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SECO Local Economic Development Assistance Programme in iLembe – Value Chain and Cluster Development (VCD) Component:

Final Report

Report prepared by:

Mike Morris, University of Cape Town

Research team:

David Perkins

Duncan Pringle

Belynda Petrie, One World Group

Sagay Moodliar, TechnoServe South Africa

Under the supervision of:

Fabio Russo, UNIDO

Nima Bahramalian, UNIDO

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Comments and suggestions on issues raised in this report are welcome and may be addressed to Fabio Russo at f.russo@unido.org.

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Table of Contents

1. Introduction	4
1.1 Constrains and Tensions.....	5
1.2 Report Structure	5
Section A: Summary of Main Findings and Recommendations	6
2. Status of sugar, wood, horticulture value chains	6
2.1 Market Orientation of these three value chains	6
2.2 Lead firm and SME dynamics in these three value chains.....	6
2.3 Renewable energy dynamics in the sugar and wood value chains.....	7
2.4 Status of Training and Support Institutions in iLembe.....	8
2.5 Absolute barriers for a SECO/UNIDO intervention programme	9
2.6 Summarising the problem for a SECO/UNIDO intervention programme	9
3. Priority opportunities for a SECO/UNIDO intervention programme	10
3.1 Support for smallholder sugar and fresh food farmers	10
3.2 Support for a cluster of furniture firms.....	13
3.3 Energy diversification opportunities	14
3.4 Lesser priority opportunities.....	17
4. Monitoring and Evaluation.....	19
Section B: More detailed discussion of findings and opportunities	20
5. Sugar Value Chain.....	20
6. Wood value chain.....	24
7. The furniture industry in the wood value chain.....	26
8. Horticulture Value Chain	27
8.1 Fresh fruit and vegetables	27
8.2 Macadamia Nuts	30
8.3 Cut Flowers.....	31
9. Training and Support Institutions in iLembe.....	32

1. Introduction

SECO developed a five component Programmatic Approach for Local Economic Development in the iLembe District, consisting of a four-year long intervention with the overarching purpose of contributing to the improvement of the economic future of the area and the quality of life of its inhabitants. The Programme interventions are intended to build the capacity of the local area for economic activity, job creation and urban development.

Within this programme UNIDO was tasked with developing and implementing the Value Chain and Cluster Development (VCD) Component. The aim of the component is to develop the economic potential of the KwaDukuza and Mandeni Local Municipalities. The VCD component is intended to be very practically focused, providing practical solutions, technical assistance and advisory services (on market access) directly to the producers and their support institutions in these municipalities.

The inception phase of this component consisted of a research project to analyse opportunities within specific value chains with a high market potential (in particular export) that also create job and income opportunities for the local population of iLembe District. The value chains covered are sugar, wood, and horticulture (fresh fruit and vegetables, macadamia nuts and cut flowers). Within these value chains there is also a focus on biomass/renewable energy opportunities.

The aim is to support SMEs to take advantage of market access potential within these value chains and assist them to comply with the required standards (quality, safety, social, and environmental) determined by local, regional, and international buyers. It was envisaged that the inception phase tasks would be skewed towards the horticulture value chain as containing the most potential. The focus would be on existing producers who already demonstrate necessary capabilities rather than establishing greenfield enterprises.

A research team comprising UNIDO and local expertise was marshalled. The local expert team undertaking the primary research comprised the following:

- Mike Morris (as lead and value chain expert),
- Dave Perkins (key institution and value chain linkage components),
- Duncan Pringle (smallholder producers),
- Belynda Petrie (biomass and renewable energy)

However, it is important to note that the team did not operate within research and intellectual silos. The research and information generated from each expert cut across the various areas to comprise a holistic result. This is reflected in their various component reports.

In addition to the work of the research team, TechnoServe were contracted to assess the prospects for developing smallholder sugar farmer capabilities to produce fresh vegetable products alongside sugar cane.

The inception phase of the project runs from December 2016 to June 2017. This final report therefore alerts SECO and the UNIDO with respect to indicative findings, potential opportunities and recommendations. The scope of this report is to succinctly report, in a practical rather than academic manner, on key findings with respect to opportunities within these value chains, potential products, barriers to entry, limitations and constraints, and

potential for strategic implementation interventions in the respective value chains under scrutiny.

1.1 Constraints and Tensions

The strategic objectives underlying the project - of realising export market potential and local economic development - are not always immediately reconcilable given the situation within the District and within the value chains targeted. Opportunities that focus on immediate high export market potential may not necessarily bring inclusivity to the fore in the short-run. Moreover, they often fail to sustain export as they are not built on a competitive local industry. Likewise local economic development strategies do not necessarily recognise that export will open up job and income opportunities in the District. In doing so, they may concentrate efforts locally and ignore export's potential for long-term sustainability of local economy.

Within this context we also need to bear in mind the following constraints. This inception stage of the overall programme is a scoping exercise, a feasibility research study, and not a full implementation study. There are hence limits to how specific one can be at this stage of the process. Making fine grained decisions about the specific nature of future programmes, skills upgrading and indicative products depends on a range of criteria involved in support implementation outside the control and beyond what can be gleaned from interviews focusing on broad possibilities and current constraints. Specifying key success factors and creating interventions to overcome constraints facing for example smallholder farming (e.g. meeting quality standards, having economic infrastructure in place such as packhouses and cooling units, creating logistics operations, building supplier capabilities, creating value chain market linkages) belong to the ambit of expertise of the project management and external support organisations involved in the four year implementation exercise.

1.2 Report Structure

This Final Report follows the following structure: Section A synthesises the main findings, opportunities, and recommendations. It sets out the current status of the three value chains – their market orientation, lead firm and SME dynamics, renewable energy dynamics, training and support institutions, barriers to additional support, and summarises the key problems. Then it details the three identified areas of opportunity with specific recommendations for VCD Component that have been identified as key priorities. It also lists a number of lesser priority opportunities that could be considered either at a later stage or with increased resources. Section B provides a detailed summary of the key issues identified from the field work undertaken by the research team. It is the basis upon which the key issues and recommendations identified in Section A are derived. This report is backed up by seven supplementary reports – introduction & context, sugar, wood, horticulture (vegetable and fruit), floriculture, macadamia nuts, renewable energy - containing a full statement of research findings and recommendations from the research team members, as well as a TechnoServe report.

Finally a workplan is presented which layouts specific activities to be undertaken in the rest of the inception phase to design detailed intervention plan, establishment of baseline and capacity building activities as prerequisite for implementation of the VCD component of the SECO-LED Programme.

Section A: Summary of Main Findings and Recommendations

2. Status of sugar, wood, horticulture value chains

2.1 Market Orientation of these three value chains

- The sugar and wood value chains have a strong export orientation component to their revenue streams through strong commercial entities with their roots in South Africa but having grown and developed into multi-nationals with operations in a number of countries. Smallholder sugar and timber farmers, although limited in total output, play a role by providing product to the lead firms within these value chains. Furniture manufacturers, as an off shoot of the wood value chain, are wholly domestically oriented.
- The horticulture value chain is primarily domestically oriented but also, through supermarket expansion into the Southern African region, encompasses export of value added packaged fresh food and processed products. There are some export oriented streams (macadamia and cut flowers from other regions) into the global market. Cut flowers from iLembe are wholly domestically oriented.

2.2 Lead firm and SME dynamics in these three value chains

- The lead milling firms (Tongaat-Hulett, Illovo, Mondi, Sappi) driving the sugar and wood value chains in South Africa have a long standing history of encouraging smallholder sugar and timber smallholder farmers through various programmes. Two of these lead firms, namely Tongaat-Hulett and Sappi are active in the iLembe District.
- The national lead supermarket firms (Shoprite/Checkers, Pick n Pay, Woolworths, Spar, Food Lovers Market) source domestically between 95% - 97% of fresh food and up to 70% of processed products. These supermarkets are very committed to sourcing from smallholder fresh food farmers if they can meet the required standards.
- Smallholder farmers providing product within these three value chains are highly valued by the lead firms because of their socio-economic development impact. This gives them a significance beyond the quantitative contribution towards total output sourced. However, despite this, smallholders still have to comply with quality standards and rarely benefit from preferential pricing.
- The lead sugar and timber mills have advanced supplier development programmes in place which they run themselves to maintain and develop their small farmer components.
- As a result of these programmes there are a significant number of smallholder sugar farmers across all four local municipalities of the iLembe District. There are also a group of small timber growers supported by the lead timber mills in the two inland local municipalities. However smallholder sugar and timber farmers have a major operating problem arising from a singular focus on mono-cropping. This gives rise to a household cash flow problem, and stunts their further economic growth and development.

