HIGH VALUE AND FRESH VEGETABLES FOR LOCAL MARKET SUB SECTOR ANALYSIS TANZANIA

JANUARY 2008
FINAL DRAFT

STUDY COMMISSIONED BY SME COMPETITIVENESS FACILITY AND CONDUCTED BY MATCH MAKER ASSOCIATES LIMITED (MMA)
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### Acronyms

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<th>Full Form</th>
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<tbody>
<tr>
<td>AMSDP</td>
<td>Agricultural Marketing Systems Development Programme</td>
</tr>
<tr>
<td>AVRDC</td>
<td>Asian Vegetable Research and Development Centre – Regional Centre for Africa</td>
</tr>
<tr>
<td>BEST</td>
<td>Business Environment Strengthening in Tanzania</td>
</tr>
<tr>
<td>DALDO</td>
<td>District Agriculture and Livestock Development Officer</td>
</tr>
<tr>
<td>DED</td>
<td>District Executive Director</td>
</tr>
<tr>
<td>GTZ</td>
<td>German Development Co-operation</td>
</tr>
<tr>
<td>ICIPE</td>
<td>International Centre of Insect Physiology and Ecology, Nairobi, Kenya</td>
</tr>
<tr>
<td>IFAD</td>
<td>International Fund for Agricultural Development</td>
</tr>
<tr>
<td>IPM</td>
<td>Integrated Pest Management</td>
</tr>
<tr>
<td>MAFC</td>
<td>Ministry of Agriculture, Food Security and Co-operatives</td>
</tr>
<tr>
<td>MAFC</td>
<td>Ministry of Agriculture, Food and Cooperatives</td>
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<tr>
<td>SACCOS</td>
<td>Savings and Credit Co-operative Society</td>
</tr>
<tr>
<td>SECAP</td>
<td>Soil Erosion Control and Agro-forestry Program</td>
</tr>
<tr>
<td>SHOP</td>
<td>Small Holder Outgrower Project</td>
</tr>
<tr>
<td>TAHA</td>
<td>Tanzanian Horticulture Association</td>
</tr>
<tr>
<td>TaNaPa</td>
<td>Tanzania National Parks</td>
</tr>
<tr>
<td>TOAM</td>
<td>Tanzania Organic Agriculture Movement</td>
</tr>
<tr>
<td>TOAM</td>
<td>Tanzania Organic Agriculture Movement</td>
</tr>
<tr>
<td>TPRI</td>
<td>Tanzania Pesticide Research Institute</td>
</tr>
<tr>
<td>TPRi</td>
<td>Tanzanian Pesticides Research Institute</td>
</tr>
<tr>
<td>TShs</td>
<td>Tanzanian Shilling</td>
</tr>
<tr>
<td>TVSP</td>
<td>Tanzania Vegetable Seed Programme / Project</td>
</tr>
<tr>
<td>ULT</td>
<td>Usambara Lishe Trust</td>
</tr>
<tr>
<td>ULU</td>
<td>Ubiri Lushoto Union</td>
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Special thanks go to SCF Board and management team, who entrusted MMA Ltd with this assignment. Also special thanks for Sosthenes Sambua, SFC Manager, and his colleagues for their knowledgeable inputs and logistical support.

Finally, it must be stressed that opinions expressed in this report are purely those of the authors based on observations and findings during the study. It therefore goes without saying that the authors, and not SCF who takes full responsibility for any errors of commission or omission that may be found in the report.
EXECUTIVE SUMMARY

This report focuses on the study of high value and fresh vegetables for local urban markets. The report provides an in-depth study of fresh vegetable sub sector dynamics in Tanzania, focusing on the North-Eastern corridor (Tanga, Kilimanjaro, and Arusha regions). Vegetables studied are: tomato, cabbage, carrot, sweet pepper, broccoli, zucchini, lettuce, cauliflower.

According to the Terms of Reference (TOR), the purpose of the study is to identify ways to improve competitiveness through three strategies: producing and delivering goods and services more efficiently; differentiating products through processing, improving quality standards, branding; and exploiting new market demand. The study methodology involved both extensive literature review and field work in all three regions. During the field work focus group discussion were held with farmers and all other chain actors.

In Tanzania the main production areas of temperate vegetables are in the Southern and in the Northern highlands. Most farmers depend on rain-fed agriculture, which means that harvest periods are almost in the same time, which results in over-production and a lot of wasted product. The market is characterised by traditional spot market arrangements, the chains are long, the traders dominate the chain, there is no transparency and the farmers are in a disadvantaged position. The majority of the produce is traded through Kariakoo market in Dar es Salaam.

In the Northern Corridor the main producing areas are Lushoto District, which produces an enormous variety of vegetables, Kilimanjaro (Hai and Siha Districts), and Arusha, where there is small scale production in Arumeru District and a few areas further away that have specialised in specific crops. The main primary actors have been identified as the producers, traders (buyers) and brokers, both on level and in the urban whole sale markets. Secondary actors are a number of Government and Non-government institutions, projects and (inter)national programs that all focus at supporting the sector and supporting small-holders. During the study two distinctive sub sector characteristics have been identified. For which different sub sector maps have been drawn.

I) The high volume trade (tomato, cabbage and carrots), where full Lorries of one product are traded, and II) the trade of high value vegetables, where smaller quantities are traded and the channels are more diverse. Within the sub sector eight supply channels have been identified:

For high volume trade:
1. The Lushoto – DSM (Kariakoo) link
2. Rural whole sale market places
3. Farmers selling directly to urban whole sale market

For high value trade:
4. Usambara Lishe Trust selling directly to high end market
5. Producers contracted by hotels/lodges or supermarkets
6. Sales via middlemen to urban shops or wholesale market
7. Farmers delivering directly to whole sale or retail market
8. Retailers buying from rural whole sale market

The profitability analysis has not been straight forward, as data gathered are not consistent. There are several reasons for the data to be unreliable and difficult to compare between actors and between regions: i) Prices fluctuate significantly, ii) the measurements in the chain are not standardised and even within one chain the measurements are changing from one actor to the next, iii) the actors in the chain are all prone to high risks of losses or damage. Despite the fact that data are inconsistent, during the study Simplified Gross Margins were calculated for the activities of different actors. For sure the activities are profitable in
most cases. But taking in account the above, the calculated SGMs can only be a proxy indicator of the profitability in specific cases.

Some of the major features of the sub sector dynamics include: i) the prevailing spot market arrangements and long chains with many actors, ii) the lack of formal institutions leaving room for default, moral hazards and fraud, iii) inadequate sharing of information which causes distrust, iv) dependency on rain-fed production there is over-production in the common harvest season and high prices in the season of shortage, v) very few farmers have access to irrigation, to enable them utilize the season with higher prices, vi) niche markets are continuing to develop, these are the high quality markets such as hotels and supermarkets, and there is also a growing demand for organic vegetables.

The main constraints and opportunities focus around knowledge, skills (training) and marketing issues. Access to irrigation should be improved to enable more farmers to produce during off-season. The opportunities are many as there are a good number of organisations active and initiatives developed in the horticulture sector. Improved co-operation between the supporting organisations would benefit the sector.

Two value chains are proposed, both based upon existing models.
1. Institutional marketing, a value chain around a central market, where the farmer owned marketing board is the chain leader. This model has been developed and tried by MVIWATA, and it is recommended to study this model further.
2. Collective marketing, a value chain based upon existing channels, such as Usambara Lishe Trust and AMSDP promoted marketing groups. The value chain is to be formed around a farmers group. It has to be realized however that it would require substantial capacity strengthening to develop well functioning groups.

The generic recommendations focus at developing markets for business services. Improving information sharing and enforcing the use of standardised measurements will increase the transparency in the chain. To upgrade the proposed value chains the approach has to be careful, involving actors in appreciating the business proposition (win-win benefits).

The way forward for SCF has been divided in short term actions, medium term and long term. Proposed is in short term to develop the network of supporting organisations and facilitate sharing experiences of successful chains. In the medium term focus should be on providing support for implementation and in the long term more structural issues can be tackled, such as support to development of standardisation of measurements and the enforcement of it and access to irrigation and financial services.
1.0 INTRODUCTION

1.1 BACKGROUND TO THE STUDY

SME Competitiveness Facility (SCF) is a matching grants opportunity for businesses in Tanzania that wish to develop or increase their ability to trade and export. The SCF aims to support product quality improvement and the meeting of international standards to enable SMEs access potential markets within and outside Tanzania. SCF supports the Government of Tanzania’s endeavour to develop the business sector as an engine for pro-poor economic growth, in line with Tanzania’s National Strategy for Growth and Reduction of Poverty (MKUKUTA). The SCF focus is on business activities that contribute to export, economic growth, employment creation and the reduction of poverty.

Since early 2006 SCF has focused primarily on two types of interventions: agro processing for fruits and vegetables, spices, natural products such as seaweed, and sisal; and three services: food safety (traceability, food safety audits), trade development (effective trade fair participation, branding, supply chain management) and packaging. SCF phase one will end in June 2008 and SCF II is currently being planned. It is projected that fruit and vegetables will also be in focus in Phase II. It is in this context that SCF has commissioned Match Maker Associates Ltd to undertake a number of selected sub sector studies in the fruit and vegetables sector in Tanzania. The studies of different intensities include the following:

**Fully fledged Sub Sector Analysis:**
- Dried fruits and vegetables for urban market and export
- High value and fresh vegetables for local market

**Quick Scans:**
- Fresh and processed tomatoes for local and regional markets
- Baby vegetables for the EU market
- Fresh mangoes for the Middle East market
- Fresh citrus for the local and the regional market

This report focuses on the study of High value and fresh vegetables for local urban markets. The report provides an in-depth study of fresh vegetable sub sector dynamics in Tanzania and drawing main reference from the North-Eastern corridor (Tanga, Kilimanjaro, Arusha, and Manyara regions).

1.2 OBJECTIVES AND RESULTS OF THE STUDY

According to the Terms of Reference (TOR), the purpose of the study is to identify ways to improve competitiveness through three strategies: producing and delivering goods and services more efficiently; differentiating products through processing, improving quality standards, branding; and exploiting new market demand.

