herbal supplements and pills to sell in the community.

14. The study did not find any major differences in poverty levels between beneficiary households and non-beneficiary households. In spite of the obvious benefits accrued as a result of working for the factory, beneficiary households did not necessarily do better than the non-beneficiary households. This is mainly because the jobs at the NDC factory were mostly low paid, manual labour while those who had jobs in the in the non-beneficiary households usually had higher paying professional jobs.
15. The recruitment process in the factory raised concerns in the community as it was generally felt that it was unfair although anyone was free to submit a CV for consideration. Chief among the worrying perceptions was that people had to pay R200 to some official at the factory to guarantee a placement.

16. The other worrying perception was that family members of those who already worked in the factory were at an advantage because the workers were asked to bring their friends and relatives when there was a vacancy.

17. These perceptions were not verified by those currently working in the factory as none of these two aspects of recruitment arose during the factory workers focus group. On the other hand, it is unlikely that someone who had paid to get a job would openly say it in front of other co-workers, so it remains a perception that could be further investigated.

18. There seem to have been real benefits from the operation of the factory in terms of temporal/seasonal alleviation of poverty and there was a strong sentiment that efforts should be made to find ways to make the employment more permanent. Suggestions for making this possible included: processing other fruits, in addition to mangoes; and incorporation of a juice processing plant alongside the pulping plant, so that pulp could be processed on site into juice throughout the year.

19. Households seem to have benefitted from increased incomes, although many respondents held the view that the money was not enough. The seasonal nature of the operation negated these gains to some extent for most households.

20. Stimulating agricultural production and employment is one of the aims of *Outcome 4 on decent employment through inclusive economic growth*. Sub Outcome 5 recognises the role that agro-based employment can make in improving rural incomes and creating inclusive rural communities (Government of South Africa, 2010a). More importantly and of significance to the NDC is the recognition of the role that technology can play in supporting employment in agriculture and agro-processing (p. 6). As such this intervention by creating employment opportunities of an average duration of 18 months is contributing to the realisation of this outcome. Specifically, *impact Indicator 7* also has a target in the NDP 2030, of increasing the percentage of adults working in rural areas (NPC, 2030).

6 Recommendations

There are two critical issues regarding the NDC project which relate to the temporal nature of the intervention. First, most of the work was limited to the mango season, between October and March. Second, the factory was a trial project and therefore was designed to come to an end at some point. This temporal nature of the intervention makes the gains for households, suppliers and the community also temporal. Many respondents wanted the work to continue throughout the year, instead of just a few months. One way to achieve this would be to construct a juice factory, adjoining the pulping factory, so that the pulp produced during the mango season could be used for producing juice during the rest of the year. This would require extra investment but supporting a complete cycle from growing fruit to the finished juice product would help to increase the stability of incomes in the community and sustain the positive outcomes throughout the year, potentially for many more households. Diversification into fruits other than mangoes could also help reduce the seasonal bottleneck.

- Consider the addition of fruits other than mangoes.
- Construct a juice processing plant, adjoining the pulping factory, to enable year round production.
• Support the complete agro-processing value chain from growing fruit to the finished product, i.e. juice.

Low wages for manual work and higher wages for clerical work are the norm in modern society. An experimental intervention such as the NDC project could explore ways to break this low wage trap by empowering employees beyond the low wages received for manual labour. Share options in the company are a possibility, as well as sizeable pension savings contributions to protect future earnings.

• Explore ways to increase employee benefits especially for those in low paid manual labour positions, e.g. share options, pension scheme, etc.

Beyond the project phase of NDC, an effort should be made to employ local professionals for management jobs in the factory. As the results of this evaluation show, the non-beneficiaries in general had higher wages than the beneficiaries of the intervention. This is because the non-beneficiary heads of household were more likely to hold a professional job, e.g. nursing, police work etc., while the beneficiary sample was almost exclusively low paid wage employment, e.g. cleaning, sorting, packing etc. This cycle could be broken by employing more local people in management positions.

• Prioritise employing local people for all positions within the factory, including management.

Although the semblance of skills acquisitions by the factory workers augurs well for the NDC interventions contribution to, **Outcome 5, A Skilled and Capable Workforce to Support an Inclusive Growth Path**, the lack of a more structured training programme weakens the extent to which this intervention can contribute meaningfully to this outcome. This is due to the fact that the, the outputs and measures under **Outcome 5** lean heavily towards the pursuit of accredited qualifications through learnerships, apprenticeship programmes and high level occupationally-directed programmes. The importance of these findings around the skills and training outcomes of this intervention would begin to suggest that amendments to the current intervention and future interventions should take a more considered approach with respect to skills development. The educational profile of beneficiaries would suggest that there is scope for such an intervention to contribute towards **Outcome 5, Output 1: Increase access to programmes leading to intermediate and high level learning by providing young people and adults with foundational learning qualifications (FLC)***. FLC is a part qualification (NQF Level 2- 4) that consists of communication and maths literacy that is aimed at defining the base level of competence required for optimal function in the world of work. The two learning areas are critical in ensuring occupational progression and skills development as they are linked to success in workplace learning and the acquisition of new skills. In as far as they might not be any service providers offering an appropriate course, the development of a suitable training programme for the NDC factory workers can be done in conjunction with the Agricultural Sector Education and Training Authority (AgriSETA). The SETA recognises that prevalence of the reliance on unskilled labour in the agricultural sector and its Sector Skills Plan (SSP) for 2017/2018 recognises the need to address some of these skills related issues through "improved Adult Education and Training and Recognition of Prior Learning (RPL) for [the] unskilled workforce." (AgriSETA, 2016)

Although this was an outcomes evaluation the burden of linking outcomes to the intervention remains. As already emphasised, like most government interventions in South Africa, the design of the NDC intervention was not done with the consideration of a future evaluation in mind. An important consideration is to realise that this outcomes evaluation can be seen as an opportunity to consolidate data
that can form the basis of a future impact evaluation baring, in mind that impacts will not be as large as they would have been when comparing a case of no intervention and one after the intervention. This means that future evaluations will have to construct a design with sufficient power to measure smaller changes in outcomes. Such an evaluation might emphasis the extent to which emerging outcomes as discussed in this evaluation have been sustained by continued participation in the factory. It also means implementing some of the recommendations arising from this study around the recruitment of workers on to the factory, understanding and put guidelines regarding the way in which workers are hired and retained, insisting that factory management keeps a database of seasonal workers and tries to retain the same workers to ensure some continuation in terms of benefits accruing to them. This will be useful in informing the basis for understanding how future evaluations will be designed and will also provide a source of information that plays an important role in analysis of any evaluation results.