- The lead supermarkets do not have the same advanced level of supplier development programmes as the sugar and timber lead firms. However the lead supermarkets are all committed to smallholder farmer sourcing, and are interested in external support interventions to expand and upgrade local smallholder farmer sourcing. Their only proviso is that delivery of product is time sensitive and must comply with quality standards; a more difficult challenge than in the case with sugar cane and timber.
- There are a number of small to medium sized furniture firms concentrated in KwaDukuza and Isithebe – roughly an equal distribution of between 8-9 firms in each area. The medium size firms range from 250 workers up to a workforce of a 1000 for the largest. However many are currently on short time because of the contracting economy. Most of these firms are producing lounge suites, which require a combination of wood and textile inputs. Hence these firms cross over the wood and textile value chains.
- These furniture manufacturers are focused on the domestic market, supplying retail chains such as OK Furniture, Joshua Doore and Russells Furniture, as well as small local retail outlets. They are not supported by any of the large lead retail furniture companies in terms of supplier development programmes. Nor do they receive any government assistance. They are wholly dependent on their own resources for sustaining and developing their operations.

2.3 Renewable energy dynamics in the sugar and wood value chains

- Outgrower sugar schemes, supported by lead firms, create significant numbers of jobs and stimulate enterprise development. Outgrower and industry diversification schemes, particularly through the water-food-energy nexus, produce energy from waste matter, reducing input costs and creating additional revenue streams across the sector. This is happening to a limited extent in the iLembe District.
- The lead sugar and timber milling firms all have co-generation facilities, at a minimum to generate their own electricity supply. They have advanced feasibility studies and engineering plans to substantially expand co-generation with a view to selling surplus electricity into the grid, thus creating additional revenue streams. The Sugar Association of South Africa has been actively supporting them in these endeavours.
- Some sugar lead firms have also conducted feasibility studies for ethanol production at scale. Both this and co-generation are understood to be important opportunities for diversification from sugar production as the trend toward declining sugar consumption accelerates. Both expanded co-generation and ethanol production will rely on increased uptake from growers and/or increased number of growers' participating in the value chain.
- Cogeneration is a heat to energy conversion process otherwise known as Combined Heat and Power (CHP). As such, it sees the simultaneous production of electricity and heat, both of which are used by the mills. Cogeneration affords greater efficiencies to sugar milling processes, through significantly optimising production capacities. In some mills, expanded cogeneration requires additional waste material from the sugar cane plant, obtained through "green harvesting" (as opposed to post-harvest burning of fields).

- Ethanol is a renewable, domestically produced alcohol fuel made from plant material - sugar cane, corn or grasses. In the sugar value chain, it is produced by the fermentation of sugar cane juice and molasses. Ethanol is a low carbon fuel that can reduce oil dependence and can be blended with petrol in vehicles that have flexible fuel engines.
- The National Economic Development and Labour Council (NEDLAC) is considering a sugar production diversification strategy as a job mitigation programme proposal directly in response to the job loss implications of the proposed sugar tax. If implementation is agreed, ethanol will become a viable investment strategy for the lead sugar mill firms who intend to partner with the automotive industry. Their resultant requirements for smallholder contributions will “exponentially increase jobs and value for small growers”.
- The potential for expanded co-generation, although understood to attract a higher cost of investment for lead firms than ethanol, is substantial. Tongaat submitted a bid to the Renewable Energy Independent Power Producer Procurement Programme (RE IPPPP) for a 100 MW facility, whereas most of the existing facilities generate between 2-5MW on average. Co-generation at scale and ethanol production will increase the value of the sugar cane plant and waste matter and thus the revenue stream for growers.

2.4 Status of Training and Support Institutions in iLembe

There are no Technical and Vocational Education and Training (TVET) institutions in the iLembe District. However the Umfolozi TVET College, with its central office in Richards Bay, has satellite campuses in iSithebe and Mandeni which serves the iLembe district. These two campuses offer vocational qualification at various NQF Levels, as well as standalone certificated training courses in various occupational activities. The degree courses have relatively high pre-requisites qualification requirements to be admitted and are hence unlikely to be useful for all beneficiaries of the SECO-LED programme. For example the carpentry and joinery courses are at the artisanal level of N2 and N3. The farming management is at the N4 and N5 level. However the skills training courses are more in line with the capabilities and objectives of the SECO-LED programme. These are skills training courses in: ABET, Bricklaying & Plastering, Carpentry, Clothing Production, End User Computer Courses, Community House building, Cooking & Catering, Electrical, Garment Making, Home Decor, ICDL, Manufacturing & Engineering (Boilermaking), Panelbeating, Plant Production, Plumbing, Vehicle Services, Welding.

Other forms of support for productive sector activities in iLembe district is limited to

- The Agribusiness Development Agency (ADA), which is a provincial public entity providing a range of services (information, resource mobilization, facilitation services, and 50% grant funding for qualifying value-add businesses etc.) and operating in collaboration with the provincial Department of Agriculture and Rural Development (DARD).
- Enterprise iLembe, the economic development agency for the iLembe District Municipality responsible for Trade & Investment Promotions and Local Economic

Development in the region, mandated to drive economic development and promote trade and investment in the region.

- Sector associations - the South African Sugar Association and Forestry South Africa.
- Lead firms in the sugar and timber sectors with programmes to support their suppliers.
- Specialist laboratories such as the Dube AgriLab tissue-culture facility producing plant material for seed cane and for the production of Gerbera and Anthurium flowers. This facility is housed in the Dube Trade Port which lies outside of iLembe.
- Any other training courses that can be brought in for specialised and specific purposes.

2.5 Absolute barriers for a SECO-LED intervention programme

- There is little direct opportunity for external intervention to develop smallholder farmers in the sugar and wood value chains in their current form. The advanced nature of the extension and development programme run by the lead mills leaves little opportunity for a separate SECO-LED programme directed at developing smallholders since the impact thereof is likely to be marginal and would be a sub-optimal usage of limited resources.
- There are a small number of successful smallholder farmers providing various fresh vegetables to supermarkets and they would benefit greatly from a support program. However they are individually scattered and widely dispersed across the District. This fresh food sector is therefore currently constrained by the high level of geographic and product dispersion of these smallholder farmers which makes it difficult to achieve agglomeration and scale effects for an external intervention program.
- The cut flowers sector is heavily constrained by technical factors which make developing a significant smallholder grower component highly unlikely.
- Macadamia nut production requires major upfront capital costs. In addition there are cash flow operating costs due to the long lead times before saleable product is available (i.e. 3 to 4 years from establishment to first yields, which gradually ramp up to break-even in about year 7). Although macadamia nut production has potential, these high start-up costs mitigate against an intervention at scale in this sub-sector, without significant appropriately structured funding that blends concessionary finance with commercial debt and equity.

2.6 Summarising the problems for the SECO-LED intervention programme

- The wood and sugar value chains have created agglomeration and scale effects for smallholder farmer interventions, but there are limited possibilities for an external intervention programme outside of diversification into energy production (ethanol, cogeneration, biogas).
- The opportunities for a support programme appear to lie in the fresh food value chain, but this sector in iLembe exhibits dispersion rather than agglomeration thereby inhibiting a viable and cost effective external intervention program.

- The nub of the problem constraining an external intervention lies in conceptualising these various value chains in isolation. If a wholly different conceptual approach to situating these smallholder farmers within these value chains is adopted then a new potential for them and an external support intervention emerges. If the smallholder farmer components of the sugar/wood value chains are analysed not in isolated value chains but rather as a nexus enabling them to cross cut with the fresh food value chain then a substantial opportunity for an external intervention programme appears.
- In practical terms this means viewing the agglomerated smallholder sugar (and perhaps timber) farmers as having the potential to diversify production away from mono cropping into fresh food directed towards local supermarkets (and possibly other markets), without necessarily restricting their current production. Indeed there may well be a spill over effect from raising their capabilities which also increases sugar yields and hence smallholder income returns.

3. Priority opportunities for a SECO-LED intervention programme

In the narrative below we summarise three critical opportunities for prioritisation as having the potential to yield the greatest results within the limited confines of the proposed SECO-LED programme. In other words they are prioritised on the basis of how SECO/UNIDO can get the “biggest bang for their buck”. There are other opportunities which can be considered, either as lower order priorities or to be sequenced in later years in the programme. These are contained below as secondary opportunities in the main report.

3.1 Support for smallholder sugar and fresh food farmers

- If a SECO-LED intervention programme can be designed and implemented to assist smallholder farmers already established in the sugar value chain to diversify into fresh food products (e.g. tomatoes, green beans, peppers etc.) for the various supermarkets (and other markets) then this would supplement the current supplier development programs within these chains, and we have a win-win result for all parties concerned. This may only apply to the smallholder sugar farmers since the timber smallholders are only found in the iLembe inland local municipalities which fall outside the scope of the SECO-LED programme.
- TechnoServe (TNS), who has already successfully implemented a smallholder sugar farmer diversification programme in Mpumalanga, investigated whether a customised programme for smallholder sugar farmers diversifying into fresh food production could be implemented and scaled up in iLembe District. The Mpumalanga intervention has resulted in: sales of tomatoes and peppers to KwaZulu-Natal supermarkets; capacity building and skills upgrading of these small sugar farmers; and a spill over effect of increased sugar yields.
- TNS’s conclusions from their field study are that a programme can be successfully implemented in iLembe. In order to diversify into fresh produce smallholder sugar farmers require irrigation systems, a pack-house, co-ordination between them through an aggregation hub to create scale, and external support to build capabilities to diversify into commercially viable fresh produce across a range of possible crops – e.g. tomatoes, green peppers, butternuts, cabbages, etc. With such support

smallholders have the potential to generate significant revenue and profit across a range of farm sizes - depending on whether production occurs on one hectare, half hectare or quarter hectare plots. Tomatoes are the highest yielding crop, with revenue and gross profit estimates of R240,000 and R54,372 respectively for one hectare plots per season, or for cabbages revenues of R114,000 and gross profit of R39,194 per season. In iLembe it is possible to achieve two alternative crops per season over 9 months of the year. Hence an ideal situation would be to grow tomatoes in the summer and another crop (e.g. cabbages) as a winter crop.