More specifically, the objectives were formulated as:
- Identify specific fruit and vegetables with high-value domestic and export market potential
- Identify the key players for each step of production and marketing using the value chain approach
- Identify key input suppliers including technologies, services
- Identify productivity issues at farm level
- Conduct an end-market study of the current demand and future growth prospects of the sector. This could include the high-value domestic market (supermarkets, hotels, resorts, lodges and the food service industry) and key regional markets (Kenya, Middle East, EU, etc.)
- Identify current market outlets and alternatives
- Analyze the factors affecting performance of the value chains
• Identify ways to improve competitiveness through three strategies: producing and delivering goods and services more efficiently; differentiating products through processing, meeting quality standards and branding; and exploiting new market demand
• Analyze the roles and relationships of actors in the industry for implementation of the interventions
• Make recommendations that are useful for promoters of the study related to economic development through the growth of SMEs in agriculture and the objectives of MKUKUTA and the on-going planning for SCF II.

The focus of the study is to be on the Lushoto, Tanga, Moshi and Arusha fruit and vegetable corridor of Tanzania.

1.3 APPROACH AND METHODOLOGY

The fruit and vegetable sector is very wide and consisting of many different sub sectors¹ and hence MMA conducted with support of SCF a sub sector selection process; broad secondary data was collected and analysed by MMA and by applying tools as attractiveness matrix and ranking matrix in a participatory manner a choice was made among the various sub sectors. The results of the process that included a (internal) workshop were:

Two major sub sector analyses
• Dried fruit and vegetables for urban market and export
• High value and fresh vegetables for local market

Four quick scans
• Fresh and processed tomatoes for local and regional markets
• Baby vegetables for EU market
• Fresh mangoes for Middle East market
• Fresh citrus for local and regional market

The next major step was essentially to apply the value chain approach focusing on the development of win-win strategies in potential value chains. The approach started with understanding the sub sector by developing sub sector maps for key product lines and identifies supply channels with potential to be developed into fully fledged value chains. Based on these identified supply channels an end-market review was done to understand market requirements and critical success factors and by using it as a departure point all the functions, actors and their interrelationships down stream the chain were mapped. Apart from understanding the primary private sector actors, also the secondary actors to the chain who are the support institutions (public, donor, projects) that could work together in supporting the chain were analysed. It will among others identify the critical services to be delivered by them, its relevancy and its sustainability.

The main tools used are:
• Sub sector and value chain mapping conventions and overlays tools
• Constraints and opportunities checklist
• Market segmentation and Critical success factor's matrix
• Organisational analysis model
• Institutional analysis / coverage matrix
• Collaborative matrix
• Guided focused group discussions formats.

Much of the essential Information for the analysis of the fresh vegetable sub sector was collected directly from the primary and secondary actors. The interviews were semi-structured. Three areas were visited:

¹ MMA uses the following working definition to define sub sectors: all the firms that buy and sell from each other in order to supply a particular set of products or services to final consumers
Lushoto District (Usambara Mountains) which produces a large variety of vegetables. In the district the team focused on the Lukozi village where there is a high production and active trading. In Kilimanjaro region several districts were visited, being Moshi Rural District, Hai District, Siha District (including West-Kilimanjaro). Depending on height and climate each area is growing its own type of vegetables. In Arusha region, Arumeru District and Meru District were visited.

In Dar Es Salaam different types of outlets were analysed and various actors interviewed, including the wholesale markets, such as Kariakoo, and retail outlets, such as supermarkets and vegetable shops. In Arusha visits were made to supporting organisations, i.e. AVRDC (Asian Vegetable Research and Development Centre – Regional Centre for Africa), AMSDP (Agricultural Marketing Support Development Programme), TAHA (Tanzanian Horticulture Association), and SHOP (Small Holder Outgrowers Project). Desk studies were done to back up the findings in the field.

1.4 LIMITATIONS
As usual the absence of reliable and accurate secondary data was a limitation; taken into account that some of the studies had a regional and international outlook this limitation was even felt stronger. Time pressure was another challenge the consultants had to face. With exception of these ‘normal’ limitations, there were no specific issues that hindered the study. In contrary, there was strong support by SCF, including linking up with organisations in Nairobi, provision of logistical support and through the apprenticeships that were attached to the MMA team.

1.5 STRUCTURE OF THE REPORT
The study starts with an overview of the fresh vegetable production in Tanzania (Chapter 2), it then focuses on the vegetable production in the Northern Corridor. The sub sector, the supply channels and the dynamics are analysed (Chapter 3). The next chapter (4) assesses and analyzes the value chains and hereafter in chapter 5, strategies for sub sector/value chain development and recommendations are presented. The study is completed by discussing the way forward in the final chapter 6.

The report is written in male form (‘he’), this does not mean that women are not active in the sector. Many farmers are women, most labourers are women, and also trading is done by women (‘middle-women’).
2.0 FRESH VEGETABLES IN TANZANIA

There is a large range of vegetables produced in Tanzania which are marketed through several types of markets. These are the local market consuming traditional vegetables, such as Mchicha, tomatoes, eggplant, etc.; the urban market which –apart from mchicha and tomatoes - consumes high value vegetables such as cabbage, carrots, sweet pepper, broccoli, zucchini and lettuce. Apart from these national markets there are few export markets. There is a regional export market, mainly Nairobi for onions and tomatoes and there is a high value export market in Europe, i.e. baby-vegetables (baby corn, mange-tout, green (French) beans, etc.

The Government of Tanzania has identified horticulture as one of the 'sources of growth' and prioritizes horticulture as a potential sub sector for export diversification to reduce the risk of dependency on traditional exports, whose price recently has been declining and fluctuating widely. By far the most important areas in the country for horticultural production for the local urban market are in the Southern regions, being Morogoro, Iringa, Mbeya and Ruvuma and in the Northern corridor, consisting of Arusha, Kilimanjaro, Tanga regions. Owing to the fairly good reliability of rainfall and high altitude, the regions mentioned produce mainly temperate vegetable types. The main vegetables produced in these areas are tomatoes, cabbages, onions, carrots, and round potatoes. Lushoto District in Usambara Mountains (Tanga) stands out for the intensive horticulture production and high variety of products grown.

Table 1: Production in ton per region of vegetables in 2002

<table>
<thead>
<tr>
<th>District</th>
<th>tomato</th>
<th>cabbage</th>
<th>onion/leek</th>
<th>carrot</th>
<th>others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lushoto</td>
<td>38,670</td>
<td>4,800</td>
<td>9,600</td>
<td>550</td>
<td>400</td>
</tr>
<tr>
<td>Hai</td>
<td>9,000</td>
<td>9,500</td>
<td>4,000</td>
<td>2,400</td>
<td>36,510</td>
</tr>
<tr>
<td>Iringa</td>
<td>101,952</td>
<td>10,695</td>
<td>11,083</td>
<td>-</td>
<td>1,321</td>
</tr>
<tr>
<td>Mbeya</td>
<td>4,940</td>
<td>3,510</td>
<td>1,170</td>
<td>1,079</td>
<td>1,521</td>
</tr>
<tr>
<td>Morogoro</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>127,546</td>
</tr>
<tr>
<td>Temeke</td>
<td>5,243</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>465</td>
</tr>
<tr>
<td>Total</td>
<td>150,805</td>
<td>29,505</td>
<td>25,858</td>
<td>4,029</td>
<td>167,965</td>
</tr>
</tbody>
</table>

Source: Shao, 2002.

Production of tomatoes is the highest with a total of 159,805 tons production and acreage of 7,170 hectare. The second vegetable crop is cabbage and third crop is onion. Carrots are a minor crop with a production of 4,029 tons (Putter, 2007)

Table 2: Acreage in ha per region of vegetables in 2002.

<table>
<thead>
<tr>
<th>District</th>
<th>tomato</th>
<th>cabbage</th>
<th>onion/leek</th>
<th>carrot</th>
<th>others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lushoto</td>
<td>1,289</td>
<td>1,600</td>
<td>300</td>
<td>85</td>
<td>20</td>
</tr>
<tr>
<td>Hai</td>
<td>900</td>
<td>950</td>
<td>500</td>
<td>300</td>
<td>1,020</td>
</tr>
<tr>
<td>Iringa</td>
<td>4,248</td>
<td>713</td>
<td>1,584</td>
<td>-</td>
<td>117</td>
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<tr>
<td>Mbeya</td>
<td>380</td>
<td>270</td>
<td>90</td>
<td>83</td>
<td>117</td>
</tr>
<tr>
<td>Morogoro</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5,102</td>
</tr>
<tr>
<td>Temeke</td>
<td>353</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>72</td>
</tr>
<tr>
<td>Total</td>
<td>7,170</td>
<td>3,533</td>
<td>2,474</td>
<td>468</td>
<td>6,448</td>
</tr>
</tbody>
</table>

Source: Shao, 2002.
Other vegetables produced are for instance eggplant, cauliflower, sweet pepper, broccoli, lettuce, fresh beans and indigenous vegetables like amaranth and okra.

For home consumption only 10% of the yield is used. The remaining is for selling but for all kind of vegetables losses are high. Although no good documentation is available estimated is that about 31% is lost leaving only 59% for selling. Losses are caused by pest and diseases, inadequate sorting/grading, rough handling, lack of cooled storage facilities and lack of adequate packing material. Besides this also a good quality control system and grading system is lacking. Only 13% of the farmers perform some sort of grading where only rotten or misshaped fruits are removed.

The food supply chain in Tanzania is very complex and disorganised. The traditional market is one of long chains and spot market arrangements. This is to the disadvantage of the producers (Lynch, 1994). Currently supply chains are based on the contacts and knowledge of the people involved in the trading and not just in the presence of physically roads, buildings and vehicles (Lynch, 1994). Most of the vegetables are traded through middlemen to whole sale markets. Kariakoo in Dar es Salaam is the most important hub for vegetable trade; more than 50% of the vegetables are traded through this large market. Most small holders depend on rain fed agriculture meaning in the main harvest season there is an enormous overproduction and much of the crop can’t be sold and is lost.