7 OVERALL ASSESSMENT OF THE INTERVENTION

This section gives an overall assessment of the NDC intervention against the evaluation criteria outlined in the evaluation matrix that was based on the interventions theory of change. It does this by drawing on the evidence presented to answer the evaluation questions. Overall the findings of this evaluation indicate that the NDC factory has been relatively successful in achieving its objectives, albeit with full sustainable benefits being dampened by the seasonality of the operations and the management issues that were experienced at the factory.
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<tr>
<th>NO</th>
<th>EVALUATION QUESTIONS</th>
<th>NDC OBJECTIVE</th>
<th>EVALUATION CRITERIA</th>
<th>EVALUATION FINDINGS &amp; ASSESSMENT</th>
<th>RECOMMENDATIONS</th>
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<tr>
<td>01</td>
<td>To assess the socio-economic outcomes of the operation of the factory in relation to people’s resources, capabilities, opportunities and standard of living.</td>
<td>All Objectives</td>
<td>Relevance</td>
<td>Poverty, unemployment and inequality, poor excess to agro value chain. It should be noted that the evaluation found that suppliers, for example, where already supplying other agro-processing factories, however, due to proximity and better prices the majority of them started selling exclusively to the NDC.</td>
<td>-</td>
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<tr>
<td>1.</td>
<td>What problem was the NDC designed to resolve?</td>
<td>All Objectives</td>
<td>Relevance</td>
<td>The ToC developed during this evaluation now clearly maps out the causal pathways that will transform the context to the desired long term outcomes. The objectives of the intervention should be refined in accordance to the ToC that was developed during this evaluation.</td>
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<td>2.</td>
<td>Are the objectives of the NDC clear and do they present a realistic pathway towards addressing the identified development problems as per theory of change (ToC)?</td>
<td>Objective 1</td>
<td>Relevance</td>
<td>The objectives of the NDC remain relevant as evidenced, for example, by the high number of suppliers who indicated only supplying the NDC and the request to make the jobs more permanent. The community focus groups also revealed that jobs at the factory appeared to be highly priced by community. The evidence shows that the problems that the NDC was meant to address remain a challenge in Nkowankowa and as such efforts should be made to support the continued existence of the factory. This should be done in way that retains the developmental objectives of the intervention.</td>
<td>-</td>
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<td>3.</td>
<td>Do the objectives of the NDC remain relevant?</td>
<td>All objectives</td>
<td>Relevance</td>
<td>It appears as if only basic on the job training was provided to workers. However, given the predominance of workers who indicated hearing about the job through their social networks and the presence of similar factories it is hoped that the skills acquired should facilitate proactive job search. The lack of a more structured training programme weakens the extent to which this intervention can contribute meaningfully to outcome 5. The development of a suitable training programme for the NDC factory workers can be done in conjunction with the Agricultural Sector Education and Training Authority (AgriSETA).</td>
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<tr>
<td>4.</td>
<td>What training has been provided to the workers and to what extent does it increase the employability of the workers?</td>
<td>Objective 1</td>
<td>Effectiveness</td>
<td>-</td>
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<tr>
<td>NO</td>
<td>EVALUATION QUESTIONS</td>
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<td>5</td>
<td>How many jobs were created?</td>
<td>Objective 1</td>
<td>Effectiveness</td>
<td>Secondary data and KII accounts indicated that the factory could have created 200 - 300 jobs especially during the mango season. These included both permanent and temporary jobs. Although the factory does undeniably contribute to employment creation in the local community. The seasonality of the jobs is a serious challenge that dampens some of the socioeconomic benefits to workers and their households. Evidence of this came through from the quantitative assessment and the factory worker focus group discussions.</td>
<td>As indicated by one of the KIIIs the factory could provide employment opportunities to the community throughout the year. Recommendations of how the factory can do this were discussed in the previous section and these should be taken on board to enhance the impact of the factory.</td>
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<td>6</td>
<td>What are the emerging impacts of the additional income to beneficiary households?</td>
<td>Objective 1</td>
<td>Effectiveness</td>
<td>The findings indicate that factory worker household incomes did rise after they had started working for the factory.</td>
<td>In line with the previous recommendations efforts should be made to provide more permanent employment to workers.</td>
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<td>7</td>
<td>Did working for the factory lead to better socioeconomic outcomes, reduction in poverty, inequality, food and nutrition security outcomes for beneficiaries?</td>
<td>Objective 1</td>
<td>Effectiveness</td>
<td>The findings show that the incidence, depth and severity of poverty all decreased. However, due seasonality some of these benefits were not sustained for seasonal workers. These outcomes show how the factory is contributing to the triple challenges in South Africa.</td>
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**O2**

To propose a suitable business model for the future operation of the factory that is compatible with the social reality and business environment in Nkowankowa.