- This investment of resources into these smallholders will also have spill over effects on sugar production on the selected farms. Currently, sugar smallholders are generally operating at either breakeven point or making a loss due in the main to impacts of drought and inadequate management as compared to normal rainfall seasons in which profits could be R3,000 to R5,000 per hectare. With training and mentorship to raise production efficiencies, installation of irrigation, and intensive fertilizer usage there is the potential to also increase sugar yields substantially, generating profits up to R11,500 per hectare.
- It is estimated that the capital investment to develop irrigation infrastructure, purchase equipment needed for production, and capacitate farmers is R100,000 per hectare. A staged process is proposed, involving a small number of smallholders initially and then ramping this up over the period of the programme to around 80 farms covering a total of 40 hectares, in order to sustain a pack-house operating at economically efficient levels. The SECO-LED programme is not envisaged to provide financial injections in either a grant or loan format. However the programme can play a facilitation function to secure the required funding from other public and private sources.
- A diversification programme into fresh food should be carefully crafted so as not to be seen to be in conflict with how these small holder sugar farmers fit into the sugar value chain and feed the sugar mills. It is very important that this programme not be seen as being in competition with the lead sugar mills. This is unlikely to occur, especially given the possibility of productivity spin-offs for raising sugar yields. However, two conditions are important to maintain a harmonious interlocking of the sugar and fresh produce value chains. First, it is important that the sugar lead firms be consulted and informed from the outset regarding the aims and objectives of the fresh food programme. Second, a sine qua non for successful implementation of such a programme is a rigorous process of selection of suitable smallholders. These have to be demonstrably committed to diversification and all it entails for the programme to succeed. The diversification programme for smallholder sugar farmers is not about shoring up survivalist smallholders who see their plot of land and production on it in terms of eking out a living. It is to find existing or potential farming entrepreneurs and support and upskill them.

The specific interventions that are required for such a programme are the following:

- **Development of rural agricultural clusters**

- Mapping of the farmers and identifying formal and informal network of farmers (i.e. cooperatives) and assessing their institutional and cooperation capacity and their “readiness” for diversification.
- Raising awareness among farmers on the benefits of diversification and the requirements for entering into horticulture value chain.
- Facilitating joint initiatives such as marketing and sales, procurement of input supply and extension services, investment in common infrastructure (i.e. irrigation) and operation of common facilities (i.e. pack-houses)
- **Capacity building of cooperatives**
 - Identifying and specifying financial grant needs, crop production finance needs, suitable irrigation systems for each smallholder to access
 - Designing the cold-chain management system from field to market taking into consideration potential energy supply from bio-gas systems (linked to 3.3)
 - Creating an aggregation point hub where equipment, inputs, are provided including access to a pack-house with cold rooms
 - Mobilizing public and private financial support to fund these requirements on either a grant or loan system
 - Identifying issues regarding crop rotation to take advantage and optimise market returns
 - Design institutional arrangements for management and ownership of common support infrastructure by cooperatives.
 - Provide corporate governance support to any institutional design that talks to corporate business entities
 - Design management arrangements for bulk supply of irrigation water
- **Skills upgrading**
 - Categorizing farmers based on the skills level and identifying training and skills upgrading needs for different categories of farmers.
 - Intensive group training programmes for farmers focused on best practice agricultural production methods in order to ensure quality, cost and reliability of supply of new crops to target markets.
 - On the farm training interventions focused on identifying specific knowledge gaps and remedial operational solutions
 - Individual mentorship programmes to facilitate farmer-to-farmer skills transfer
 - Assessment and certification of farmers in national and global GAP.

- Streamlining training and skills upgrading services in the portfolio of relevant service providers (i.e. TVET and extension service providers).
- **Building value chain linkages**
 - Linking farmer networks to a supermarket retailer such as SPAR
 - Doing a market analysis for specific crops on seasonal rotation
 - Working with the sugar mills to take advantage of the spill over effect of raised sugar yields from these farmers.

3.2 Support for development of furniture cluster

- The fact that the identified furniture and wooden products manufacturers are concentrated in two geographical areas – KwaDukuza and iSithebe (the industrial township of Mandeni) – creates an agglomeration effect that is critically important for development of the cluster of small furniture and wood products manufacturers in iLembe. Small and medium size enterprises, running their own businesses, do not have the capacity to travel long distances to attend training programmes or workshops. They have struggled to attend training and cluster meetings or workshops, which are often tackling problems beyond the more basic requirements of these enterprises. Hence they either limit attendance or drop out with negative consequences for their ability to learn, rectify operational errors, and maximise cluster resources.
- The concentration of furniture manufacturers in these two areas, plus the fact that their operations are at a similar level, creates the opportunity to set up a focused support programme that aims at developing the individual and collective efficiency of the furniture and wooden products cluster in iLembe. They should significantly benefit from accessing skills upgrading and training workshops, enterprise benchmarking, joint learning visits, and focused remedial attention.
- Major issues that furniture producers in iLembe face are lack of competitiveness, up-to-date manufacturing processes, capacity to design and adapt products to market demands, and linking to retailers. In the meantime, local presence of input supply and the rapidly expanding tourism and housing sectors in the coastal areas seem to offer significant opportunities for furniture producers.
- A major aim of the cluster will therefore focus on skills upgrading aimed at all management levels – from senior management right down to team leaders. Although upgrading skills is quite an evident need, there are not so many service providers in the region, especially technical and vocational trainings and producers are struggling with accessing such services. Therefore, skills development at firm level and capacity building at the institutional level should be an important aspect of the SECO-LED Programme.
- The cluster will be a mechanism for doing this at both an operational and scale level; and also be a mechanism for facilitating learning from each other. Benchmarking through a cluster will provide comparative lessons on various dimensions – e.g. cutting waste, reducing inventory, reducing defect rates, the determinants of manufacturing

excellence, lean production, continuous improvement, team leadership, cellular production etc. It will also provide the opportunity for those who are 'best in class' at any of these dimensions of world class manufacturing to assist other furniture manufacturers to learn and upgrade their operational performance. This can only occur through the cooperative interrelationships established in a cluster where manufacturers learn to trust each other, work with each other, and 'learn to learn' from each other. They can also potentially work together on fulfilling large orders as cooperation becomes embedded and the general level of production is enhanced over time.

The specific interventions that are required for such a programme are the following:

- **Development of iLembe furniture cluster**
 - Participatory diagnostic study of the cluster and development of cluster development strategy
 - Awareness raising and sensitization of cluster actors on the common challenges and opportunities to secure buy-in and formal participation from furniture firms in designing and implementation of joint activities
 - Mobilizing financial and non-financial support services, and establishing public-private partnerships for implantation of cluster development strategy
 - Enhancing the governance structure of the furniture cluster through capacity building of the representative and/or support institutions (public and private) and enhancing institutional linkages.
 - Design and organize study tours for principle firms, key support institutions and association and municipal institutions to well-performing clusters in order to enhance understanding of cluster development process and identify lessons for iLembe furniture cluster.
 - Promoting inter-firm visits and dialogue among enterprises to ensure reciprocal cluster learning
- **Skills development**
 - Skills-gap assessment at enterprise and institutional level
 - Setting up a skills upgrading programme aimed at senior management to lower supervisory/team leader levels.
 - Training of trainers and capacity building of skills upgrading service providers (i.e. TVET and FET colleges)
 - Roll-out of training programme for enterprises
- **Enterprise upgrading**
 - Undertaking a base line study of operational performance of the furniture producers and identification of individual firm operational weaknesses

- Individual enterprise benchmarking and developing enterprise upgrading plans.
- Identifying and capacity building of service providers to support enterprises to implement upgrading solutions.
- **Markey access**
 - Identifying key buyer and main opportunities for accessing new market channels.
 - Facilitating linkages between buyer and producers to enhance transfer of market demands in terms of design, quality and cost to producers

3.3 Energy diversification opportunities

- The sugar value chain has significant potential for diversification into renewable energy through expanded co-generation and/or ethanol production as an alternate revenue stream to sugar production.
- SECO-LED programme can be effectively designed for both aspects of energy diversification - expanded co-generation and/or ethanol production. Support for establishing “green harvesting” practices and processing support is needed for lead firms and growers to increase feedstock and production, as is further development of the enabling policy environment. National by-laws for “green harvesting” (as an alternative to current practices of burning the waste matter in the field) are being proposed for adoption at the local government level with a view to greatly improving local air quality.
- For expanded co-generation, specific support is needed to enable municipalities and lead firms to navigate the regulatory environment to establish appropriate licences, wheeling agreements and power purchase agreements. This will unlock increased participation for growers.
- In addition to the diversification options, support is required for increasing the installations of small scale biogas systems at the co-operative (or farm) level. Farmers and co-operatives, as well as enterprises established to enable and maintain biogas systems, require support in determining the associated costs and benefits to decide the feasibility of the investment and size of the system. Support is also needed in developing the skills and training co-operatives/enterprises in installing, maintaining and optimising biogas system installations.
- In addition to diversification opportunities, there is the potential for co-operatives to install biogas systems, which make use of relatively simple and well known or mature technology to generate energy. Fertiliser is a useful by-product of these systems, for the benefit of the farming enterprise. The main part of a biogas system is a large tank, or digester, inside which bacteria convert organic waste into methane gas through an anaerobic digestion process. The methane gas can be used directly as an energy source, or converted, through a generator, into electricity. The energy and fertiliser produced reduces input costs for co-operatives and farmers that effectively install and optimise the management of these systems. For instance, the energy produced can

power irrigation systems or borehole pumps, in addition to providing energy for houses, cooking and heating.