Apart from the specific export vegetables grown by a few specific farms/companies which are supplied by few outgrowers (at present there is only one company exporting in the Northern corridor, being Serengeti Fresh), there is little export of vegetables from Tanzania. Exported to regional markets are especially onions from Manyara and tomatoes to Nairobi. GTZ-BEAF has carried out a study into this cross border trade. Also some sweet pepper from Tanzania was found on the Mombassa market. But quantities being traded cross boarder of other vegetables than onions and tomatoes are not significant.
3 FRESH VEGETABLES IN THE NORTHERN CORRIDOR

The vegetables sub sector dynamics in the Northern Corridor of Tanzania are discussed in this chapter. This includes the identification of key actors and their functions, the sub sector map, the main constraints and opportunities with potential business solution and profitability analysis. The Northern Corridor comprises the production areas in Tanga region, being mainly Lushoto District, Kilimanjaro region and Arusha region.

Figure 1: The main production areas of mixed vegetables in Northern Tanzania

3.1 DEFINING THE SUB SECTOR

Vegetables are a wide field of study. There are different varieties and different consumer market segments and preferences. Trade can be local, inter-regional and international. According to the proponents and practitioners of sub sector analysis methodology, it is crucial to define the precise parameters of a sub sector in order to create focus and clarity. Sub sector is generally defined by the finished product and market segment it serves. The sub sector analysis is meant to identify and analyse all firms (input suppliers, producers, processors, retailers etc) that buy and sell from each other in order to supply a particular set of product or services to the final consumers.

Whilst acknowledging this necessity, we adopted a working definition of fresh vegetables for the urban market. Sub sector in this study is defined as a basket of commonly demanded vegetables, and higher value vegetables demanded in the urban market and produced in the Northern corridor of Tanzania. The vegetable basket was identified to include; tomatoes, cabbage, carrot, cauliflower, iceberg lettuce, sweet pepper and a few high value vegetables, being broccoli, zucchini and soft (red) lettuce. The market focus in the study is the urban markets in Dar Es Salaam, Arusha and Moshi. In Dar Es Salaam the most important entry point for vegetables is Kariakoo market.
3.2 FUNCTIONS AND KEY ACTORS

3.2.1 PRIMARY ACTORS

The key primary actors in the sub sector are the producers and traders. Producers of vegetables are mainly small holders who either grow a wide variety of vegetables (e.g. Lushoto District), or one type (e.g. tomatoes in Ngari nya nyuki, Arumeru District, or carrots in Oldonyo Sambu, Arumeru District). Small holders in general are not organised. The farms have an average size of 1-2 acres (roughly 0.5 - 1 ha), few have more going up to 4 ha. There are few larger scale producers for the local market. There are some large scale producers like Prison farms (mostly for own use) and another example of a large producer is Poverty Girls in West Kilimanjaro. Also, there are a few larger estates growing vegetables for export like Serengeti Fresh in Arusha, but their operations will be separately and extensively discussed in the ‘high value vegetables for export sub sector report.

The trading is highly diversified, informally organised; There are local brokers (dalali) who negotiate deals between farmers and buyers (this is especially the case in Lushoto). There are buyers from outside - the guys with the money (wanunuzi/watajiri) - who buy larger quantities, which they sell in whole sale markets. The buyers hire transporters; in Lushoto they do that through transport brokers. Within the larger whole sale markets, (Kariakoo, Arusha main market) there are brokers (dalali’s) who receive the load of produce (on credit) and sell it on to retail traders, such as retail-market traders, shops, hotels etc. These brokers know each other and work closely together; they form a cartel and make it difficult for new comers to enter. Many traders are specialised in certain produce. There is little transparency in the trade, which put farmers in a disadvantaged position. The Kariakoo traders are organised in unions, they pay a fee to the union, and they are registered in the market through their unions.

The middlemen and brokers are definitely the key actors in the vegetable trade. At first sight middlemen often are judged negatively. They manipulate weights and measures, they mislead farmers, they monopolise (market) information etc. Though their practices are sometimes dubious they also take huge risks and perform important functions such as:

- linking buyers to farmers and their produce; a buyer would not deal with farmers individually.
- delivering cash money to farmers
- bulking and transporting loads of goods to urban centres; when there is a breakdown or quality loss, is their risk.

Particularly their exposure to risks makes it understandable that the brokers seek a good profit.

In the Northern corridor, Lushoto is the place where there is the highest variety of vegetables produced. The vegetables are produced in the valleys among the mountains and in certain areas the total valley bottom is cultivated. Cultivation in the valley bottoms implies that the production season is longer as the valleys are the wettest areas.
Apart from the common vegetables being tomatoes, cabbage and carrots, one can find special types, such as cauliflower, broccoli, zucchini, and leeks, different types of lettuces, spring onions, celery, beet root, and even fresh herbs. Lushoto can produce all year round due to the production in valley bottoms. Marketing seasons for Lushoto are the following:

- April to December (the time that follows the long rains and includes the short rains) is the season with high production and consequently with low prices. In the same period also other vegetable producing areas (such as Morogoro) produce vegetables, which results in over supply in the Kariakoo market.
- January to April is a good season for Lushoto Lushoto can produce but other areas can’t, unless they have irrigated production systems.

Most producers own a few plots of ¼ - 1 acre each and they grow a variety of vegetables. They grow a few types of vegetables at a time, often ¼ acre of one type. There is crop rotation, although this does not seem to be founded on agricultural reasons (pest& disease and fertility management).

There is risk for environmental damage because of the intensive cultivation: Erosion, water conservation, deforestation, over use of pesticides were concerns the team heard from people around.

In Kilimanjaro, certain production areas produce particular types of vegetables. There are quite a few areas producing tomatoes, cabbage, carrots, and sweet pepper. Hardly any type of high value vegetable is grown.

In lower areas of Moshi district there is production of: Sweet pepper, Okra, tomatoes, mchicha, etc. Production areas are: Gona, Kyomu, Mwiwaleni, Kisangi sangeni, Chekireli weruweru (all use irrigation).

Middle altitude (900 - 1200 m): tomatoes, Amaranthus (mchicha), cabage, okra, black nightshade. Production areas are: Kilema pofu (irrigated tomatoes), Masaera (irrigation).

Upper altitudes (> 1200 m): Cabbage, carrots, tomatoes, amaranthus, very little cauliflower and lettuce. Production areas are Tema (visited) and Mwika.

Production seasons: In middle and lower areas production season is June to March. During rainy season there is flooding, thus no production.
When visiting Tema village which is at a high altitude, main crops found were tomatoes and carrots. Farmers had stopped growing cabbage because they themselves got sick from the use of the chemicals. They have turned to growing kale (sukumawiki) as it does not need pesticides. One farmer was experimenting with broccoli, but he had no information about production methodology whatsoever. Even if there was a extension worker in the village.

West Kilimanjaro, particularly Hai and Siha districts, is a main producer for potatoes and carrots, tomatoes, cabbage, some sweet pepper, recently tomatoes are increasing. In Hai District, tomatoes, cabbage and sweet pepper are mainly grown. Carrots and potatoes are grown on the Northern side of Siha District on plots of 50x50 meter, allocated to farmers by the Forestry Department (TaNapa). This area used to be forest, trees were cut and replanted. Cultivation has happened in these newly planted fields for a number of years but this year many of the carrot & potatoe farmers have been moved out due to forest replanting. There is a move to production of tomatoes on plots outside the forest land. Otherwise in West Kilimanjaro, commercial farmers can have large fields and between 100 and 200 acres is quite common. One such a vegetable farm is run by the company ‘Poverty Girls’, headed by Joke Bruinsma. Poverty girls are producing a variety of vegetables and delivers to supermarket and hotels/lodges directly.

There are two main trading channels in Kilimanjaro, one channel is where the trader buys at farm gate (e.g. carrots in Siha, tomatoes in Kilema pofu), loads a lorry and takes it to an urban whole sale or retail market. The other channel is where either businessmen or farmers themselves take their produce to a rural whole sale market (e.g. Kwasa Dala in Boma Ng’ombe/Hai or Sanya Juu in Siha) and buyers bulk and buy and take to sell at urban markets, some produce (sweet Pepper was bought to be transported to Mombassa).

In Arusha / Arumeru – villages’ small holders produce tomatoes, zucchini, cabbage, lettuce, sweet pepper, broccoli in small quantities for sale at the Arusha central market. The produce is mainly traded by middlemen who come up to the farm, buy and sell at the main market. In Arusha region there are a few special production areas, such as:

- **Ngara nya nyuki** which is important production area for tomatoes. The tomatoes are exported to Mombassa and through Sany juu whole sale market to Arusha and Dar markets. Ngara nya nyuki can produce three seasons a year as there is irrigation. There does not seem to be a system of crop rotation.

- **Oldonyo Sambu** (Arumeru District, Nairobi Road) which is a carrot producing area. It is mainly produced as cash crop and in the shortage season (sept – January) Oldonyo Sambu still produces while other areas do not produce. During this season traders from outside come to buy at the spot. In other seasons farmers (or businessmen) take carrots to Arusha whole sale market. They got a link to Sopa lodges but it is not clear if it has been successful. The carrots are not sold to Nairobi.

- **Tengeru** is an important area for tomato production but due to the market for tomato seeds, the production has been shifted to seed tomato production.

Input supply is arranged by private companies. In Arusha and Kilimanjaro areas farmers go to town to buy the inputs. There are a few larger companies who supply the chemicals and seeds (e.g. Mukpar Ltd., Pop Vriend, etc) and who have shops in Arusha and Moshi town. There does not seem a problem with supply; the only limitation is that seeds and chemicals are expensive. Only in Lushoto District we found in a village a stockist selling all commonly used pesticides, fungicides, fertilisers and vegetable seeds. The owner of this shop had a diploma in Agriculture. It is mandatory for pesticide traders to follow a refresher course every year at TPRI (Tanzania Pesticide Research Institute). For those farmers who are interested in IPM (Integrated Pest Management), it is difficult to obtain natural pesticides or information about it.