**Assumption**

*The NDC model is the most appropriate model for achieving the intended development objectives.*

1. How appropriate is the NDC business model? Were the planned activities, outputs and outcomes consistent with the objectives of the NDC? | Objective 2 | Sustainability | The current NDC business model appears to work. There is evidence to show that the factory represents a viable business entity that is capable of generating positive returns in the future. However, some of these outcomes are threatened by the management at the factory. This conclusion is collaborated by key informant interviews and perspective from the factory worker focus group. | An appropriate business model should be adopted and as per the ToC this should be a model that retains the developmental orientation of the intervention. Two alternative models are recommended for the NDC factory: a cooperative model & a local entrepreneurship empowerment model, see appendix 3. |
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<th>EVALUATION QUESTIONS</th>
<th>NDC OBJECTIVE</th>
<th>EVALUATION CRITERIA</th>
<th>EVALUATION FINDINGS &amp; ASSESSMENT</th>
<th>RECOMMENDATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>To what extent did the factory’s pro-poor technology lead to an inclusive procurement policy?</td>
<td>Objective 2</td>
<td>Effectiveness</td>
<td>The fact that almost 50% of the suppliers surveyed where backyard sellers indicates that the procurement policy of the factory was inclusive.</td>
<td>The methods used by the factory remain one of the core justifications for DST funding the NDC. However, in order to facilitate access into international agro-value chains they is a need for further innovations that would overcome the accreditation hurdle. This might require a STI partnership that can come up with an appropriate solution.</td>
</tr>
<tr>
<td>3.</td>
<td>To what extent has the training and capacity building initiatives improved the business management of the entrepreneurs?</td>
<td>Objective 2</td>
<td>Effectiveness</td>
<td>The results show that although the entrepreneurs reported benefiting from the training they received. These benefits were not sustained once the pills and boosters ran out.</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Was the NDC able to participate in the local agro-value chain?</td>
<td>Objective 2</td>
<td>Sustainability</td>
<td>There is evidence to show that the NDC is now recognised as one of the main players in Nkowankowa with key informants mentioning the factory amongst the big four. This finding is interesting as KIs also alluded to the fact that the NDC might have limited capacity in terms of the quantity of mangoes that it can take.</td>
<td></td>
</tr>
</tbody>
</table>

**O3 To what extent has the NDC achieved its objectives?**

**Assumption**

There is sufficient and appropriate evidence to assess the effectiveness of the NDC and to identify areas for improvement

<table>
<thead>
<tr>
<th>NO</th>
<th>EVALUATION QUESTIONS</th>
<th>NDC OBJECTIVE</th>
<th>EVALUATION CRITERIA</th>
<th>EVALUATION FINDINGS &amp; ASSESSMENT</th>
<th>RECOMMENDATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>How effective has the NDC intervention in achieving its intended objectives?</td>
<td>All objectives</td>
<td>Effectiveness</td>
<td>Overall the findings of this evaluation indicate that the NDC factory has been relatively successful in achieving its objectives, albeit with full sustainable benefits being dampened by the seasonality of the operations and the management issues that were experienced at the factory.</td>
<td>Project design: In order for the NDC to achieve its long term goal of improved household socioeconomic status and reduction in unemployment and poverty they should be inclusive participation by members of the target communities. This would also avoid perceptions that the key beneficiaries of the project are people from outside the local community.</td>
</tr>
<tr>
<td>2.</td>
<td>What are the main lessons learnt from the implementation of the NDC?</td>
<td>All objectives</td>
<td>Effectiveness</td>
<td>Summarised from all findings: Rural agro-based interventions can create positive outcomes in the local economy. However, the implementation of these interventions needs to be closely monitored to ensure that pro-poor management policies are adhered to.</td>
<td></td>
</tr>
</tbody>
</table>

113
<table>
<thead>
<tr>
<th>NO</th>
<th>EVALUATION QUESTIONS</th>
<th>NDC OBJECTIVE</th>
<th>EVALUATION CRITERIA</th>
<th>EVALUATION FINDINGS &amp; ASSESSMENT</th>
<th>RECOMMENDATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.</td>
<td>What are the main improvement recommendations for the NDC?</td>
<td>All objectives</td>
<td>Sustainability</td>
<td>Summarised from all findings</td>
<td>The key recommendation for the NDC is related to sustainability. For the factory to fully realise its benefits to the local community the issue of seasonality needs to be addressed by following some of the recommendations outlined above.</td>
</tr>
</tbody>
</table>
8 CONCLUSIONS

The revised version of the NDC intervention from the original demonstration centre to the agro-processing factory seems to have created positive outcomes with respect to its intended objectives. Ignoring the impact of seasonality on the flow of benefits; the findings indicate that the intervention has the potential of making a meaningful contribution towards addressing the country's triple challenges of poverty, unemployment and inequality. The intervention also has elements that contribute to three of the 12 outcomes, that is, Outcome 4 on decent employment through inclusive economic growth; Outcome 5, A Skilled and Capable Workforce to Support an Inclusive Growth Path and Outcome 7: Vibrant, Equitable and Sustainable Rural Communities and Food Security for All: Outputs and Measures.
9 References


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Kindness, H. & Gordon, A. (2001). Agricultural Marketing in Developing Countries: The Role of NGOs and CBOs. Policy Series 13, Natural Resources Institute; University of Greenwich.


Ministry of Food and Agriculture. (2007). *Food and Agricultural Sector Development Policy, (FASDEP II)*.


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### Appendix 1: Health, Food and Nutrition Security Outcomes

#### 1. Transitions: Worried run out of food

<table>
<thead>
<tr>
<th>%</th>
<th>Description</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>21%</td>
<td>became less worried about running out of food</td>
<td>19</td>
</tr>
<tr>
<td>12%</td>
<td>became more worried about running out of food</td>
<td>11</td>
</tr>
<tr>
<td>9%</td>
<td>represents positive net change</td>
<td>8</td>
</tr>
<tr>
<td>66%</td>
<td>had no change in their status between the two periods</td>
<td>59</td>
</tr>
<tr>
<td>24%</td>
<td>remained food secure relative to this indicator</td>
<td>32</td>
</tr>
<tr>
<td>7%</td>
<td>remained with this food insecurity in both periods</td>
<td>6</td>
</tr>
</tbody>
</table>

#### 3. Transitions: Ate only a few foods

<table>
<thead>
<tr>
<th>%</th>
<th>Description</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>18%</td>
<td>were able to eat more kinds of foods</td>
<td>16</td>
</tr>
<tr>
<td>8%</td>
<td>were no longer able to eat more kinds of food</td>
<td>7</td>
</tr>
<tr>
<td>10%</td>
<td>represents positive net change</td>
<td>9</td>
</tr>
<tr>
<td>74%</td>
<td>had no change in their status between the two periods</td>
<td>66</td>
</tr>
<tr>
<td>36%</td>
<td>remained dietary diverse (both periods)</td>
<td>32</td>
</tr>
<tr>
<td>31%</td>
<td>remained marginally dietary un-diverse (both periods)</td>
<td>28</td>
</tr>
<tr>
<td>7%</td>
<td>remained chronically dietary un-diverse (both periods)</td>
<td>6</td>
</tr>
</tbody>
</table>