- Diversifying into energy production and establishing small scale renewable energy plants that reduce localised input costs requires support and stimulation. Initial support for awareness raising, training, capacity building, partnership building and stimulation of outgrower and farmer participation could establish the traction needed for outgrower schemes, industry associations and government to continue to entrench these opportunities in the longer term. Evidence of this is available in Mpumalanga Province, another South Africa sugar cane and timber growing region, where the establishment of a bio-energy cluster has facilitated diversification of timber and sugar industries into energy production (biomass).

The specific interventions that are required for such a programme are the following:

- **Development of iLembe Bio-energy Cluster**
 - Facilitate Public Private Partnerships in the Bio-energy Cluster, convened by the Provincial Department of Economic Development, Tourism and Environmental Affairs, with co-convening responsibilities from iLembe District Municipality and local municipalities
 - Design and implement renewable energy opportunity awareness raising workshops through Enterprise iLembe in order to build consensus among key actors around the idea of a development of a bio-energy cluster in iLembe.
 - Design and develop a skills development programme, implemented through Enterprise iLembe or other suitable service providers and support institutions
- **Promote green harvesting practices** (linked to 3.2; diversification of sugar farmers)
 - Conduct a cost/benefit analysis that weighs up the pros and cons of green harvesting and develop a cost mitigation strategy for implementation through outgrowers, primarily considering: i) costs of logistics (transport); ii) the need for and costs of mechanisation, and iii) the value of waste material.
 - Promote the adoption of the Provincial policy for green harvesting at the municipal level in the iLembe District Local Municipalities, as designed under the National Environmental Management Air Quality Act 2004 (Act 30 of 2004), promulgated in 2014.
 - Co-operate with the Sugar Association South Africa (SASA) in promoting green harvesting and providing training/skills development among outgrowers.
 - If mechanisation is a viable option, raise awareness with, and support co-operatives in leveraging external finance for green harvesting equipment

- **Enable cogeneration expansion**
 - Build the capacity of SASA and municipalities to understand the regulatory environment for licencing cogeneration facilities and establishing wheeling agreements
 - Provide technical support for establishing power purchase and wheeling agreements that allow for a number of electricity buyers, including municipalities
 - Provide capacity building and technical support to SASA and municipalities to negotiate guarantees for PPAs (e.g. from the International Finance Corporation)
- **Establish readiness for ethanol diversification**
 - Stimulate sub national government and industry to industry partnerships for ethanol production
 - Design and implement a study tour to Brazil for local and provincial government, industry/SASA and co-operatives to examine the options for ethanol production linked to the auto industry
 - Develop the capacity of local (and provincial) government, Enterprise iLembe, outgrowers and industry/SASA to monitor the Sugar Tax job mitigation strategy development process, and link into this as it evolves. A joined up capacity development process will enable partnerships and scale when the time comes.
- **Explore the viability of biogas systems for co-operatives** (linked to 3.2; diversification of sugar farmers)
 - Use the technology pilot plant (near completed 50 kilowatt facility at Thorny Park, Mandeni) to analyse the costs and benefits of co-operative-level biogas plants, specifically to understand: i) extent of reduced input costs; ii) logistical costs; iii) optimal size of plant; iv) optimal financing and business models, v) feasibility of providing necessary energy for operation of irrigation systems and; vi) potential for bottling and selling surplus gas as an alternative to Liquid Petroleum Gas (LPG), and identify/quantify other value add from biogas generation.
 - Build the skills and capacity of co-operatives to install, operate and maintain biogas systems (through the Bio-energy Cluster and Enterprise iLembe)

3.4 Lesser priority opportunities

There are also a number of smaller interventions with much less impact and greater difficulty which may be worth considering which are listed here. They are not prioritised but can be considered at a later stage in the programme if so desired. The detailed discussion concerning them is dealt with below under different sector headings.

3.4.1 Transport aggregation hubs of cut sugar cane for smallholder sugar farmers create an opportunity for small black transport firms to move cut sugar cane rapidly to the mills. However most of these small transporters need finance to recapitalise their equipment. This would require SECO-LED Programme to develop a loan mechanism in conjunction with local financial institutions.

3.4.2 There is a perceived need for bolstering NovaCane seed cane propagation through supporting the current laboratory facilities. This would require SECO-LED Programme to facilitate leveraging external finance for the substantial capital costs involved.

3.4.3 The industry has discussed the possibility of developing a juicing plant (either in the Agri-Park or elsewhere in iLembe) to produce sugar cane juice and market this for the domestic and export market. A SECO-LED Programme would focus on providing or facilitating capital, assisting in finding required technical and marketing expertise.

3.4.4 The smallholder timber growers could also be included in the fresh produce diversification project especially with regard to non-timber forestry products. However these smallholder timber growers are only found in the inland municipalities of iLembe and hence are not part of the geographical scope of the SECO-LED Programme.

3.4.5 There is an opportunity for biomass production from waste matter in the paper mill and sawmills in the wood value chain involving producing wood pellets for the export market. However, recent history has demonstrated that it is difficult to make these plants viable, mainly because of the absence of an enabling policy environment; high logistics costs and strong competition in the international export market.

3.4.6 There are a number of successful fresh produce smallholder farmers scattered throughout the iLembe municipalities. They produce a range of produce selling into various supermarkets value chains. They require financial assistance, management expertise, technical assistance, and extension support, with each enterprise having different support requirements. However their scattered nature makes it difficult to achieve scale effects and any generalizable 'bang for the buck' invested. The SECO-LED Programme could assist them through a voluntary matching grant scheme involving limited allocation of human capital resources.

3.4.7 Macadamia production is a successful sector for the export and domestic market. This is a heavily capital intensive activity and any support for new entrants or assisting existing farmers to diversify into higher value added niche products will require substantial financing on the part of SECO-LED Programme.

3.2.8 The Agri Lab Tissue Culture facility at the Dube Trade Port Agrizone requires financial and management assistance to maintain its operations and widen the scope of its activities especially with regard to horticultural products. The SECO-LED Programme could support it in helping to develop a matching loan finance mechanism and technical expertise, and seek external finance from public and private sources.

4. Monitoring and Evaluation

Programme monitoring and evaluation are complementary activities, and are vital in assessing whether policy and programme changes have achieved their intended aims. Monitoring occurs on a continuous basis via the collection and analysis of data on pre-specified and agreed upon performance indicators, and by tracking actual performance against hypothesised outcomes. By providing regular information and feedback to programme managers and other stakeholders on whether or not progress is being made towards fulfilling the aims of the intervention, and if so, the extent to which such progress is being made, would allow for corrective action to be taken should the need arise.

In contrast, evaluation occurs periodically, taking the form of an indepth analysis of programme performance. Evaluations may occur once a project has been completed, or may be conducted in order to improve the design and performance of an existing project. The purpose of an evaluation is to provide a systematic and objective assessment of the impact, relevance, efficiency, accountability, and sustainability of programme interventions, thereby generating a body of knowledge on good practice (i.e. what works and what doesn't).

The key steps in any monitoring exercise begin with a participatory process involving all stakeholders in the definition of the goals or standards against which an intervention is to be assessed (i.e. determining what the intended outcomes are that are hypothesised to be affected by the intervention). This is followed by the collection of data on these outcomes, the analysis of the data, and synthesis and dissemination of key results back to the stakeholders and the broader public.

In order for an evaluation exercise to be successful, it is crucial that the purpose of the evaluation exercise be clearly defined from the start. In other words, it should be clearly articulated what questions the evaluation aims to address and who will make use of these findings. Stakeholders should be involved from the start to ensure their concerns are addressed and that they participate in defining the appropriate evaluation criteria, as this will promote confidence in the results once the evaluation is complete. Potential outputs, targets or outcomes should be clearly defined and articulated from the start. In addition, any external factors or risks that might affect the outcome of the project intervention should be identified and monitored. In setting these targets, attention will have to be given to baseline studies in the various industries or sectors, paying special attention to historical trends in outcomes. Moreover, taking stakeholder expectations and previous research findings in the target sectors into account, and considering success stories from similar sectors not identified to receive an intervention may provide useful sources of information about the kinds of targets that can realistically be achieved.