A summary of the primary actors and their main characteristics is presented in the next table 3 below.
Table 3: Overview Primary Actors

<table>
<thead>
<tr>
<th>Primary Actor</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input suppliers</td>
<td>Supply seeds, chemicals and fertilizers. Also farm equipment, including irrigation equipment.</td>
</tr>
<tr>
<td>Labour</td>
<td>Labour is obtained locally and is mostly women for the common work, digging, planting, weeding etc. Some people are specialized, e.g. packing carrots in a gunia.</td>
</tr>
<tr>
<td>Producers</td>
<td>Mostly small scale producers Few larger scale producers</td>
</tr>
<tr>
<td>Brokers</td>
<td>Negotiate between farmers and buyers Local guys</td>
</tr>
<tr>
<td>Traders</td>
<td>Work in between urban market and production area They have a work capital Take big risks Have work relationships with brokers on production and on market side. Often specialised in certain crops</td>
</tr>
<tr>
<td>Market brokers</td>
<td>Distribute the load to retail buyers</td>
</tr>
<tr>
<td>Retail traders</td>
<td>Either shopkeepers, supermarkets or stand holders on retail market, but also hotel / catering services, etc</td>
</tr>
<tr>
<td>Consumers</td>
<td>Buy their vegetables from retail markets, shops or supermarkets.</td>
</tr>
</tbody>
</table>

3.2 SECONDARY ACTORS

There is a strong interest by donors to support the horticultural sector in Tanzania through organizations and such as TAHA and programmes such as SHOP, which are supporting the development of the sub sector and/or delivering essential (business) services. See Table 4 below and also Annex 4)

Table 4: Primary and secondary actors, their characteristics and remarks

<table>
<thead>
<tr>
<th>Secondary actors</th>
<th>Activities</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHOP</td>
<td>SHOP (Smallholder Horticulture Outgrower Promotion), Arusha</td>
<td>SHOP officially started in October 2007, so it is still in the starting phase. It has a 2 year project period. See also Annex 4.</td>
</tr>
<tr>
<td></td>
<td>- Capacity building for production of high value vegetables</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Strengthen Farmer Organization Capacity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Improve Extension Services</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Expand Export Market Outgrower Schemes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Expand Domestic Market Outgrower Schemes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Commodity Grant Fund</td>
<td></td>
</tr>
<tr>
<td>TAHA</td>
<td>Tanzania Horticulture Association.</td>
<td>Ex. Director: Jacqueline Mkindi. TAHA started as an association for the larger horticulture companies in the North of Tanzania. Since 2007, TAHA also focuses at small holders. Funding, among others, from Royal Netherlands Embassy. See also annex 4</td>
</tr>
<tr>
<td></td>
<td>- General support for small holders in horticulture</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Strengthening the sector</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Support to strengthening the market, linking to processors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Strengthening the sub sector organisation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Value addition</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Technical support</td>
<td></td>
</tr>
<tr>
<td>AMSDP</td>
<td>Agricultural Marketing Support Development Programme</td>
<td>Manager: Mrs Nyambilila Funded by IFAD, Head office</td>
</tr>
<tr>
<td></td>
<td>strengthening the marketing of vegetables for small</td>
<td></td>
</tr>
<tr>
<td><strong>Faida Mali</strong></td>
<td>Tanzanian NGO, aiming to improve market linkage for farmers through stimulating farmer organisation, business awareness training and market linking. Faida Mali has implemented the programme for improved marketing of vegetables in Hai District. Through organising business platforms (where all actors from the chain meet) and providing training such as business awareness, participatory market research and strengthening the groups. <strong>Manager:</strong> Mrs Maria Ijumba. <strong>Head Office in Arusha.</strong> <strong>Funding:</strong> several donors.</td>
<td></td>
</tr>
</tbody>
</table>
| **AVRDC** | AVRDC is a non-profit international organization dealing with research and development into vegetables, established in Asia in 1972. The centre in Tanzania is the regional centre for Africa. The centre’s focus is breeding and creating new vegetable varieties and production technologies. Training is carried out to create awareness of research efforts. Currently there is special attention to traditional vegetables and tomatoes. Extension to farmers is done through organising farmers days. AVRDC provides short courses:  
  • Production Technology  
  • Plant protection  
  • Export oriented production  
AVRDC can also provide tailor made training to the needs of the client. AVRDC intends to bring in more PhD and post-doc students to its courses so as to conduct more cutting edge research on vegetables. **AVRDC works closely together with Horti Tengeru.** **Contact person:** Mr Hassan Mndiga. |
| **Horti Tengeru** | Horti Tengeru is a research and training institute under the Ministry of Agriculture, offering a diploma and tailor-made short training courses in all aspects of horticulture. Currently focus in research is on tomatoe: resistant varieties and seed production, in co-operation with AVRDC. Horti Tengeru offers offers a two-year diploma course in horticulture, and a one-year diploma course entitled “Post harvest handling skills and crop quality management of horticultural crops”. **Contact person :** Mr R Swai. |
| **Floresta** | Floresta is a USA based NGO. Floresta focuses on: Environmental issues, bio-intensive agriculture (vegetable production), improving livestock keeping, Saving&Credit. In vegetable production their activities are:  
  - Technical support to small holders in Marangu village  
  - Marketing support  
  - Promoting organic production  
A Floresta branch is based in Marangu, Moshi. |
| **University of DSM, Incubator** | Incubator Project runs farmer training in Lushoto. Training focuses at:  
  - Business skills  
Project Leader Mr Mushtak Osman. |
3.3 SUB SECTOR MAPS AND DESCRIPTION OF MAIN CHANNELS

As there are essential differences in trade of high volume vegetables and high value vegetables two sub sector maps are presented. We have characterised the distinction as follows:

i) High volume vegetables. These are tomatoes, cabbage, carrots and cabbage and sometimes sweet Pepper. These vegetables are grown and traded in large quantities (lorry-loads). Purposely we do not say high volume-low value, because in the seasons with low supply, the price can be high for these veg.

ii) High value vegetables which are traded in smaller volumes and typically in mixed loads. These vegetables are Cauliflower, Brocoli, Zuchini, lettuce, sometimes sweet pepper and others like leeks, spring onions, beet roots, etc. It does happen that some loads also contain tomatoes, cabbage or carrots but then these are of high quality for specific buyers (e.g. Usambara Lishe Trust, Shoprite).

For the maps and descriptions of the channels see next pages:
Figure 3: Sub sector map High volume vegetables (Tomatoes, cabbage, carrots)

- **Consumption**
  - High/middle income
  - Low/middle consumers
  - Institutions (schools, etc)

- **Retail**
  - Urban shops/supermarkets
  - DSM urban retail market & Regional urban retail market

- **Wholesale**
  - DSM & Regional urban wholesale markets

- **Transport**
  - Trader

- **Brokering**
  - Broker/dalali

- **Bulking/trading**
  - Trader (sometimes through brokers)

- **Production**
  - Farmers
  - Input suppliers (Seeds, chemicals and fertilizers)
  - Labour

- **Channel 1: Lushoto-DSM Channel**
- **Channel 2: Rural wholesale markets**
- **Channel 3: Direct market link**

Nairobi/ Mombassa
Description of main channels:

1. The Lushoto – DSM (Kariakoo) Channel

The characteristic of this channel, based on research in Lukozi village, is that there is a farm level transaction of the produce and that there is a broker in-between the farmer and the buyer. Buyers/middlemen (matajiri) come to the village where they meet with the broker (dalali). The broker (dalali) is a local person and there are approx. 50 Dalali’s (Chokoo) in Lukozi village. Buyer and broker know each other (e.g. the Dalali we talk to, works with 50 buyers, others might have 20-30 buyers). Dalali’s are specialised in crops, e.g. potatoes, tomatoes, cabbage and carrots.

The buyer/middlemen pass his order (possibly done by phone before) and the dalali arranges with farmers to fulfill the order. He negotiates with the farmer and with the buyer, and after agreeing on the price he pays the farmers and receives his money from the trader. The difference after deducting the costs for packing material and loading the material is his profit. For transport there are trucks with drivers waiting in the village. The buyer hires a truck but the hiring is arranged through the ‘village transport broker’ (dalali wa magari), who coordinates the trucks so that buyers fill a truck together. The truck driver pay the broker TShs 20,000 per trip (trip to Dar costs 650,000/-). On arrival in DSM wholesale market (Kariakoo), the load is passed on credit to a dalali in the market. He sells it in smaller quantities to retail traders, such as market stand holders or hotels and shops. In between the dalali and the retail salesman is the ‘mpimaji’, the one who weighs the product into kg quantities, so it can be sold in smaller quantities.

Every crop has its own sales/packing system and selling units:
- Tomatoes are sold by farmers in buckets, the dalali sells in buckets, the buyer transfers and trades the tomatoes in baskets (tenga), which contain 6 buckets (DSM market) or 8 buckets (Z’bar market).
- Cabbage is often sold on the field – a price for whole field is negotiated. Buyer then arranges the harvesting, packing, transporting and loading onto the truck with help of dalali, who are paid by buyer.
- Carrots are sold by gunia (80-100 kg); packing is done on the field by labourers hired by dalali.

Channel 2 – Rural whole sale market places

This channel is characterised by product exchange at a rural whole sale market place and examples of these markets are Kwasadala (Hai District) and Sanya Juu (Siha District). A farmer take his produce to these rural whole sale market however, a farmer might also collect/buy from neighbour farmers. Buyers buy from farmers at these markets after which they transport it to the urban wholesale markets. In some cases (kwasadala – tomates) there are brokers in between farmers and traders.Buyers take the product to the urban whole sale market where they hand it over to the broker.