#### 5. Transitions: Ate less than it should

<table>
<thead>
<tr>
<th>%</th>
<th>Description</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>17%</td>
<td>were able to eat as they thought they should</td>
<td>15</td>
</tr>
<tr>
<td>11%</td>
<td>ate less than they thought they should</td>
<td>10</td>
</tr>
<tr>
<td>6%</td>
<td>represents positive net change</td>
<td>5</td>
</tr>
<tr>
<td>72%</td>
<td>had no change in their status between the two periods</td>
<td>63</td>
</tr>
<tr>
<td>40%</td>
<td>remained food secure relative to this indicator</td>
<td>35</td>
</tr>
<tr>
<td>26%</td>
<td>remained marginally insecure (both periods)</td>
<td>23</td>
</tr>
<tr>
<td>6%</td>
<td>remained with this food deprivation (both periods)</td>
<td>5</td>
</tr>
</tbody>
</table>

#### 6. Transitions: Household ran out of food

<table>
<thead>
<tr>
<th>%</th>
<th>Description</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>15%</td>
<td>experienced a reduction in incident of running out of food</td>
<td>13</td>
</tr>
<tr>
<td>9%</td>
<td>increase in incident of running out of food</td>
<td>8</td>
</tr>
<tr>
<td>6%</td>
<td>represents positive net change</td>
<td>5</td>
</tr>
<tr>
<td>76%</td>
<td>had no change in their status between the two periods</td>
<td>66</td>
</tr>
<tr>
<td>44%</td>
<td>remained food secure relative to this indicator</td>
<td>38</td>
</tr>
<tr>
<td>26%</td>
<td>remained marginally insecure (both periods)</td>
<td>23</td>
</tr>
<tr>
<td>6%</td>
<td>remained with this food deprivation (both periods)</td>
<td>5</td>
</tr>
</tbody>
</table>

#### 7. Transitions: Someone hungry did not eat

<table>
<thead>
<tr>
<th>%</th>
<th>Description</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>20%</td>
<td>experienced a decrease in experiences of hunger</td>
<td>18</td>
</tr>
<tr>
<td>8%</td>
<td>saw an increase in experiences of hunger</td>
<td>7</td>
</tr>
<tr>
<td>12%</td>
<td>represents positive net change</td>
<td>11</td>
</tr>
<tr>
<td>72%</td>
<td>had no change in their status between the two periods</td>
<td>64</td>
</tr>
<tr>
<td>45%</td>
<td>remained food secure relative to this indicator</td>
<td>40</td>
</tr>
<tr>
<td>22%</td>
<td>remained marginally insecure (both periods)</td>
<td>20</td>
</tr>
<tr>
<td>4%</td>
<td>remained with this food deprivation (both periods)</td>
<td>4</td>
</tr>
</tbody>
</table>

#### 8. Transitions: Someone didn't eat for whole day

<table>
<thead>
<tr>
<th>%</th>
<th>Description</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>16%</td>
<td>reduction of incident of family member not eating the whole day</td>
<td>14</td>
</tr>
<tr>
<td>9%</td>
<td>increase in incident of family member not eating the whole day</td>
<td>8</td>
</tr>
<tr>
<td>7%</td>
<td>represents positive net change</td>
<td>6</td>
</tr>
<tr>
<td>75%</td>
<td>had no change in their status between the two periods</td>
<td>67</td>
</tr>
<tr>
<td>51%</td>
<td>remained food secure relative to this indicator</td>
<td>45</td>
</tr>
<tr>
<td>20%</td>
<td>remained marginally insecure (both periods)</td>
<td>18</td>
</tr>
<tr>
<td>4%</td>
<td>remained with this food deprivation (both periods)</td>
<td>4</td>
</tr>
</tbody>
</table>

#### 9. Transitions: Child: Not eat healthy & nutritious no money

<table>
<thead>
<tr>
<th>%</th>
<th>Description</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>16%</td>
<td>had a child who could now eat healthy &amp; nutritious foods</td>
<td>12</td>
</tr>
<tr>
<td>11%</td>
<td>had a child who could not eat healthy &amp; nutritious foods</td>
<td>8</td>
</tr>
<tr>
<td>5%</td>
<td>represents positive net change</td>
<td>4</td>
</tr>
<tr>
<td>74%</td>
<td>had no change in their status between the two periods</td>
<td>56</td>
</tr>
<tr>
<td>41%</td>
<td>remained food secure relative to this indicator</td>
<td>31</td>
</tr>
<tr>
<td>26%</td>
<td>remained marginally insecure (both periods)</td>
<td>20</td>
</tr>
<tr>
<td>7%</td>
<td>remained with this food deprivation (both periods)</td>
<td>5</td>
</tr>
</tbody>
</table>

#### 10. Transitions: Not enough food no money

<table>
<thead>
<tr>
<th>%</th>
<th>Description</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>16%</td>
<td>were now able to give child food because they enough money</td>
<td>11</td>
</tr>
<tr>
<td>9%</td>
<td>were not able to give child food because they did not have enough money</td>
<td>6</td>
</tr>
<tr>
<td>7%</td>
<td>represents positive net change</td>
<td>5</td>
</tr>
<tr>
<td>76%</td>
<td>had no change in their status between the two periods</td>
<td>53</td>
</tr>
<tr>
<td>41%</td>
<td>remained food secure relative to this indicator</td>
<td>29</td>
</tr>
<tr>
<td>27%</td>
<td>remained marginally insecure (both periods)</td>
<td>19</td>
</tr>
<tr>
<td>7%</td>
<td>remained with this food deprivation (both periods)</td>
<td>5</td>
</tr>
</tbody>
</table>
Appendix 2: Types and Uses of Evaluation

The table below shows the type of questions that an outcomes evaluation is meant to address relative to other types of evaluations.