Monitoring and evaluating an intervention is an iterative process. The basic idea is to generate information that will be useful in terms of both surveillance of the design and implementation of specific projects/interventions and to provide an analysis of the benefits of the intervention so as to inform future policy formulation.

Section B. More detailed discussion of findings and opportunities

The sections that follow provide the foundation for and elaborate with more detail on the key findings and recommendations set out above. Further information can also be accessed in the annexed reports in Section C from the members of the research team.

5. Sugar Value Chain

The sugar value chain represents the clearest opportunities for smallholder enterprise development through diversification into fresh produce and renewable energy activities..

On average on a yearly basis between 40 – 50% of South African raw sugar output is exported to Africa, Asia, Americas, and Europe. Between 50 – 60% is sold within the Southern African Customs Union (SACU). It is important to note that SACU is wider than the South African domestic market since it includes Botswana, Lesotho, Namibia and Swaziland. Hence a portion of this amount also counts as exports. On a provincial basis KwaZulu-Natal is the largest producer of raw sugar. Within KwaZulu-Natal, the District of iLembe ranks third to eThekweni which dwarfs all other Districts.

The sugar value chain in iLembe is dominated by Tongaat Hulett Sugar and the Gledhow Sugar Company. Tongaat Hulett has one sugar mill in the iLembe District – Darnall and two mills that draw on sugarcane produced within the iLembe District. Maidstone, in Tongaat draws most if not all its sugarcane from the iLembe District and Amatikulu near Ginggingdlovu where the area north of Mandeni is included in its catchment area. Gledhow Sugar Company have a mill at KwaDukuza.

On average, the rain-fed cane growing areas of the District receive rainfall of between 1,000 mm to 1,300 mm per annum. Most cane is burnt prior to harvesting but there are attempts to encourage green harvesting, which results in trash residue being available for composting or as biomass for alternative processes to that of sugar milling.

The area under cane for the three main mills combined (Maidstone, Darnal and Gledhow) has seen a decline from a high of over 93,000 ha in 2003/04 to a low of 75,500 ha in 2013/14, which has recovered to 77,900 ha in 2015/16. In 2003/04 smallholder farmers had 16,984 ha (18% of the total cane area) under cane and at present 7,859 ha – smallholder farmers thus now account for only 10% of the area under cane and contribute around 6.8% of total supply, indicating their lower per unit productivity levels compared to other segments. Whilst these smallholder farmers quantities of cane supply are only at the margin of miller profitability they are regarded as very important suppliers from a financial and development perspective. This is why the industry has supported the development of smallholder farmer suppliers from as far back as the early 1970s.

In the small scale sugar farming segment Tongaat Hulett has been active for some time in funding smallholder cane growers. However in recent years it has become very keen on doing so, not as an independent player but rather through various collaborative projects with other parties. In 2009/10 the provincial government and Tongaat Hulett launched a ten year Public/Private project (Operation Vuselela) aimed at supporting small-scale sugar cane growers north of Durban, supplying the Maidstone, Amatikulu and Felixton mills. The implementation process was completed in late 2016/early 2017. The aim is establish 2,500 new cane growers. Approximately 3,061 individual beneficiaries have benefited from this

project. An important driver of this programme is the excess capacity of the sugar mills which require new throughput. There are no known plans of any expansion in mill capacity.

Tongaat Hulett uses Simamisa Farming as a dedicated (subsidiary) services company/agent to support management of the farming operations of its smallholder cane grower projects. The aim is not only to produce smallholder cane growers but also to train local farmers up to eventually become Project Managers and assist other farmers in their communities. The latest Tongaat Hulett annual report claims that by the end of the 2015/16 season, approximately 4 600 hectares of new sugarcane will be developed for eight primary cooperatives, through the innovative Simamisa model. Upon completion, a total investment of R132,6 million in sugarcane development would have been made, and will result in the annual employment of 1 000 individuals and approximately 185 000 tons of additional sugarcane production.

Tongaat Hulett provides seed and support with extension services and government provides fertiliser and other inputs. Growers are required to submit their crop estimates to the nearest mill and this effectively amounts to a contract to deliver to that mill. Tongaat Hulett also does cane supply agreements with some farmers. All growers are allocated a code and their sugar cane is tagged accordingly for administrative/traceability reasons. The revival of smallholder sugar cane farming in these targeted rural communities has benefitted many rural households. Some households reported being able to pay school fees, school uniforms, build and renovate houses. Some farmers have also been able to repay historical debts.

There are 972 registered smallholder farmers, but only 423 made any deliveries in 2015/16 (i.e. 44%) and they only delivered 137 738 tons (6.8% of total deliveries). Smallholders have struggled to survive for several reasons. These include a lack of expertise, civil unrest in the 1980's/early 1990's, insufficient returns on small individual units to warrant dedicated management (i.e. inadequate scale of production to cover overheads), lack of access to working capital finance, land restrictions on expansion to attain scale necessary to reduce costs and increase revenue, and spells of adverse weather conditions, which make it difficult for producers without sufficient wealth to cushion such shocks. Hence some tend to lease their land to a cooperative or diversify into other crops.

Four opportunities have been identified for intervention:

1. Despite encouragement by the lead firms and associations in the industry, diversification by smallholder sugar farmers has however been met with mixed success. One of the principal reasons for this is the lack of specialised support, focused on assisting smallholder farmers diversifying into fresh food taking into account the requirements of specific markets, especially the need to meet the standards requirements of the supermarket chains.

TechnoServe has undertaken a successful diversification project with smallholder sugar farmers in Mpumalanga since 2013. Farmers were assisted to improve their productivity on the land under sugar cultivation concomitant with a process of diversifying into other agricultural crops. There were two thrusts to this process – a) through crop rotation (into beans, legumes,) after the 7 year cane cycle, and b) inter cropping with vegetables, specifically tomatoes, that are in demand in the local markets. The results were impressive. The spillover effect of enhancing the smallholder farmer capabilities through diversification into fresh vegetables had a major impact on their core business of sugar production. Average

yields on irrigated sugar cane production rose from 60 tons to 85-105 tons per hectare. More importantly from a diversification perspective, tomato yields currently are between 40-60 tons per hectare, yielding a lucrative additional income for these smallholder sugar farmers.

Supermarket lead firms, both nationally and in KwaZulu-Natal, demonstrate an unequivocal commitment to local sourcing and an appetite for sourcing from local smallholder fresh food producers who can meet their standards. The market demand for jam tomatoes in particular in Durban is extensive. A TechnoServe programme with smallholder farmers in Limpopo supplying tomatoes for processing to Tiger Brands is finding its way into the Durban market in large volumes. TechnoServe is currently in the iLembe District on as part of the research team investigating the possibilities for developing a unique UNIDO partnership programme.

Opportunity 1: Smallholder sugar farmer diversification

- *The combination of market demand, export potential, mill excess capacity/throughput requirements, enthusiastic government support, large numbers of existing and potential smallholder cane growers, low risk for new value chain entrants, the new thrust towards collaborative public/private partnerships, and most importantly the need for smallholder farmers to diversify into other cash crops such as fresh vegetables means that this is a very fruitful area for the SECO/UNIDO programme to launch an implementation support programme over the next four years.*
- *This programme should be based on the fact that there is an agglomeration of smallholder sugar farmers in parts of iLembe, thereby creating the necessary scale. The best option would be for an aggregation model of production of cane and tomatoes/peppers. With such a support programme these sugar smallholder farmers could be introduced to tomato production as an additional crop sustainably grown alongside sugar cane albeit on a smaller scale.*
- *The diversification programme would aim to boost overall income levels by creating a new cash crop serving local markets and supermarkets as well as improving sugar cane yields through increasing farmer capabilities and upgrading their production skills.*

2. The sugar mills are already heavily invested into co-generation facilities to meet their energy requirements and generate their own electricity supply. The lead sugar firms in iLembe have developed comprehensive and progressive feasibility studies and some have developed state of the art engineering plans for expanded co-generation with a view to selling surplus electricity into the national grid. The lead firms have been supported in these endeavours by the Sugar Association of South Africa (SASA).

The proposed, controversial Sugar Tax, announced in the national budget speech in February 2017 and aimed at curbing the country's growing obesity epidemic, has given cause for an employment-loss mitigation plan, called for by the trade union movement. A National Economic Development and Labour Council (NEDLAC) process is currently examining a job mitigation programme, to which energy-generation as a sugar production diversification strategy is central. Should implementation be agreed, ethanol will become a viable investment strategy for the lead sugar mill firms who intend to partner with the automotive industry. Their resultant requirements for outgrower smallholder contributions will

“exponentially increase jobs and value for small growers” according to detailed feasibility assessments.

Some lead firms have also conducted feasibility studies for ethanol production at scale. Both this and co-generation are understood to be important opportunities for diversification from sugar production as the trend toward declining sugar consumption accelerates. Both expanded co-generation and ethanol production will rely on increased uptake from growers and/or increased number of growers’ participant in the value chain.