Channel 3: Farmers or middlemen take produce direct urban market

There are some larger farmers who organise their own sales and take their crop direct to the urban wholesale market. These farmers might also buy from neighbour farmers to fill a truck. Alternatively, there are traders who buy at farm gate and take the crop direct to the wholesale or the retail market where they sell it themselves. An example of this channel is found in the Oldonyo Sambu (Arusha region) – mainly a carrot producing area – where some farmers buy from neighbour farmers and deliver directly to Arusha whole sale market.
Figure 4: Sub sector map of mixed loads of high value vegetables

- **Consumption**
  - Ship catering
  - High/Mid income Urban consumers
  - Mid/Low income Urban consumers
  - High end Hotels/ Lodges /
  - DSM & Regional urban retail markets
  - DSM & Regional –Wholesale urban market
  - Market salesman / traders

- **Retail**
  - DSM Corridor Group
  - Urban shops and supermarkets
  - DSM & Regional urban retail markets
  - DSM & Regional –Wholesale urban market
  - Poverty Girls
  - Mid/Low income Urban consumers
  - High/Mid income Urban consumers
  - DSM & Regional urban retail markets

- **Wholesale**
  - Usambara Lishe Trust
  - Freshmark & Castro
  - Poverty Girls
  - DSM & Regional –Wholesale urban market
  - Market salesman / traders

- **Transport**
  - Rural wholesale market
  - DSM & Regional –Wholesale urban market

- **Bulking /trading**
  - DSM & Regional urban retail markets
  - DSM & Regional –Wholesale urban market
  - Poverty Girls

- **Production**
  - DSM Corridor Group
  - Urban shops and supermarkets
  - DSM & Regional urban retail markets
  - DSM & Regional –Wholesale urban market
  - Poverty Girls

- **Input**
  - DSM Corridor Group
  - Urban shops and supermarkets
  - DSM & Regional urban retail markets
  - DSM & Regional –Wholesale urban market
  - Poverty Girls

- **Channels**
  - Channel 4: Usambara Lishe Trust
  - Channel 5: Contract farming
  - Channel 6: Via Middlemen to wholesale market
  - Channel 7: Farmers sell direct
  - Channel 8: Rural wholesale market
Description of the channels:

Channel 4. Usambara Lishe Trust
Usambara Lishe Trust (ULT) is one of two farmers organisations in Lushoto (ULU is the other, but ULU is not functioning at present). The objective of ULT is to link farmers to the market. ULT has been founded in 1997 as a trial by SECAP. SECAP was a programme funded by GTZ with the aim to improve soil conservation and reforestation in the Usambara Mountains. After establishing terraces and other protected fields on slopes, marketing of the extra produce (especially horticulture) became an issue. In the beginning SECAP and NEVEPA (another GTZ funded programme) financed the building of stores and buying centres. These are still functioning. ULT is co-ordinated by Mary Rimoy, who in fact is one of the three District Horticultural Officers. There are four groups of roughly 50 farmers who sell to ULT. ULT deals with a large range of vegetables; basically any type that can be thought of and is grown in Lushoto.

ULT has specific outlets for their vegetables, including Mövenpick Hotel in Dar es Salaam, Saverio Pizzeria, vegetable shops on the DSM Peninsula (upper end of market) and Dar Es Salaam Corridor Group, which supplies the ships in the DSM harbour. In the past ULT had more hotels to sell vegetables to, but clients were lost due to various reasons. Some changed management and decided to buy in Kariakoo market, some places ULT could not guarantee night delivery of vegetables. ULT did also sell to Shoprite and Shoprite would regularly sent a cool truck but communication and timing was very difficult and prices were very low, and at the end this outlet was lost. ULT was found the only organization that is aware and raises awareness on reducing pesticide use. It does provide organic vegetables to two outlets in Dar es Salaam, and it could develop into a larger organic vegetable supplier to urban markets.

Orders are taken on daily basis by phone, communicated to contact farmers, collected from farmers through buying centres, and taken by hired trucks to deliver in DSM. Delivery is twice a week at night at the doorstep of the client. The following day the ULT representative follows up the payment and next order. Sales are mostly in Dar, some in Arusha and some in Zanzibar. ULT collects the vegetables through collection centres (called ‘Sheratons’ by local people, as Mövenpick hotel was in the Sheraton chain before) these centres are in the villages Soni, Nyasa, Lushoto mgini, Lukozi, Malindi. Farmers deliver and are paid as a group, once a month. The groups keep their own administration. The price paid is higher than paid by traders or the local market. Obviously for that price ULT has to deliver a good quality. See the table below. Some money is held back by ULT for transport and administration costs. ULT support farmers by organising seminars, training, awareness raising on use of pesticides, e.g. ULT facilitates the ICIPE to do an experiment with biological control of a cabbage pest (Diamond back moth controlled by parasite wasp). ULT has also stimulated the use of irrigation (Money maker pumps).

There were some weaknesses found in ULT, such as:
- Reducing number of clients, probably caused by a lack of good marketing management.
- Lack of proper financial management (e.g. there is no accountant)
- Lack of proper quality control system
- Lack of initiative to do something structural to counter the problems

<table>
<thead>
<tr>
<th>Crop</th>
<th>ULT</th>
<th>Trader</th>
<th>Local market Soni</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomatoes</td>
<td>300</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>Cabbage</td>
<td>100 / piece</td>
<td>50-100</td>
<td>50/piece</td>
</tr>
<tr>
<td>Carrots</td>
<td>400</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Cauliflower</td>
<td>500</td>
<td>100-200</td>
<td>200</td>
</tr>
<tr>
<td>Broccoli</td>
<td>700</td>
<td>400</td>
<td>300</td>
</tr>
<tr>
<td>Zucchini</td>
<td>750</td>
<td>100</td>
<td>300</td>
</tr>
<tr>
<td>Salad</td>
<td>500</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
Channel 5  Contracted production for hotels/lodges or supermarkets (Shoprite)

Few – more advanced – farmers (groups) sell directly to either supermarkets (or their outsourced purchasers) or hotels/restaurants/lodges. This channel is characterized by a contract between farmer and buyer and high demands on quality and continuity and reliability of supply. The Shoprite contract includes a price – with a clause that price can fluctuate according to the market price and quality - and agreements on Good Agricultural Practices to be implemented. The procurement manager of Shoprite DsM is visiting the supplying farms on a regular interval to monitor the production and to discuss problems. There is again a quality check on the vegetables on arrival in the pack house. Shoprite has outsourced the purchase, quality control and packaging to two companies: ‘Freshmark’ in Arusha and ‘Castor’ in Dar es Salaam. Freshmark has contracted approximately 25 farmer(groups). Castor is Minly supplied by ‘Poverty girls’ from West Kilimanjaro and by 2 individual producers from Lushoto and by ULT. Shoprite has also outsourced the transport of the produce from the farm to the packing house to company called Millenium. Millenium has a refrigerated van; break-down on the way is his responsibility.

‘Poverty girls’ supplies besides Shoprite in Dar also a number of tourist lodges in the North. The supply of fresh vegetables to Shoprite Dar es Salaam (DsM) reaches a value of around 1mio Tsh on a weekly basis since March 2007 which equals the sales to approx 7 lodges around Arusha. For the latter transport is arranged by PG. Particularly this market segment is asking more than PG is able to deliver. Additional vegetables are bought from various sources, including the Arusha market. She tried to outsourcing to local farmers but the attempts have not been successful as they were failing to deliver. PG is able to produce vegetables the whole year around due to irrigation. They mostly use hybrid seeds and minimize the use of pesticides. A supplier to Freshmark Arusha is ‘Eliza’, which is a women’s group from Tengeru. Eliza also supplies to some restaurants in Arusha.

Channel 6. Sales via middlemen to urban shops or wholesale market

This channel is characterized by a middleman/trader who has links with farmers to the whole-sale urban market or shops. There are no formal contracts but there is an informal bond. The middlemen buy from farmers at farm level or at a collection point (not an open market) and transport the vegetables to the urban market. In Lushoto the research team met a trader who has specialised in marketing a variety of high value vegetables such as: leeks, cauliflower, broccoli, red cabbage, soft lettuce (red), lettuce course (Iceberg), green/red/yellow pepper, spring onions, beet roots, herbs, chives, etc. This trader has several trade options:

1) Supply on order from shops in Dar

The trader is supplying on order a number of shops in Dar Es Salaam (Masaki). When he receives orders (by phone) he contacts farmers to deliver to him the requested products and quantities. In his store the packaging is done, a transport is arranged by hiring a truck and he accompanies the load for delivery to the shop. The trader has a well kept network of farmers to source his produce from.

2) Collection on special days

Every Sunday, the trader organises a transport of produce to Kariakoo market. Before the planned date the trader orders certain produce and quantities from farmers, who then deliver at collection day. The trader buys packs and hires transport to Kariakoo market, himself he goes with the cargo to the market. He has no special arrangement in Kariakoo market, he sells on to middlemen or he sells directly to Zanzibar traders. Selling to Zanzibar traders is good business because the prices are good. Still he does not have special arrangements with them to meet for trading. It is difficult to develop special trade relationships with the Zanzibar traders as there are different traders coming every time.

3) Broker for other business men

When other businessmen want to send a certain load of special vegetables to Dar es Salaam they have to arrange it with the help of this trader, as he has the network of farmers producing. The trader collects the order and arranges delivery by the farmers at the collection point. The businessman buys and packs and goes with the cargo to Dar es Salaam. Transport has been arranged by the trader as he knows the drivers. The trader gets about 4-5% of the value of the load.
In Arusha – Kilimanjaro such traders also operate but on smaller scale. They buy at farm gate crops such as zucchini, cabbage, lettuce, sweet pepper, broccoli and sell on to a broker (dalali) in the market. Often the trader and the broker have agreed to work together. This makes it difficult for farmers to go to the market themselves as the dalali’s in the market won’t buy from them.

Channel 7 Farmers delivering direct to whole sale or retail market
This channel does not occur often. Still it is shown it as it is the channel where farmers may receive most profit as middlemen are not involved. Two examples:
1) In Lushoto, the team met a farmer who did deliveries himself to Kariakoo and also to shops in Dar. This farmer has been a trader before and knows brokers in the market, which provides him with access to the wholesale market. In fact, and especially if this farmer also buys and sells produce from neighbours, the farmer takes on the role of a middle man. His extra pay can be seen in the tables in the chapter below on Profitability analysis where the farmer will receive the price as paid to the trader. Obviously the farmer has also incurred extra costs.
2) A farmer in Arusha, producing lettuce and sweet pepper, goes himself to the retail market to get orders from retail salesmen and then delivers next day. In his case it works because the product is special, low volume, and there is no competition through the middlemen in the market. When he sells direct to the market his Simplified Gross Margin is 62%, when he sells through the trader the SGM is 52%.