<table>
<thead>
<tr>
<th>Evaluation Types</th>
<th>When to use</th>
<th>What it shows</th>
<th>Why it is useful</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formative Evaluation</td>
<td>• During the development of a new program.</td>
<td>• Whether the proposed program elements are likely to be needed, understood, and accepted by the population you want to reach. • The extent to which an evaluation is possible, based on the goals and objectives.</td>
<td>• It allows for modifications to be made to the plan before full implementation begins. • Maximizes the likelihood that the program will succeed.</td>
</tr>
<tr>
<td>Evaluability Assessment</td>
<td>• When an existing program is being modified or is being used in a new setting or with a new population.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Needs Assessment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process Evaluation</td>
<td>• As soon as program implementation begins.</td>
<td>• How well the program is working. • The extent to which the program is being implemented as designed. • Whether the program is accessible an acceptable to its target population.</td>
<td>• Provides an early warning for any problems that may occur. • Allows programs to monitor how well their program plans and activities are working.</td>
</tr>
<tr>
<td>Program Monitoring</td>
<td>• During operation of an existing program.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcome Evaluation</td>
<td>• After the program has made contact with at least one person or group in the target population.</td>
<td>• The degree to which the program is having an effect on the target population’s behaviours.</td>
<td>• Tells whether the program is being effective in meeting its objectives.</td>
</tr>
<tr>
<td>Objectives-Based Evaluation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economic Evaluation:</td>
<td>• At the beginning of a program. • During the operation of an existing program.</td>
<td>• What resources are being used in a program and their costs (direct and indirect) compared to outcomes.</td>
<td>• Provides program managers and funders a way to assess cost relative to effects. “How much bang for your buck.”</td>
</tr>
<tr>
<td>Cost Analysis,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost-Effectiveness Evaluation,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost-Benefit Analysis,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost-Utility Analysis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact Evaluation</td>
<td>• During the operation of an existing program at appropriate intervals. • At the end of a program.</td>
<td>• The degree to which the program meets its ultimate goal on an overall rate of STD transmission (how much has program X decreased the morbidity of an STD beyond the study population).</td>
<td>• Provides evidence for use in policy and funding decisions.</td>
</tr>
</tbody>
</table>

Source: CDC (2015)
Acknowledgements

The team wishes to express its gratitude to the Department of Science and Technology, who initiated and funded the study. In particular warm gratitude is due to Ms. Busisiwe Ntuli and Dr Elmary Buis and members of the Project Steering Committee for their strategic guidance and support throughout the study period.

The findings reported in this study are those of the authors and do not necessarily reflect the views of any other party.
1 INTRODUCTION

This is the second of a two part report of the Outcomes Evaluation of the NDC factory in Nkowankowa, undertaken by the HSRC EPD team between February 2015 and August 2016. This report proposes a business model based on the findings and recommendations contained in the main report of the study and the outcome of a profitability analysis using the Net Present Value method.

In section 2, the NPV method and result are presented. A synopsis of the literature is presented in section 3. In section 4 the results from the field study on which the recommendation is based are discussed. Section 5 presents the business model recommendation and section 6 closes with concluding remarks.

2 THE NET PRESENT VALUE ANALYSIS OF THE NDC FACTORY

2.1 Rationale

In order to make an informed decision on what type of business the NDC factory should evolve into after the project phase, we need to have an idea of its profitability going forward. An assessment needs to be made of the future value of the investment in the factory based on its present and predicted cash flow. In assessing the future profitability of a capital investment like the NDC factory, we need to have an idea of how much value the future cash flow generated from the investment will have in today’s money. The method of discounting cash flows is used for this purpose. The idea is to get a glimpse of how much the future predicted cash flows are worth in today’s money.

The difference between the present value of cash inflows and the present value of cash outflows is then used to analyse the profitability of an investment or project. This is a capital budgeting decision. The formula used to calculate NPV in its simplest form is

\[ NPV = \sum_{t=1}^{T} \frac{C_t}{(1 + r)^t} - C_0 \]

Where \( C_t \) = net cash inflow during the period, \( C_0 \) = initial investment, \( r \) = discount rate, and \( T \) = number of time periods.

This is the concept of the time value of money, which simply stated predicts that the value of ten rands today is bigger than the value of ten rands a year from now. Projects that promise earlier returns are therefore more preferable to those that promise later returns.

The predicted cash outflows and inflows of the factory are used to determine whether the project is viable or not. If the difference between inflows and outflows is positive or zero, the investment is worth making. If the difference is negative, the project must be abandoned.

We will evaluate the NDC plant for a three year period taking the current value of the plant as initial investment.

A simple but accurate version of the above formula will be executed using values from the NDC factory 2015 financials bearing in mind that the accuracy of the calculation depends on the accuracy of the data and the suitability of the rate of return.
The rate of return used in the calculation is 9.95%, which is the return on a 3 year fixed term deposit used at Standard Bank as of June 2016. This value is chosen because it gives a close estimate of what the return would be in the three years if the investment was put in a three year fixed term deposit on the money market at Standard Bank (Standard Bank is chosen arbitrarily). The commercial bank rates do not vary considerably such that any rate from any similar commercial bank could have been used.

### 2.2 Data from the factory

The data needed for the calculation is as follows:

1. The initial investment, “C” in the above formula. An investment is almost always made with the goal of earning money in the future. This type of investment typically is in in the form of a cost of the asset being purchased. In the case of the NDC, The initial investment as recorded by the DST was R46, 601, 211.

   So C = 46 601 211

2. The time period, t in the formula. As stated above we will use five years as the long run period for which we will determine the NPV for the investment in the factory. The unit of time used is years.

   So t = 5

3. The cash inflow during the period, C_t. We need to estimate how much money the factory will make during each time period for which it is operating. These amounts (or "cash inflows") are optimistic estimates based on the previous year’s cash inflows and assuming that market conditions stay relatively constant. This is done by weighting the value of the estimated cash inflows for each time period against the amount of money that could be made from an alternate investment in the same period, referred to as "discounting" the cash flows for each year and is done using the simple formula \( C_t / (1 + r)^t \), where \( C_t \) is the amount of the cash flow for year t, r is the discount rate, and t represents time. The cash flow projection for 2015 from the company accounts was 26 297 000, so we will use this figure to represent the cash income in year 1.

   \[
   C_1 = 26 297 000 \\
   C_2 = 28 663 730 \\
   C_3 = 31 243 466 \\
   C_4 = 34 055 378 \\
   C_5 = 37 120 362
   \]

   The initial cash flow figure was sourced from the accounts receivable for the NDC factory for 2015. The subsequent figures are calculated with the assumption that the operation will have a similar turnover every year adjusted for inflation at 9%.