The potential for expanded co-generation, although understood to attract a higher cost of investment for lead firms than ethanol, is substantial. Tongaat submitted a bid to the Renewable Energy Independent Power Producer Procurement Programme (RE IPPPP) for a 100 MW facility, whereas most of the existing facilities generate between 2-5MW on average. Co-generation at scale and ethanol production will increase the value of the sugar cane plant and waste matter and thus the revenue stream for growers.

Cogeneration, biofuel (ethanol) and biogas production potential from waste in the sugar and timber milling processes are opportunities worth exploring in the two main industries in the iLembe District. Tongaat-Hulett is one of the primary employers and supporters of smallholders in the District and have the infrastructure in place necessary to supporting either or both cogeneration and biofuel production from bagasse, the fibrous waste matter that remains after sugar cane has been crushed to extract its juices. They also have the means of integrating the smallholders they support into renewable energy production, thus absorbing and/or mitigating the associated risks (high initial capital costs of production, market access, etc.), something few, if any, smallholders can afford to do alone.

Opportunity 2: Co-generation and ethanol

- *These initiatives create the possibility to exploit the opportunities for diversification into energy through expanded co-generation and/or ethanol production. SECO/UNIDO external interventions can be effectively designed for both aspects of energy diversification.*
- *Alternate harvesting and processing support is needed for lead firms and growers to increase feedstock and production, as is further development of the enabling policy environment.*
- *In terms of co-generation, lead firms need to firm up alternate customers to Eskom such as industry and metropolitan municipalities such as eThekweni.*
- *Support is needed to enable municipalities and lead firms to navigate the regulatory environment to establish appropriate licences, wheeling agreements and power purchase agreements, where wheeling of power is done through the municipalities. This will unlock increased participation for growers.*

3. The sugar value chain opportunities for enterprise development involve not only production but also a crucial logistic link in the chain between production of sugar cane on the land and milling. Once the cane is cut and harvested it needs to be collected for transport to the sugar mill. Cut sugar cane cannot stand for long as it loses its value very quickly. Hence speed is of the essence once the cane is cut. In the case of smallholder sugar growers this

becomes a more complex task than large plantations. Smallholder sugar grower production results in numerous lots of cut sugar cane spread over the countryside which have to be collected into nodes. Aggregation is necessary because the bigger trucks can't access some of the remoter areas where cane is grown. Aggregating these sugar lots into larger hubs for transport contractors to move to the mill provides another enterprise activity for some smallholder contractors. They can operate cranes at trans-shipment nodal points where cane is aggregated and loaded onto trucks for delivery to the mills. Each node serves roughly a 2-3km radius of smallholder growers (the exact radius depending on a variety of factors).

Opportunity 3: Transport hubs

- *These hubs create opportunity for smallholder black enterprises. However, in many if not most instances, they have "sweated" their machinery to a point where they need to recapitalize but can't because of financial constraints. This may be an opportunity for the SECO-LED Programme to get involved in supporting these contractors.*

4. The focus on the need for diversification of smallholder activities has also yielded other ideas for smaller sized cane producers to diversify production. There is a need to produce true-to-type disease free seedlings for sugarcane. Although labs are currently being erected to produce seedlings, an adequate "plant hardening" facility was unaffordable. Should the industry produce seedlings commercially, a hardening facility needs to be created. The industry has also identified adding value to cane through making sugarcane juice, as has occurred in Mauritius and Brazil. There is a proposal to build a juicing plant as part the Agri-Park located near Umhlali on the North Coast, but alternative land in iLembe could be procured for such a project.

Opportunity 4: Laboratory and juicing plant

- *These two opportunities (NovaCane seed cane propagation, and a juicing plant) for SECO-LED Programme interventions are primarily around providing capital, expertise, marketing, and institutional relationships with local municipalities.*

6. Wood value chain

In South Africa (and KwaZulu-Natal) this sector is highly concentrated and driven by two large lead firms (Mondi and SAPPI) which have interests in forestry, sawmills and paper/board mills and hence control their own value chains from growing to final product to sale (domestic and export). The forestry/wood sector demonstrates three overlapping and intersecting value chains. The dominant one produces wood chips feeding into pulp for producing paper and board products for either the domestic market or exports. A second value chain turns timber into biomass products (such as pellets), for domestic or export markets. A third chain produces sawn timber for industrial, construction and furniture products, almost wholly for the domestic market.

Both SAPPI and NCT Forestry Co-operative Limited (NCT) have a history of setting up, bringing in, and supporting smallholder timber farmers in their value chains. However SAPPI's efforts in this regard have declined markedly due to the high investment and risk involved. NCT have several smallholder woodlot owners either just within and near to the District boundaries between KwaDukuza and Kranskop in the Maphumulo area who supply to the 2 woodchip plants located at Richards Bay. Woodchip from these mills is supplied to the pulp and paper

industry in Japan and more recently to Ireland as biomass for the energy sector. According to interviews undertaken, NCT draws about 20,000 to 30,000 tons of timber from smallholders in this region (albeit not all from within iLembe).

Smallholder timber grower growth has stalled somewhat. It takes many years for trees to grow to an age when they can be felled. This requires substantial support from either the lead firms in the value chain or external institutional support. The lead firms are loath to expand support since they have no contractual mechanism to ensure that the smallholder grower sells the timber to them rather than to any other buyer who will pay a higher price for another purpose. Government was meant to have capitalized a smallholder grower development fund but it hasn't yet even established the fund. This has undoubtedly retarded smallholder grower development. Land area under forest cultivation is also decreasing and the industry is in a general decline when measured on any meaningful indicator. The result is that there has been no meaningful growth in smallholder timber grower numbers.

Within the iLembe District there is very limited timber production. There are two lead firms who dominate productive activity, namely SAPPI and NCT. Other major SA forestry companies such as Mondi and Hans Merensky either do not have a production base in the area or any processing facilities that draw from the area. An opportunity may exist for producers in the north-eastern parts of iLembe closest to Richards Bay to sell into NCT's chipping plant there. NCT exports wood chips to the far-East.

In these two inland municipalities of Maphumulo and Ndwedwe on Ngonyama Trust land there is as much as 75 kpta of timber grown. Average woodlot sizes are 2.5 hectares. These smallholder timber farmers are however struggling to yield sufficient cash income to cover the monies advanced by lead firms such as Sappi to the growers over the time it takes for the trees to mature. Basically the problem arises from the long lead time that it takes for a tree to grow/regrow after it has been planted/cut down. No income is derived for the smallholder timber farmer from that small section of land until the tree is able to be harvested again. So the smallholder ignores best silviculture practice to work his way around this. Instead of trimming the new shoots to just allow a single new stem to grow they let a whole bunch grow. Then they cut some of these off as they grow and use them for interim supplementary income prior to harvest of the mature tree. This means it takes longer for the actual felleable tree to grow but in the meantime they get necessary income to keep them going.

It's not just an information gap problem. This is poor economics in terms of timber silviculture but it is economically rational in the short term in terms of household survival. So to respond to this Sappi have been getting their forestry extension officers to run programs with the smallholder timber growers to diversify into other activities (bee keeping and mushrooms) to soften dependence on mono cropping and increase their incomes. The problem is that whilst these extension officers have skills in timber growing they don't actually have a lot of expertise outside of timber. Hence these diversification activities encounter multiple problems.

Opportunity 1: Small holder timber grower diversification

- *The inland municipalities of Maphumulo and Ndwedwe fall outside of the scope of the SECO-LED Programme. If they were to be included, there may be an opportunity for supporting smallholder timber growers to diversify their production activities into*

other crops similar to the opportunity identified for the sugar value chain. The SECO-LED Programme programme could adapt this programme to the conditions prevalent in the smallholder timber sector in the inland municipalities of iLembe. However the fact that these two municipalities fall outside the scope of the SECO-LED programme may be an exclusionary factor.

- *If this was to occur then it would be advisable to do so in partnership with an organization such as Forestry South Africa (FSA). FSA is a voluntary association of growers representing the interest of 90% of growers in ZA (covering lead firms, commercial timber growers, and emerging timber growers) and is part of a series of institutions active in the forestry sector. FSA does not have a large enough budget to provide meaningful capital support to smallholder growers but it does have a dedicated team looking at business development issues and advisory support.*

Opportunity 2: Biomass products

- *There is an opportunity for biomass production from waste matter in the paper mill and sawmills in the wood value chain involving producing wood pellets and chips for the export market. Securing fibre for energy is a critical success factor.*
- *There is an established international market for wood pellets and wood chips, often used as source of green energy, for example in Europe, but South African wood pellet plants have repeatedly gone out of business through an inability to compete with international prices given the high local costs of raw material, transport and labour.*
- *The market is starting to value waste matter as fibre for the energy sector, a value that has still to be recognised in a national biofuel policy; national policy on biomass and biofuels has yet to be finalised and has stagnated in development over the past five years.*
- *Natal Co-operative Timber (NCT), the 3rd largest timber trader in South Africa and located in KZN, is exporting wood chips, a by-product from their pulp and paper production, to Japan, and has been doing so consistently for approximately 10 years. These exports provide an additional revenue stream, indicative of a model that could be replicated elsewhere.*
- *If this opportunity is to be exploited, SECO-LED Programme could be usefully directed toward establishing NCT as a fibre hub in KZN, through establishing a supply chain from the timber outgrowers to the hub.*

7. The furniture industry in the wood value chain

The small furniture and wood products manufacturing industry is concentrated in two areas – KwaDukuza and iSithebe. It is difficult to pinpoint the exact number of furniture and wood products manufacturers but there are roughly 8-9 firms in each location. The vast majority of these firms are manufacturing lounge suites with a few firms producing wooden accessories such as umbrellas or wooden pallets. Producing lounge suites, which are comprised of wooden frames, arms and legs with a textile covering of the cushioned segments, involve these firms in two intersecting value chains – the wood and the textile value chains. Some products are simply composed of a chipboard frame completely covered in textiles covering,

whilst the more sophisticated products (and firms) produce furniture comprised of turned legs and arm rests coupled with textile covering.