Channel 8 – Retail sales people buying from rural farmers market
This channel is characterised by farmers and retail traders trading with each other on a rural market place. It is successful in those cases where the retail market is not too far away from the producers. The following example highlights this: It concerns Soni market in Lushoto District where retail traders from Tanga buy. Twice a week there is a market where a high variety of vegetables is traded: tomatoes, cabbage, sweet pepper, carrots, cauliflower, broccoli, leeks, lettuce, spring onions, etcetera but also some fruits, such as passion. The farmers bring their produce to the market where they meet the traders. Some traders communicate orders to the farmers before. These particular traders have a market stall in the urban market in Tanga where they sell on to consumers and also to hotels and restaurants. The traders take care of transport; many loads go on a normal bus, some have a car or share a car.

3.4 PROFITABILITY ANALYSIS
The proxy indicator employed in this study to calculate the level of profitability and hence the value addition of the different functions being performed by different actors is the simplified gross margins (SGM). This is calculated by subtracting direct costs from sales revenue expressed in percentage. This is a powerful indication of the degree to which the business’s gross margin can cover for indirect costs and remain with disposable income for the entrepreneur. Due to lack of data and willingness by respondents to disclose information pertaining to their profits, this proxy indicator is considered adequate.

Approach
In all production areas visited, data are collected at producer level, and where possible also the costs and income for traders. When analyzing these costs it became clear that it is quite difficult to make a sensible profitability analysis. Despite the difficulty of getting realistic and comparable data, we have made an effort to show some anecdotic evidence of the profit that the different actors in the chains make. Before going into those details, the following points give insight why it is difficult to get reliable and comparable data:

Risks
In Lushoto, at first sight, farmers seemed to make enormous gross margins on the production of vegetables (common is between 70 and 95%) while they can at the same time harvest 3 times per year from one field. Despite that positive picture, farmers still struggle to get a decent income from producing vegetables. The confusing factor is that there are a lot of risks that are not shown when numbers are given on ‘how it should be’. Examples of risks are:
• Overproduction (or high supply in Kariakoo from other areas such as Morogoro) and the market is flooded, as many farmers farm the same product, price goes down and sometimes the crops can not be sold (farmers say in ¼ of cases crops are not sold)
• Bad weather (too much sun) harvest is lower, too much rain causes flooding
• Diseases/pests that can ruin a crop if not controlled in time.

Measurements are not standardized
Measurements are not standardized and on top of that the type of measurement is changing while the product is traded on through the chain.

Example: Selling and buying cabbage
A farmer sells the cabbage per total field, the broker sells it on as a field or in bags (=120kg or =150 pieces), the trader in Kariakoo buys in bags and sells the cabbage in bags or in kilograms to retail traders. The retail traders sell cabbage by piece.

Different products are measured in different units: Tomatoes are traded in buckets, boxes and baskets (tenga), carrots in sacks (robatatu), cabbage in larger bags (gunia), lettuce plastic bags (sack). Everybody uses common knowledge, such as x buckets in a crate, or x kg in a bag. But we heard different amount mentioned for these transfers. For example a farmer will sell tomatoes in buckets, the broker sells in tenga’s (baskets), which are said to contain 6 buckets for Dar es Salaam and 8 buckets for Zanzibar. In the bag measurements there are ‘roba’s’ which in general seem to contain 50 kg (carrots), farmers count their harvest in the number of roba’s. Three roba’s - ‘roba tatu’s’ (3 roba’s) - is a rumbesa (a jute bag with a ‘head’ on it, by sowing a ‘kilemba’ (piece of cloth) on the top. These are the units for selling. In the Kariakoo market they measure gunias (normal jute bag), which are said to hold 80-90 kg…but we also heard more than 100 kg. This non-standardization causes a non-transparency of the trading and pricing in the chain. The types of measurements change when the products are in hands of the middlemen. This system is especially disadvantageous for farmers. They can’t see what their share is in the value chain.

Figure 5: Non-standardised measurements: Carrots in roba with a ‘head’ and tomatoes in tenga’s.

There is a practice to sow two gunia together to make large loads. These ‘rumbesa’ are very big and impossible to be handled easily (150 kg). The reason behind it is that people think that it is more economically in transport, as transport costs are paid per load. This practise has been banned by the government recently.

Differences in cost per area
Costs for farmers are different per area, e.g. labour in Lushoto, from digging up to weeding is 17,000 for ½ acre, while cost for the same activities in villages around Arusha is 60,000/- for ¼ acre! The study did not allow us to go back and find out what is behind this difference. The fact that villages in Lushoto are very rural and villages in Arusha are close to town is one reason for the difference. In analyzing costs of growing crops, we have taken in the costs of labour as well. For the small scale producers close to towns this made...
a big difference. Including labour costs makes the profitability low. But only taking cost of inputs in consideration, shows a profit. That is what the farmer sees, but in fact it is his due pay for work.

Fluctuation of prices
Prices of crops are fluctuating during the year, due to season and to supply from other production areas. This makes it difficult to make exact profitability calculations. The fluctuations of tomatoes and cabbage are shown in Section 3.5.

Simplified Gross Margins for different crops

Tomatoes
As mentioned above we have made an effort to give an impression on profit made in the chain by different actors.

Table 6: Approximate SGM for actors in tomato chain

<table>
<thead>
<tr>
<th>Tomatoes</th>
<th>Season</th>
<th>selling unit</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>shortage (SGM)</td>
<td>surplus (SGM)</td>
<td></td>
</tr>
<tr>
<td>1 Producer Lushoto - high supply</td>
<td>64%</td>
<td>-143%</td>
<td>buckets</td>
</tr>
<tr>
<td>2 Producer Arusha vijjini</td>
<td>34%</td>
<td>-228%</td>
<td>crates</td>
</tr>
<tr>
<td>3 Producer Hai</td>
<td>80%</td>
<td>70%</td>
<td>crates</td>
</tr>
<tr>
<td>4 Broker Lushoto (farmer-buyer)</td>
<td>17%</td>
<td>50%</td>
<td>buckets</td>
</tr>
<tr>
<td>5 Buyer (village to kariakoo)</td>
<td>8%</td>
<td>13%</td>
<td>tenga or crates</td>
</tr>
<tr>
<td>6 Kariakoo trader</td>
<td>22%</td>
<td>50%</td>
<td>crates</td>
</tr>
<tr>
<td>7 Retail trade TX market</td>
<td>47%</td>
<td>50%</td>
<td>kgs</td>
</tr>
</tbody>
</table>

As shown in the table we find negative SGM’s based on information that we got from the different actors in the chain. This is the case for tomato production in villages around Arusha, Arumeru; according to information gained from the farmers production of tomatoes is not profitable. This can be caused by the very high labour prices around Arusha town. If hired labour is not included in the costs, the SGM for the surplus season moves from negative (-228%) to an acceptable 14%.

When comparing prices of tomato through the chain we see the following price increase.

Table 7: Selling price of tomato in Tsh/kg, or each actor in the chain (Lushoto case)

<table>
<thead>
<tr>
<th></th>
<th>farmer</th>
<th>broker</th>
<th>buyer</th>
<th>Kariakoo</th>
<th>retail TX</th>
<th>% increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>shortage</td>
<td>400</td>
<td>480</td>
<td>625</td>
<td>800</td>
<td>1500</td>
<td>275</td>
</tr>
<tr>
<td>surplus</td>
<td>60</td>
<td>120</td>
<td>250</td>
<td>500</td>
<td>1000</td>
<td>1567</td>
</tr>
</tbody>
</table>

The picture above is simplified, considering that the costs are not reflected. However, it shows the range of price increase up the chain to the final consumers and its distribution over several actors. It shows the potential for farmers to be able to receive a higher price if they move up in the chain by carrying out the respective activities.
Cabbage

Table 8: Approximate SGM for actors in Cabbage chain

<table>
<thead>
<tr>
<th>Cabbage</th>
<th>Season</th>
<th>SGM (%)</th>
<th>SGM (%)</th>
<th>selling unit</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>shortage</td>
<td>surplus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Producer Lushoto</td>
<td>74</td>
<td>73</td>
<td>shortage: field surplus: field or gunia</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Broker Lushoto</td>
<td>15</td>
<td>23</td>
<td>shortage: field surplus: gunia</td>
<td>measurements un-precise (from acre to gunia)</td>
</tr>
<tr>
<td>3</td>
<td>Buyer Lushoto to Kariakoo</td>
<td>-15</td>
<td>-16</td>
<td>gunia</td>
<td>The information on revenue is doubtful.</td>
</tr>
<tr>
<td>4</td>
<td>Kariakoo trader</td>
<td>69</td>
<td>55</td>
<td>gunia / kg</td>
<td>check with costs trader</td>
</tr>
<tr>
<td>5</td>
<td>Retail</td>
<td>20</td>
<td>38</td>
<td>piece</td>
<td></td>
</tr>
</tbody>
</table>

It is remarkable that the trader, who buys in the village and transports to Kariakoo, makes a negative SGM. This can not reflect reality. The changing measurements might confuse the calculations, and in the calculations we did not overload the truck, which in reality is normal done.

Carrot

In carrot there is less seasonality than in other crops. Since carrots are not as perishable as other crops. Profitability on production of carrots was calculated in three different areas: Lushoto, Moshi rural – higher altitude zone and West Kilimanjaro. These areas showed very different production.