   Next we sum the discounted cash flows and subtract the initial investment. The result represents the NPV — the net amount of money that the factory will make compared to the alternative investment (fixed call deposit on the money market at Standard bank) that gave us the discount rate. In other words, if this number is positive, the factory will make more
money than if it had been invested in a call deposit on the money market, if it's negative, the factory will make less money.

\[
NPV = \sum_{t=1}^{5} C_t - C_0
\]

\[
NPV = 70,936,225
\]

The NPV being positive indicates that this is a viable venture to undertake. The question that remains is what form the business should take in practice. There are several options that are first highlighted in the literature review that follows.

3 Impressions from the Field

There seems to have been issues of trust from the community surrounding the operation of the factory. The overriding sentiment was that the community did not know how the factory came about and were of the impression that the manager owned the factory and she was merely doing them favours by employing them in the factory. These issues of trust seem to have been compounded by the management structure at the factory which appeared to be very closely knit and of the same race.

Management problems were cited by both the factory workers and the key informant interviewees. These problems ranged from an aggressive form of management to difficult employer/employee relationships in the factory.

Another contentious issue coming from the focus group discussions was the employment processes and procedures. Apart from the fact that some people in the community clearly felt they had to pay to get a job, the type of jobs given to community members were also an issue. None of the community members was part of the management team. Almost everyone that was employed from the community was employed for some form of low paid manual labour work. As the demographic statistics from the households reveal, there are professionally trained people in the community who probably could have been hired to a management position.

It was not clear to most interviewees who actually owned the factory, hence the supposition that the manager was the owner of the factory and whatever the manager said was final.

It is therefore important that the enterprise that the NDC factory evolves into should address the above concerns and provide an avenue not only for the local people to get low paying jobs but for professional in the community to get meaningful semi-skilled, skilled and managerial positions in the factory.

4 Towards an NDC pro-livelihoods support social enterprise model

The literature on community models both national and international supports the paradigm of a social enterprise although there seems to be no clearly defined model for community development. Depending on community needs different models can be developed. The Community Business
Matching model developed by Buescher (1999) is an important model which should be considered in any community to assess the community needs before any intervention.

This literature background together with results of the Net Present Value method and the household survey will inform what business model would best suit the NDC operation after the project life is ended. Figure 1 is a depiction of this process.

The results of the field work, the interviews with the key informants and the NPV analysis all make a strong case for the NDC factory to be operated as a social enterprise model setup going forward.

While the definition of a social enterprise is still a contentious issue in the literature, in a nutshell a social enterprise is a business enterprise that has social and environmental value creation as its main focus. Various versions of this definition can be found in the literature, but the overriding principle is the creation of social and environmental value through the operation of the traditional enterprise (Diaz-Foncea and Marcuello, 2012). The social enterprise’s purpose is to bridge disparate and often competing interests of non-profit and for-profit organizations. So this is a special type of enterprise that can generate a profit while pursuing a social purpose. Diaz-Foncea et al (2012), explain that these enterprises appear as a result of failure of markets to produce certain services, most especially in the areas of education, social services and health among others. Social enterprises are therefore non-profit private organizations providing goods or services directly related to their explicit aim to benefit the community while operating as a normal business. They rely on collective dynamics involving various types of stakeholders in their governing bodies; they place a high value on their autonomy and they bear the economic risks linked to their activities (Defourny, 2001). The following section surveys the literature of studies which assessed different social enterprise models used in other countries.

5 Social enterprises in the literature

5.1 Community Business Matching (CBM) model

Buescher et al., (1999) identified a need for a community model which could incorporate both economic and non-economic goals. They developed the Community Business Matching (CBM) model based on two measures, the desirability and compatibility indices. The desirability index is a measure of match between business benefits and community goals. Application of the CBM model in two communities in Vermont demonstrated the differences in community needs suggesting that CBM can be used to identify factors which are important for economic development.

5.2 Township-Village Enterprises

Jin and Qian (1998) used provincial data to carry out an empirical analysis on Township-Village Enterprises versus private ownership of firms. The TVE’s are rural (community government-owned) local public firms controlled by the community (township or village) government. Four theories were important in the development of TVE’s and these are:

1. Financing of investments

They argued that TVE’s have an advantage of accessing financial support from government compared to private firms. TVE’s use their political advantage with the local government to acquire financial support while private firms finance maybe sourced from banks or personal loans.
2. **Transaction cost**
The theory argues that TVEs, with help from the community government, have a lower transaction cost in dealing with the existing state owned enterprises (SOEs), which enable them to access the SOEs’ technology and materials.

3. **Urbanisation**
This theory encourages urbanization of TVEs. It views developing TVEs as vehicles for the community government to convert community assets to cash flow under the situation in which the development of asset markets lags behind that of product markets. For example, land closer to urban areas is more valuable, communities closer to them have more incentives to transform assets into income streams so as to improve the TVEs.

4. **Security property rights**
This theory prioritises the importance of securing property rights of TVEs over private enterprises with local government having power over political protection. To do this, under the TVEs the community government can integrate government activities with other business activities. However, in this case the TVEs must be excellent in performing the central government activities. Thus the government will become less predatory towards community government firms (TVEs) than private firms and thus property rights under this theme are more secure. In such a case, both the central government and the community government can benefit from TVE ownership.

5.3 **Community empowerment agribusiness model**
According to Ustriyana (2015) an agribusiness model based on community empowerment is an approach that takes into account several factors with each having different roles and functions.

Some of the factors are:

1. **Role of Universities also called Primary factor:**

Universities must assess the potential of the available agricultural land and human resource. Furthermore, universities must assess the rural community environment and any business opportunities that suit the community.