The firms range from small scale operations (perhaps half of the firms) to medium sized factories. The medium size firms range from 250 workers up to a workforce of a 1000 for the largest firm running at full capacity. However due to recent economic contraction many firms are either on short time or have reduced their workforce. Production is significant for the medium sized firms. For example one firm consisting of 300 workers producing complex wooden and textile lounge suites has monthly sales of up to 800 units when demand is good. Currently however that same firm has had to reduce its monthly production to 400 units because of the downturn in the economy.

These furniture firms are locked into value chains supplying OK Furniture, Joshua Doore and Russells, as well as small shops known as “Mammas and Pappas” stores. They receive no support from government nor from the retail chains they supply. Skills development is wholly in their own hands and dependant on their own resources. All training of workers is on the job training undertaken in house by supervisors. There is no management training in world class manufacturing to increase operational competitiveness. However they appear extremely receptive to the proposal of a cluster or similar competitiveness support driven by SECO/UNIDO.

Opportunity 3: Furniture manufacturing cluster

- *The existence of a sufficient critical mass of furniture and wood products firms in KwaDukuza and iSithebe creates a clear opportunity to set up a furniture cluster assisting these firms to become more competitive, expand and create greater labour employment opportunities.*

8. Horticulture Value Chain

This is a complex sector consisting of a variety of subsectors, product groups and value chains. We have isolated a few specific discrete product groupings and value chains. These are respectively value added fresh fruit and vegetables feeding into South African supermarkets with the opportunity (if not currently then with a possibility in the future) exporting into the Southern African region through these supermarket chains, value added macadamia nuts for the domestic and export market, and cut flowers.

8.1. Fresh fruit and vegetables

South African supermarkets dominate these value chains both within the domestic market and supplying into the Southern African regional market. The large lead firms are Shoprite/Checkers, Pick n Pay, Spar, Food Lovers Market, Spar, and Woolworths. They supply similar but slightly differentiated market segments, with Woolworths clearly at the top end of the range. There are also smaller independent players such as Choppies, or lead firm subsidiaries with lower standards feeding into a lower market segment, such as Boxer which is a Pick Pay subsidiary. The main lead firm supermarkets have unequivocally committed themselves to local sourcing of fresh food and the encouragement of sourcing from smallholder farmers where they can meet their required standards.

There are also food processing companies (most large brands) that play a major role in this value chain sourcing fresh food for processing. These are mostly large 'iconic brands' although there are also medium sized enterprises dealing primarily niche or artisanal products. There are no processing companies of any significant size in the iLembe District municipal area.

This subsector needs to be differentiated between basic and high value added products. Although small enterprises may start with basic commodities, the aim has to be an upgrading one of integration into local supermarket value chains through supplying high value added products. Unless the latter is achieved the chances of sustained success and raised incomes is low. However, successful integration of small enterprises into a value chain supplying high value products to consumers across functions requires a few basic building blocks which constitute key success factors. These are:

- Suitable and sufficient land with irrigation
- Production management and technical skills of the producer
- Working capital to invest in production before income is earned
- Access to a cold chain within a short space of time after harvest
- Suitably located and functionally operating packing stations
- Adequate post-harvest logistics
- Sustained and reliable access to a market through a lead firm

There are a number of institutions operating in the iLembe District which are either providing some form of support, albeit often at a lower than level than significant expansion of the sector demands. The Agribusiness Development Agency (ADA) is a provincial public entity providing a range of services (information, resource mobilization, facilitation services, grant funding at 50% of requirements for qualifying SMEs in the agribusiness value-add sector, etc.) and operating in collaboration with the Department of Agriculture and Rural Development. ADA are not however operational in iLembe and defer to Enterprise iLembe as the lead development organisation locally.

Enterprise iLembe have been promoting the development of both open field and tunnel vegetable producers for several years. Few of these projects supported have succeeded and notwithstanding several studies and assessments, only a limited number of recommendations have been implemented.

There are potential adjacent market channels in the Durban and Pietermaritzburg urban areas. However, despite some exceptions, producers in the District have mainly been unable to access these market opportunities and are struggling to successfully enter these supermarket value chains. Most smallholder farmers in the District are reliant on either the local informal community as an outlet for surplus or on hawkers who collect at farm gate (the so-called "bakkie traders"). These routes reportedly often do not yield attractive returns to smallholders. They become 'forced sellers', having to accept any cash price offered due to their precarious financial situation and the perishability of their product.

Success in entering more sustainable fresh food value chains is constrained by the following:

- Difficulty in understanding and meeting the high quality and health and safety standards requirement of the supermarkets for highly perishable products
- Unsuitable climate and topographical conditions that limits production possibilities

- Limited scope for processing due to the lack of access to suitable processing facilities
- Lack of coordination between producers
- Inability to provide the technical conditions to ensure year round supply of produce/inappropriate technical interventions at great expense but designed for completely different topographical and climatic conditions (e.g. unsuitable and poorly managed tunnels)
- Management failure on the part of support institutions
- Politically driven projects, poorly scoped, undermining success, squandering resources

There are however instances of successful smallholder fresh food operations or examples of enterprises that show the promise of success if their specific constraints can be overcome in the District. As one such producer put it: “I haven’t got a market problem but I do have a supply problem” (i.e. constrained by the size and topography of the land on which he produces). These producers are dispersed across the District. At the lowest level they are trying to produce cucumbers on a sustained basis but face infrastructure and equipment constraints. Or they are trying to move into (or scale up) higher value added, niche products - such as strawberries, patty pans, specialty chillies, indigenous Indian vegetables. Others are contemplating production of crops such as avocados which some farmers point to as a serious market opportunity but which requires financial support since they take four years plus before bearing fruit and hence generating income. This is an example of a crop which if produced to meet high quality standards an export market is accessible, and there are a number of downstream value addition opportunities available. There is also an opportunity to produce castor beans, a low-input crop that is heat tolerant and water efficient, for processing into castor oil. Moringa was also identified as an opportunity for commercialisation given the extensive proven health benefits of moringa leaf products. New crops such as bamboo are being talked about as representing a possible new development opportunity because it is suited to the bio-physical environment in the District and because it has a high affinity for downstream processing.

Although a number of producers were interviewed as part of the research effort there is little point in detailing the specifics of each case in a report of this nature. However, from an implementation project perspective these producers can be identified, their particular needs (capital, extension, machinery, market access, inputs, support to move into higher yielding products etc.) specified, and differential support could be provided through a highly focused programme.

The key conclusion to draw is that although there are instances of successful commercial fresh vegetable farming operations spread across the District, there is not a large critical mass of successful commercial producers to build a large scale fresh vegetable producers support programme on.

Opportunity: Small farmer support

- *On this basis interventions should therefore be focused, and concentrated on the small core of dispersed enterprises demonstrating the high potential for successful movement into higher value added products and integration into value chains. The lack of scale effect is not necessarily a reason for non-engagement. Indeed it can make a focused intervention within a relatively small project easier to manage and, on this*

basis, form the foundation for achieving scale at a later stage once a more sustainable nucleus or nuclei of producers is reinforced

- *In the next implementation stage of the programme, commission a specialist small farmer support organization to identify a small number of products that could be produced at scale, meet local or export value chain requirements, and engage in a focused, geographically concentrated project.*

8.2. Macadamia Nuts

This is a product for which a strong domestic and export market already exists and is growing rapidly. Around ninety percent of the South African macadamia crop is exported (mostly to North America and Europe), and South Africa is one of the top 3 - 5 global exporters. However the high capital cost of establishing a macadamia orchard (R50 000/ha dryland and R80 000/ha irrigated plus R120 000/ha per annum working capital up to year 4) is the biggest constraint to development for new entrants. The trees start to yield some revenue after 3 years, and achieve a break even return after four years for dryland and after six years for irrigated nut trees. Trees achieve full production by years 8 – 10 and have a 30 – 40 year life cycle. Macadamias would therefore be a long term development initiative for new entrants and would require considerable financial support even if intercropping were practised (growing vegetables) in the early years after macadamia trees were planted.