Table 9: Production of carrots in 3 areas

<table>
<thead>
<tr>
<th>Area</th>
<th>Harvest on ½ acre</th>
<th>kg per ½ acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lushoto</td>
<td>90 bags (roba) of 50 kg</td>
<td>4500 kg</td>
</tr>
<tr>
<td>Moshi rural-higher altitude</td>
<td>16 bags of 100 kg</td>
<td>1600 kg</td>
</tr>
<tr>
<td>West Kilimanjaro</td>
<td>8-10 rumbesa (=roba 3) of 150 kg</td>
<td>1350 kg</td>
</tr>
</tbody>
</table>

The differences can’t be explained satisfactorily. One factor is that data are not exact, e.g. the ½ acre can be of different size for different farmers…., also measurements during harvesting are different. The field in Lushoto was farmed by an extension officer, he should be able to farm well, and he clearly did.
Table 10: Approximate SGM for actors in carrot chain

<table>
<thead>
<tr>
<th>Season</th>
<th>Carrot</th>
<th>SGM (%)</th>
<th>SGM (%)</th>
<th>selling unit</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Carrot</td>
<td>shortage</td>
<td>surplus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Lukozi farmer</td>
<td>76</td>
<td>34</td>
<td>Roba</td>
<td>Direct sales to Kariakoo</td>
</tr>
<tr>
<td>2</td>
<td>Moshi Rural farmer</td>
<td>11</td>
<td>-42</td>
<td>Gunia</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>West Kilimanjaro</td>
<td>69</td>
<td>35</td>
<td>Rumbesa</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Trader West Kilimanjaro to Kariakoo</td>
<td>89</td>
<td>67</td>
<td>Gunia</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Dalali Kariakoo</td>
<td>9</td>
<td>13</td>
<td>Gunia or kg</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Retail TX market</td>
<td>33%</td>
<td>40%</td>
<td>kg</td>
<td></td>
</tr>
</tbody>
</table>

Except for the farmers in Tema, Moshi rural, the carrot trade is quite profitable.

Sweet Pepper

Table 11: Approximate SGM for actors in sweet pepper chain

<table>
<thead>
<tr>
<th>Season</th>
<th>Sweet Pepper</th>
<th>SGM (%)</th>
<th>SGM (%)</th>
<th>selling unit</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sweet Pepper</td>
<td>shortage</td>
<td>surplus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Farmer Lushoto</td>
<td>79</td>
<td>47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Trader selling to Mombassa</td>
<td>86</td>
<td></td>
<td>Buying at Kwasadala and selling in Mombassa</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Trader Lushoto</td>
<td>13</td>
<td>-17</td>
<td></td>
<td>Buys from farmers and sells directly to Kariakoo</td>
</tr>
<tr>
<td>4</td>
<td>Dalali Kariakoo</td>
<td>17</td>
<td>50</td>
<td></td>
<td>costs not included</td>
</tr>
<tr>
<td>5</td>
<td>Retail Veg Shop</td>
<td>20</td>
<td>0</td>
<td></td>
<td>costs not included</td>
</tr>
</tbody>
</table>

For the other types of vegetables it turned out to be very difficult to calculate the profitability in the chain. These are broccoli, Cauliflower, Zucchini and lettuce. The volumes produced and traded are generally small. The quantities traded are not standardized at all, so it is difficult to compare quantities and prices in different stages in the chain. The farming of these products is profitable for farmers.

Table 12: SGM of farmers for a few high value products

<table>
<thead>
<tr>
<th>Season</th>
<th>High value vegetables</th>
<th>SGM (%)</th>
<th>SGM (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High value vegetables</td>
<td>shortage</td>
<td>surplus</td>
</tr>
<tr>
<td>1</td>
<td>Cauliflower</td>
<td>96</td>
<td>86</td>
</tr>
<tr>
<td>2</td>
<td>Broccoli</td>
<td>95</td>
<td>83</td>
</tr>
<tr>
<td>3</td>
<td>Zucchini</td>
<td>98</td>
<td>96</td>
</tr>
<tr>
<td>4</td>
<td>Lettuce</td>
<td>99</td>
<td>98</td>
</tr>
</tbody>
</table>
The indicative profit made on these crops, seems incredibly high. These calculations do reflect the case when there are optimal conditions. These types of vegetables are very perishable and easy to get damaged on the way or during harvesting, so losses will be relatively high. The SGM's have to be seen in that perspective.

Findings from other studies

In the table shown below from Putter&van Koesveld (2007) ‘Overview of the vegetable sector in Tanzania’, average profits made throughout the chain are shown. This table confirms the difficulty of calculating profitability for farmers and being able to compare the profitability levels across the sub sector (showed by large ranges in profitability an absence of any figures for profitability for small holders).

Table 13: Market actor and the margins in the national market chain

<table>
<thead>
<tr>
<th>Actor</th>
<th>Description</th>
<th>Margin (% of consumer price)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Producers</td>
<td>Live in rural areas, selling products mostly only source of cash, sell product mostly directly at farm to void transport costs.</td>
<td></td>
</tr>
<tr>
<td>Local brokers</td>
<td>Know the region and the producer. Do not have enough capital to act as large trader. Serve as intermediaries between producer and large trader.</td>
<td>4 – 20%</td>
</tr>
<tr>
<td>Large scale trader</td>
<td>Buy directly from farmers or through local broker</td>
<td>20,000 Tsh per trip</td>
</tr>
<tr>
<td>Transporters and transport brokers</td>
<td>They organize and facilitate transport, they don’t buy product themselves.</td>
<td>10% of transport costs</td>
</tr>
<tr>
<td>Brokers in Dar es Salaam</td>
<td>They distribute large quantities over small buyers. Act as trade facilitators to match seller and buyer they know and by their presence at the deal act as a safeguard to guarantee a deal.</td>
<td>4 – 10%</td>
</tr>
<tr>
<td>Wholesalers at Dar es Salaam</td>
<td>Small scale grain wholesalers have a working capital 200,000 – 1,000,000 Tsh. Large scale have more than 5,000,000 Tsh. They sell large quantities and have equipment to grade and weigh their products. They also have the capital to pay right away in cash for transport.</td>
<td>8% +</td>
</tr>
<tr>
<td>Retailers in Dar es Salaam</td>
<td>Mostly small scale traders who buy from larger trader and help them distributing products to the consumer.</td>
<td>20 – 70%</td>
</tr>
<tr>
<td>Final consumer</td>
<td>Go to the market several times a week to obtain food. They can rely on a steady supply, but prices can fluctuate.</td>
<td></td>
</tr>
<tr>
<td>Export agent</td>
<td>Collect large quantities from wholesalers or directly from large farms to export.</td>
<td>3 – 5%</td>
</tr>
</tbody>
</table>

Source: Eskola, 2005
3.5 SUB SECTOR DYNAMICS

The fresh vegetable sub sector is very dynamic and some of the major features are the following: (not in order of priority):

**Spot market and long chains**
Spot markets are the pre-dominant market arrangement in the fresh fruit and vegetable sector in Tanzania. Koesveld van M.J., et al. (2007) estimate that 80% of the produced vegetables in Tanzania is sold by the farmers at farm gate to commissioners. Moreover, the traditional supply chains in the fresh fruit and vegetable sector are long, involving an array of many subsequent stages and actors, un-coordinated flow of produce and generating very small margins per actor. However, there are some few long-term, constructive relationships between individual producers and traders / buyers.

In this market environment farmers are in a disadvantaged position, lacking assets (social capital, financial capital, human capital) to improve their positioning. Collective action could improve their positioning. Present chain actors making profits due to market imperfection are however resistant to change and do discourage organizing of farmers. Several respondents confirmed that traders and brokers would not allow farmers to act in the market arena jointly (through horizontal integration) or collectively take up up-chain activities now being executed by other chain partners (brokers, packers, transporters).

**Lack of formal institutions, no sharing of information**
Lacking formal institutions and informal institutions leave room for default, moral hazards and fraud that increase transaction costs even more. Lack of sharing information and thus power causes a distrust and short term vision objectives (“hit & run” tactics). Lack of joint interests and shared views, or the acknowledgement thereof by the actors involved, encourage opportunistic behaviour. Reputation is not a shared value providing incentives for short term, opportunistic behaviour and creating dis-incentives for building longer term relations. There is no sign of shared interests or collaboration, the general attitude of actors is one of distrust. Actors in the same chain are competing for the division of value added and not collaborating as a chain entity.

**Over production in certain seasons**
Farmers who depend on rain fed farming, which is the majority of farmers, all harvest at the same time, resulting in an overproduction and difficulties to sell all produce. Lots of the produce rots away. This is especially the case for the most perishable crops, such as tomatoes, lettuce, etc. There is no production planning whatsoever, so many farmers farm the same crops, which also causes overproduction. Fluctuating prices - The prices of vegetables fluctuate strongly during the season. The next graphs provide some anecdotic evidence for tomatoes and cabbage.

Figure 6: Tomato prices per kg delivered in crates of 40 kg at Kilombero market, 2005
As the above graphs show, prices are generally low after the long rains (during the second half of the year) as it is the harvesting period but start increasing in November, December.

**Irrigation**
Few farmers have access to irrigation. Without irrigation farmers are depending on rain and following the ‘normal’ harvest times with the consequently low prices. Farmers that do have access to irrigation can produce in the season when there is a shortage and receive better prices. There are certain areas (Kilema Pofu, Kilimanjaro), where farmers grow tomatoes with irrigation. In Lushoto where farmers farm in the valley bottoms, there is sort of a natural irrigation by the river.

**Niche markets**
There is the prevalence of some niche markets; lodges, hotels and even Shoprite DsM are buyers who require a high quality and safe product and they are willing to pay high prices for good quality. Obviously, they wish to have a whole year around and consistent supply, implying that it has to be grown under irrigated and (pest) controlled circumstances. Only few farmers have the knowledge and drive to produce a high quality product. The few farmers who produce high quality vegetables, i.e. Poverty Girls are not able to satisfy the demand. It is likely that such niche markets will increase, not only because of the growing tourist industry but also because of an emerging Tanzanian middle class who become more sensitive to food safety standards, and therefore it provides an opportunity to tap.

**Developing niche market for organic vegetables**
Consumers and farmers are getting more and more aware of the possible negative effect of chemicals. It is known that some farmers have a separate plot where they grow for home-use and where they don’t spray. Farmers in Tema (Kilimanjaro) had left cabbage production because they became sick when they sprayed the chemicals, they have moved to growing sukumawiki – a local kale variety. In Marangu a group of farmers (supported by Floresta) produce organic vegetables (not-certified), their vegetables are sold first of all other vegetables in the market. During field work the team met consumers in market places who expressed interest to buy organic vegetables. Usambara Lishe Trust is producing non-certified organic vegetables. They do not have an Internal Control System to guarantee organic quality so they work on trust. There are two outlets in Dar Es Salaam for these ‘organic’ vegetables, the Mövenpick Hotel and the box scheme, which is run by an expatriate woman, who supplies boxes of mixed vegetables to a number of people who have subscribed.