2. **Main factor** consist of five factors these are-farmer, banking institution, economic enterprise, related institutions and entrepreneur.
   a. **Farmer:** To overcome some of the challenges involved in farming, farmers must use the output of research conducted by the universities and form a cooperative (local economic enterprise) which will then be used as a fund provider. This kind of partnership will surely give some benefits such as market assurance for the farmer’s product, hence preventing the farmer from the price fluctuation risk.
   b. **Banking institution:** This is loan provider for the local economic enterprise (cooperative) and the entrepreneur. The loan is through the cooperative which already has an agribusiness or agro-industry business.
   c. **Local economic enterprise:** Cooperative shall function as an enterprise at the rural area as well as a mediator of production means and farming machine/tools to its members. Cooperative also serve as a mediator of agricultural products produced
by the members. Cooperative is also expected to manage the agricultural products (sorting, packing and stocking) as needed by the market demand.

d. **Related institution:** In this case, the related institution involvement is represented by the government. It is expected that the involvement of government in terms of policy and enrichment be supportive to rural community empowerment.

e. **Entrepreneur:** Entrepreneur here refers to the entrepreneur who owns capital and also trader. As a capital owner, they collaborate with cooperatives in providing production means and farming machines/tools and act as technology supplier to support the rural agribusiness activity.

### 5.4 Models of grocery store ownership in rural communities

Furthermore, Bailey (2010) identified four primary models for ownership of grocery stores in rural communities. Modifications of these models could be used to implement other social enterprises in rural areas with a view to meeting the social imperative while creating employment and easing poverty.

1. **Independent retailer**

These stores are mostly dominant in the rural communities. In the United States, some state initiatives have been developed to address the capital needs of the individual retailers. An example of these initiatives includes the Pennsylvania Fresh Food Financing Initiative which is a private-public partnership that provides grants and loans to independent retail stores in low-income communities and neighbourhoods. The model has also been applied in other states including Illinois, Louisiana and New York (Bailey, 2010).

2. **Cooperatives and rural grocery store**

One of the intriguing ownership models for rural grocery stores is the cooperative model. An effective cooperative model of rural grocery store ownership is achieved through a variety of stages. Lawless and Reynolds (2005) outlined the following to be important components of an effective cooperative model of rural grocery stores:

- Competition
- Community and industry support
- Member support
- Quality of the business plan
- Business growth patterns
- Market niche
- Board and management leadership
- Finance

Lawless and Reynolds (2005) further outlined the following as keys to a successful rural grocery cooperative:

- **Strong operational management.** A successful cooperative employs managers who are willing to innovate, make necessary changes, invest and grow.
- **Member, community and industry support.** Successful rural grocery store cooperatives had “substantial leadership and financial support from members” at the start-up phase. Members of existing cooperatives were more likely to become members and patrons of the new grocery store cooperative. Cooperatives also benefited from the support of local public
• **Reasonable competition.** Successful cooperatives “benefited from a location as the sole grocery store in their immediate area. “Finding an attractive location with “reasonable “competition allows a cooperative effort to find and cater to its niche market.

• **Dedicated organizers.** Successful cooperatives drew on the leadership skills of dedicated volunteers.

3. **Community-Owned Grocery Store**

This ownership model is similar to a cooperative. The community is responsible for running the store rather than a cooperative entity. The community-owned store is a corporation, capitalized through the sale of stock to local residents and operated by an elected board of directors. Some communities will have more residents with the ability to accomplish this than will other communities. To avoid domination by one person or a small group of residents, stock sales are set per individual. The benefits of the model to communities include the following:

• Preserve town’s local character
• Enable those who feel the impact of a decision to make critical decisions affecting the business
• Neighbours understand the economics of operating a rural grocery store
• Support local economies by keeping locally generated dollars recycling in the community
• The community owned grocery store complements other local businesses to create a diverse and thriving local economy
• The community owned grocery store provides convenient access to a variety of goods, staffed by local people

5.5 **Agribusiness models in national policy**

In South Africa, the Accelerated and Shared Growth Initiative for South Africa (AsgiSA) committed itself to establishing an agribusiness model in 2009. The model focused on providing support to emerging farmers producing crops such as maize and soya beans. These crops were to be expanded to include high value cash crops targeting both the local and the export markets. Under the agribusiness model, Asgisa committed to:

• Providing business and technical support to the participating farmers;
• Providing local communities with input support including fertilisers, pesticides and herbicides;
• Making the necessary arrangements to outsource any business and technical support activities with reputable strategic partners in instances were such skills are presently unavailable in-house;
• Enter into formal written arrangements with the participating farmers;
• Agree beforehand the costs attributed to any of the support provided to the participating farmer. It is envisaged that Asgisa-EC will be able to procure various agricultural inputs efficiently through negotiating for discounts and rebates on bulk purchases;
• Facilitate the marketing of the produce of the participating famers;
• Recover certain or all of the operating costs incurred by Asgisa-EC directly and objectively attributed to each participating farmer from the gross proceeds on the sale of the produce of such farmers.
Asgisa also sought to establish relationships with key market players aimed at securing critical agricultural inputs and selling the agricultural produce of the participating farmers. To sustain the agribusiness model, Asgisa would have to enter into strategic financing and investment relationships with preferred developmental partners. These would include development banks, bilateral and multilateral financial institutions and donor agencies.

As a social enterprise operating in this environment of the AsgiSA-EC, the NDC would have to take on a form of business that takes complete advantage of the created environment so as to be able to cater to its community and environmental aspects of its new existence. The best way to do this is to take on one of the following possible operational models. These are configurations of operations that can be used to create both social and economic value rather than legal structures in themselves. The operational models described below are designed to work in accordance with the new social enterprise’s financial and social objectives, market dynamics, client needs and the country’s legal environment.

6 The fundamental Operational Models

The following fundamental models of social enterprises are adapted from Wolfgang (2012). The objective of Wolfgang’s exposition is to show that it is better to build a social enterprise based on a hybrid of two or more models than a single model. In the following sections a synopsis of the fundamental models is given leading to an explanation of what a hybrid model would look like.

6.1 Entrepreneur Support Model

The entrepreneur support model of social enterprise sells business support and financial services to its target population or "clients," self-employed individuals or firms. Social enterprise clients then sell their products and services in the open market.