Currently, harvested nuts are sold to buyers from processing firms who dehusk, dry, sort/grade and crack the raw nuts. There are 8 large processing companies buying the raw nuts which are mostly located in Mpumalanga and Limpopo, with one at Paddock in Southern KwaZulu-Natal. There is no significant processing activity of macadamia nuts taking place in the iLembe District. Only 30 - 35% of nuts are premium grade but there are a number of other downstream value addition processing opportunities - macadamia oil, macadamia milk, confectionary and health/energy bars, animal fodder, etc.

- One successful macadamia farmer interviewed cited development costs for Macadamia in iLembe of roughly R150 000/ha for dryland production compared to between R20 000 and R 23 000 for sugar cane. However the claimed long-term returns to macadamias significantly overcome the initial capital outlay (including capitalised working capital costs for the first 4 years or so before there is a meaningful yield of nuts). With yields of between 1.5 and 5 tons per hectare (averaging 2.5 tons per hectare) and an average wholesale price of R55/kg, revenues of R82 500 and R275 000 per hectare are achievable. The same farmer said that in his case 8 hectares of macadamia nuts would yield a cash return equivalent to that from 96 hectares of sugar cane. He was able to use his successful sugar cane operations to provide the cash flow to finance his diversification into macadamias. Most smallholder farmers will however require support in the early stages to make such a transition.

Opportunity:

- *Macadamia production provides a high value opportunity for diversification for already successful smallholder farmers (be they sugar cane farmers or successful vegetable producers). However, capital development costs are high and lead times are long. Any support intervention in this sector would have to be focused on leveraging a workable financial model with an attendant focused skills and management development*

support programme to ensure successful “intercropping” and/or other workable production regime. These would have to include, mechanisms and financial instruments to overcome cash-flow challenges, support for the acquisition of technology and equipment, technical support and extension services (which Mayomacs, a nut processing company, indicated that it may be willing to provide), support with processing and market access. Given that the funding challenges and demanding management skills requirements, Macadamias are unlikely to be an opportunity for intervention through the SECO/UNIDO programme.

8.3. Cut Flowers

South Africa currently is a small exporter of cut flowers. – exporting only €16.1m compared to Kenyan exports of €406.6m in 2015. In terms of cut flower supply to Europe, while SA ranks 10th as a supplier by value, its exports are about the same as Zambia’s, not even a 10th of Ethiopia’s and a 25th of Kenya’s. Most of South Africa’s cut flower production is consumed locally. Cut flowers in South Africa primarily feed into the domestic market through local supermarkets and florists. The exports are mainly of roses, proteas, Cape foliage, and chrysanthemums. SA’s fresh cut flower industry is centred around JHB and therefore OR Tambo airport which has direct flights to nearly every European centre (unlike Durban). KZN’s flower sector is centred more around Pietermaritzburg/Mooi River and flower producers make use of reverse logistics of trucks returning to Gauteng from Durban, and hence enjoy lower than normal freight charges.

Tellingly, there are only a very limited range of flower varieties that can be grown commercially on the coastal zone of KZN, due to limitations imposed by the hot, humid coastal climate. Inland areas of the province have a clear advantage over the coastal zone in this regard and it is there where the bulk of the province’s flower are grown. Coastal iLembe is only suited to growing a few flower varieties – mainly ruscus, anthuriums and gerberas and these are wholly destined for the domestic market. Cut flowers are being produced on a commercial scale in at least 3 localities (Liv Flowers and Bloemendal in KwaDukuza and Bethany Farms in Mandeni).

All producers interviewed reported that the small size of the local market and the dominance of a few large players in what is a heavily concentrated industry nationwide means that margins are tight and that the market is in any case under stress at the moment given the current economic climate. Moreover, value-addition through production of bouquets takes place mostly in Gauteng province (though one local producer did try “importing” foliage and other flower varieties to do this in iLembe but could not sustain the operation). Added to this, the industry representatives interviewed including Vegmoflora in Durban (KwaZulu-Natal’s largest wholesaler and distributor) concurred that prospects for direct flower exports from Durban are very limited. Add to this the limited scope for expanding production in iLembe because the local market is so limited and the prospects for growth of new entrants into this market are poor.

The producers are not optimistic about expanding cut flowers in iLembe. A critical constraint identified curtailing cut flower production are issues surrounding the Dube trade port, and in particular those limiting the ability of the Dube AgriLab tissue-culture operation to operate successfully.

Opportunity: Cut flowers

- *It is still unclear whether there is much room for intervention in the actual growing of cut flowers given the limited scope even for local expansion because of the small domestic market and the dominance of large firms. It is also unclear as to how the SECO-LED Programme could intervene to increase prospects for cut flower or ornamental plant exports. However local cut flower firms identify a well functioning Dube Trade Port Agrizone AgriLab tissue-culture operation as a potential source of plant material that could reduce their reliance on imported product. Clearly targeted support for the AgriLab, in terms of technical expertise, management, marketing, and assistance in securing external finance could have a substantial impact on expanding the growth potential of the cut flower and ornamental plant sector.*

9. Training and Support Institutions in iLembe

There are a limited number of training and productive sector institutions in iLembe. There is not a Technical and Vocational Education and Training (TVET) institution in iLembe. Many people go to the adjacent District municipal and Metropolitan areas which house the cities of Durban and Pietermaritzburg to secure such training. Key institutions in the neighbouring eThekweni District are the Cedara Agricultural College, and the Enterprise Development Unit (EDU) of the Coastal KZN TVET College. The latter focuses on business activities and cooperatives (coops) with a broad target market covering rural areas, SMMEs, and individuals, providing a range of services in training and business development, and offering accredited qualifications and unaccredited short courses.

National Certificate (Vocational)

- Civil Engineering & Building Construction
- Electrical Infrastructure Construction
- Education & Development
- Engineering & Related Design
- Finance, Economics & Accounting
- Hospitality
- Information Technology & Computer Science
- Office Administration
- Primary Agriculture
- Tourism
- Transport & Logistics
- Primary Health

National Certificate and Diplomas

- Business Studies (N4 - N6)
 - Business Management
 - Financial Management
 - Human Resource Management
 - Management Assistant
 - Public Management
 - Hospitality & Catering Services
 - Farming Management
 - Educare

- Clothing Production
- Engineering Studies (N2 - N6)
 - Electrical Engineering
 - Electro – Mechanical
 - Electronics
 - Instrumentation
 - Mechanical Engineering
 - Production
 - Refrigeration Mechanic
 - Engineering Millwright
 - Carpenter and Joinery

Certificate skills training courses are in the following subjects:

- ABET,
- Bricklaying & Plastering,
- Carpentry,
- Clothing Production,
- Computer Courses (End User),
- Community House building,
- Cooking & Catering, Electrical,
- Garment Making,
- Home Decor,
- ICDL,
- Manufacturing & Engineering (Boilermaking),
- Panelbeating,
- Plant Production,
- Plumbing,
- Vehicle Services,
- Welding.

There are a limited number of specialist institutions operating in the iLembe District which are providing some form of support for productive sector activities. Enterprise iLembe, the economic development agency for the iLembe District Municipality responsible for Trade & Investment Promotions and Local Economic Development in the region, is mandated to drive economic development and promote trade and investment in the region. It focuses on developing agriculture, tourism, manufacturing, and services.

The Agribusiness Development Agency (ADA) is a provincial public entity located in Pietermaritzburg providing a range of services (information, financial resource mobilization, facilitation services, capacity building, market infrastructure services) and operating in collaboration with the Department of Agriculture and Rural Development. ADA focuses on projects that are catalytic in nature and have benefits beyond direct beneficiaries, create economic spinoffs, embrace the whole value chain, and speed up the development in the whole geographical area. One of ADA's programmes is an enterprise and value chain development programme which aims to improve value chain competitiveness for previously disadvantaged entrepreneurs in key high potential subsectors of agribusiness, focusing on

traceability, consumer demand, standards, established brands and brand awareness, bulk, uniformity and surety of supply.

Other support for productive sector activities come from industry business associations (such as the South African Sugar Association and Forestry South Africa) or large lead firms (such as Tongaat-Hulett, Mondi, Sappi etc.) which run a number of support programs for suppliers in their various sectors.

The Dube Agrizone AgriLab, a purpose-built micro-propagation facility, is a specialist plant tissue culture laboratory capable of producing disease-free and virus-free plant material. The laboratory supplies high quality disease-free, true-to-type young plants through tissue culture under sterile conditions. It is well placed to service the plant propagation needs of the KwaZulu-Natal farming community and support the development of the horticulture sector in KwaZulu-Natal. The AgriLab is the only such facility in KZN, but it has no internal clients and limited clientele outside the AgriZone. Currently, the facility operates at only 10% capacity and is being run by the AgriZone management since they have been unable to identify a competent, capacitated operator, notwithstanding a tender process intended to do so. The resident horticulturalist bemoans that the current institutional arrangements make it difficult to achieve any efficiencies or undertake industry relevant research. That said, AgriLab is propagating plant material for seed cane and for the production of Gerbera and Anthurium flowers for clients outside the zone.