Figure 1: The Entrepreneur Support Model

The entrepreneur support model is usually embedded: the social program is the business, its mission centres on facilitating the financial security of its clients by supporting their entrepreneurial activities. The social enterprise achieves financial self-sufficiency through the sales of its services to clients, and uses this income to cover costs associated with delivering entrepreneur support services as well as the business’ operating expenses.

6.2 Market Intermediary Model

The market intermediary model of social enterprise provides services to its target population or "clients," small producers (individuals, firm or cooperatives), to help them access markets. Social
enterprise services add value to client-made products, typically these services include: product development; production and marketing assistance; and credit. The market intermediary either purchases the client-made products outright or takes them on consignment, and then sells the products in high margin markets at a mark-up.

Figure 2: The Market Intermediary Model

6.3 Employment Model

The employment model of social enterprise provides employment opportunities and job training to its target populations or "clients," people with high barriers to employment such as disabled, homeless, at-risk youth, and ex-offenders.

Figure 3: The Employment Model

The organization operates an enterprise employing its clients, and sells its products or services in the open market. The type of business is predicated on the appropriateness of jobs it creates for its clients, regarding skills development, and consistency with clients' capabilities and limitations, as well as its commercial viability.

6.4 Fee-for-Service Model

The fee-for-service model of social enterprise commercializes its social services, and then sells them directly to the target populations or "clients," individuals, firms, communities, or to a third party payer.
The fee-for-service model is usually embedded: the social program is the business, its mission centres on rendering social services in the sector it works in, such as health or education. The social enterprise achieves financial self-sufficiency through fees charged for services. This income is used as a cost-recovery mechanism for the organization to pay the expenses to deliver the service and business expenses such as marketing associated with commercializing the social service. Surpluses (net revenue) may be used to subsidize social programs that do not have a built-in cost-recovery component.

6.5 Low Income Client as Market Model

The Low Income Client as Market model of social enterprise is a variation on the Fee-for-Service model, which recognizes the target population or "clients" a market to sell goods or services.

The emphasis of this model is providing poor and low-income clients access to products and services whereby price, distribution, product features, etc. bar access for this market. Examples of products and services may include: healthcare (vaccinations, prescription drugs, eye surgery) and health and hygiene products (iodized salt, soap, eyeglasses, earing aids, sanitary napkins), utility services, (electricity, biomass, and water), etc. for which they pay.

The Low Income Client as Market Model target population has also been described as those living at the "base of the pyramid." This is a socioeconomic designation of the 4 billion people who live primarily in developing countries and whose annual per capita income fall below $1500 purchasing power parity (PPP) 2; and earn less than $5 a day 3. People in this income bracket cannot realize economies of bulk purchase, and ironically may pay up to 30% more for products and services than middle income consumers.

6.6 The Cooperative Model

The cooperative model of social enterprise provides direct benefit to its target population or "clients," cooperative members, through member services: market information, technical assistance/extension services, collective bargaining power, economies of bulk purchase, access to products and services, access to external markets for member-produced products and services, etc.
The cooperative membership is often comprised of small-scale producers in the same product group or a community with common needs—i.e. access to capital or healthcare. Cooperative members are the primary stakeholders in the cooperative, reaping benefits of income, employment, or services, as well as investing in the cooperative with their own resources of time, money, products, labour, etc.

### 6.7 The Market Linkage Model

The market linkage model of social enterprise facilitates trade relationships between the target population or “clients,” small producers, local firms and cooperatives, and the external market.

The social enterprise functions as a broker connecting buyers to producers and vice versa, and charging fees for this service. Selling market information and research services is a second type of business common in the market linkage model. Unlike the market intermediary model, this type of social enterprise does not sell or market clients’ products; rather it connects clients to markets.

The market linkage model can be either embedded or integrated.

If the enterprise is stand-alone; its mission revolving around linking markets, and its social programs support this objective, the model is embedded. In this case, the social program is the business, income generated from enterprise activities is used as a self-financing mechanism for its social programs.

### 6.8 The Complex Model

A complex model of social enterprise combines two or more operational models. Complex models are flexible; virtually any number or type of operational models can be combined into one social enterprise.
Models are combined to achieve desired impact and revenue objectives. For example, operational models that fall into integrated or external social enterprise categories may yield greater financial benefit, whereas embedded social enterprises offer higher social return, thus models are combined to achieve the dual objectives of the social enterprise. If appropriate for an organization's target population, the employment model is often combined with one of the other models to add social value—i.e. employment and organizational support model (as illustrated). Operational models are often combined as part of a natural diversification and growth strategy as the social enterprise matures.

7 PROPOSED MODEL

From the foregoing exposition of models taking into consideration the findings of the study and the profitability analysis the following two models or a hybrid of the two is proposed for the NDC factory in Tzaneen in order to meet the dual objectives of development and empowerment of the community through the operation of the NDC factory as a social enterprise.

7.1 The Cooperative Model

The first option is the operation of the factory as a cooperative, with power devolved into a community based Board of Directors, who directly influence the selection of the management team and provide oversight over the operation of the factory. This option would involve a scheme of empowering local community investors and factory workers through a share-holding scheme. The details of such a scheme would have to be worked out with agricultural investment experts.

7.2 A Local Entrepreneurship Empowerment Model

The second is the packaging of the factory as a local entrepreneurship empowerment package to a successful local entrepreneur to be chosen by the DST. This would involve a selection/bidding process where individuals or partnerships bid for total control over the assets of the factory. The DST would have to lay down the rules of engagement and the requirements and expectations of the eventual successful owner. Whoever wins the bid would have to adhere to strict community development empowerment clauses over a probation period after which a community empowerment evaluation would be carried out by an independent assessor before the total devolution of power and assets to the entrepreneur. The operational details of the firm would also have to be worked out by entrepreneurship and investment experts together with the DST.
8 Concluding Remarks

An innovative approach to the creation of the social enterprise that the NDC becomes is necessary to make sure that the community is the eventual winner of the local mango beneficiation industry in Nkowankowa and the neighbouring areas.

9 References


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