**Market places**
Open vegetable markets are still more popular than supermarkets for vegetable sales. Shoprite is the only supermarket that sells fresh vegetables inside. For the upper end of the market there are a number of vegetable shops, these shops are either direct supplied by e.g. Usambara Lishe Trust, or buy the produce from the Kariakoo or Arusha Central Market. The domestic market for fresh fruit and vegetables is dominated by the Dar es Salaam (Kariakoo) urban market which trades over 50% of urban consumption, thereby determining traded volumes, prices and quality standards (WI-WUR, 2007).

**Use of chemicals**

Chemicals are used extensively in vegetable production, but farmers have no knowledge to use chemicals in a ‘wise’ way. They follow calendar-spray schemes, or what the chemical trader advises. Probably TPRI (Tanzania Pesticide Research Institute) has set regulations to limit the use of chemical for food-safety reasons. But we can quite surely say that there is no follow up of this type of regulations. Only Shoprite checks quality (including chemical residues) on the farm. The purchase manager visits the contracted farmers and check on use of GAP (Good Agriculture Practices).

The main **driving force** is a growing urban population, depending on buying food. The urban population in Tanzania (and worldwide) is growing rapidly. In 2002 estimated was that 30% of the people where living in urban areas with 2.5 million people living in Dar es Salaam (Total population in 2002 was 34.6 million). In Tanzania the urbanisation rate is approximately 20% with an expected urbanisation of 50% in the year 2010. The population in 2006 is estimated at about 37,187,939 people. (Putten & van Koesveld, 2007)

The urban people can not grow their own vegetables and are depending on supply from the regions. Leafy vegetables (such as Amaranthus spinach) are still grown in the urban area, as they are easy to grow, and very difficult to transport. In the urban areas there is also a middle class and a rich class of people developing. These people show a growing demand for less traditional vegetables, which makes the market grow.

On producers side it is noted that farmers are looking for alternative markets, especially for high value crops. In some areas land is not easily available (Lushoto, slopes of Mount Kilimanjaro) and farmers need high value crops to earn sufficiently from little land. Traditional crops such as coffee are not paying anymore and farmers look for high value alternatives.

### 3.5.1 Main constraints, opportunities

The vegetables sub sector is facing a number of constraints that holds back growth and competitiveness. There are also quite some opportunities worth taking advantage of in order to develop the sub sector forward.
### Table 14: Constraints and Opportunities

<table>
<thead>
<tr>
<th>Issue</th>
<th>Key constraints</th>
<th>Key Opportunities</th>
</tr>
</thead>
</table>
| Input Supply | • Farmers lacking information on use of chemicals and on alternative ways to control pest & diseases results in farmers’ health and environmental problems.  
• Lack of availability of organic pesticides and lack of knowledge to make natural pesticides forces farmers to continue using chemicals with constraints mentioned above.  
• Farmers lack sufficient technical knowledge (improved production techniques, pest & disease control, soil fertility, harvesting & post-harvest techniques) resulting in low production efficiency, crop losses, non-sustainable production systems, etc.  
• Farmers lacking information about innovations (e.g. new varieties, market information), resulting in slow or no development in production and marketing.  
• Farmers lacking knowledge on IPM and organic production techniques, results in continuation of use of expensive chemicals and fertilizers, loosing profit, and putting health and environment at risk.  
• Poor outreach of District extension officers to farmers resulting in farmers not receiving technical or market information.  
• Lack of irrigation facilities, causing farmers to be unable to produce off-season and improve market access.  
• Not sufficient quality control/management which increases crop losses and reduces price. | • TPRI provides training on use/risks of pesticides, currently mainly to traders.  
• Organic pesticides available, e.g. from suppliers in Kenya and India.  
• Many farmers use organic manure.  
• IPM project (GTZ) was/is run from Horti Tengeru. Expertise was developed, and a lot of material published.  
• Organic agriculture is developing in Tanzania. Knowledge is available. TOAM and other groups provide training.  
• Technical and innovative knowledge is available in Institutes such as Horti Tengeru, AVRDC, but also with smaller organisations such as Floresta, TOAM etc.  
• AVRDC runs farmer field days on new developments in vegetable production.  
• Incubator project runs series of trainings, focusing at post harvest treatment.  
• SHOP is starting up to work with small holders and offer training.  
• TAH A is starting up to support small holders.  
• IPM expertise and material available from Horti Tengeru.  
• District extension workers are motivated, but need upgrading and means to reach the farmers.  
• MAFC is working on implementation of the policy to increase the acreage of land under irrigation in Tanzania. |
| Technology and product development (value addition) | | |
### Market access

- Lack of irrigation causes farmers to be dependent on rain fed production, and marketing in the season with high supply and low prices.
- Farmers/extension workers lack knowledge and skills to collect and use market information to improve production planning resulting in better marketing.
- ULT lacks management capacity, especially financial & marketing management, which hampers ULT to grow and function optimally giving more farmers the opportunity to benefit.
- The chain is not transparent and the middlemen are dominating the chain, which results in farmers having no grip on marketing their produce.
- There is no (informal) system to guarantee organic quality of vegetables (which are grown organically), which hampers the development of a local organic market.
- Quality does not seem to be a factor that influences the price, which is a missed chance for better pay to farmers for better quality.
- Farmers and traders lack marketing and business skills and hence do not take a viable business approach to their activities.

### Organisation and management

- Spot market arrangements prevail, supply chains are long, resulting in high transaction costs, which reduces or profit for farmers.
- Very few farmers are organised, there is no joint bulking or marketing, giving brokers the chance to take up that activity and take money from farmers for that.
- Dependency on rain fed agriculture forces farmers to all sell at same time, which makes farmers compete and which makes it difficult to see benefits of communal marketing.
- Traders benefit by farmers not being organised, this delays farmers to organise themselves.
- Lack of access to appropriate financial services for farmers and traders, resulting in lack of working capital to invest in moving up into the chain or invest in farming.
- Lack of standardisation of measurements makes it difficult to get an insight in the value chain, so actors can not compare well what their share is in the value chain.

### Finance

- Knowledge and capacity present in established institutes and projects which can be utilised.
- Most production areas have certain periods or crops in which they excel. These could be better utilised.
- GoT has prioritised horticulture as a source of growth. GoT has capacity to support marketing issues country wide.
- Improved access to irrigation will reduce dependency on raining season and enable farmers to spread out production though out the year.
- Mobile telephone network available in most areas even rural, so market information can be communicated fast.
- Urban centres and markets continue to grow; consequently niche market for high quality produce is growing.
- Organic demand is growing.
- There are interesting examples of empowering farmers through running business platforms and through marketing group formation (Faida Mali).
- Farmer training on marketing skills and business awareness is available, e.g. Faida Mali provides this type of training.

### Organisation and management

- There are successful examples where farmer groups market their produce communally (ULT, AMSDP, Faida Mali).
- Traders in the market (Kariakoo) are organised.
- Mwiwata has successfully developed improved rural marketing systems.
- SHOP aims to strengthen ULT management and organisation.
- TAHA is setting up to work with small holders and improve the organisation of the sector.
- Tanga Regional Authorities seem to be discussing the idea to develop an institutional market for fresh fruit and vegetables at Segera junction.

### Finance

- Improved access to SACCO’s for farmers is Government policy.
- There is a research on standardisation of measurements initiated by the BEST Programme.
• No monitoring of pesticide use and residues, resulting in environmental hazards and public health risks.
• No data availability on district level, making it difficult for policymakers and support organisations to understand reality and take informed decisions.
• Lack of a legal framework to enforce compliance with contracts, resulting in insecurity for farmers and for companies to enter into contract farming.
• Lack of effective formal institutions to support the sector and implement regulations, hampers development of the sector.
• Over-use of pesticides puts a risk for the environment and for people’s health.
• In Lushoto pressure on the land can cause loss of fertility, deforestation and erosion.

• Govt has prioritised the horticulture sector for support, and is ready to provide additional support.
• There is a Tanzanian Organic certification body and TBS is a regulatory board with capacity on implementation of regulations (incl capacity in organic certification).

• Organic farming and Agricultural conservation knowledge is now widely available.
• Many organisations, ngo’s are active in the field of environment and people’s health.
4.0 VALUE CHAIN IDENTIFICATION

4.1 VALUE CHAIN ASSESSMENT

One can define a value chain as a chain in which shared interests and common values amongst chain actors prevail and the focus is on collaboration to increase efficiency. A non-coordinated supply chain is, on the contrary, characterized by a loose sequence of transaction in which actors acknowledge common interests or values but merely compete with each other on margins. The spot market for fresh fruits and vegetables in Tanzania shows every characteristic of non-coordinated supply chain. There is no sign of shared interests or collaboration, the general attitude of actors is one of distrusts. Actors in the same chain are competing for the division of value added and not collaborating as a chain entity. (WI-WUR, 2007)

In spite of this there are some supply chains that have the potential to be transformed into value chains and these are presented in the next chapters.

4.2 VALUE CHAIN MAPPING AND FEASIBILITY

4.2.1 INSTITUTIONAL MARKETING

The MVIWATA Rural Market Development Programme (RMDP) has established institutional arrangements in which chain partners are joined in a multi-stakeholder platform around a commonly managed rural market. Three key areas of improvement are:

- Transparency (transactions, market rules, standardization of measurements, taxes)
- Accessibility (improve communication & product flows)
- Security (of transactions, cash, people, assets and produce)

The project was successful in tackling some of the major constraints in the marketing of fresh fruits and vegetables at spot markets including addressing formal & informal institutions. The installed Marketing Boards function as innovative institutional arrangements allowing for bridging distrust between marketing parties, through improving access to information to all parties involved, installing clear rules and regulations and enforcement mechanisms. See Annex 5 for background information. The mission was informed that the Regional Authorities in Tanga have taken the initiative to look into the feasibility of an improved rural market at the Segera junction. This market place would facilitate the improved marketing of fresh vegetables and fruits from the region in a similar way as described above.

The potential value chain in which the Marketing Board would be the chain leader in this value chain is presented below.
For development of these improved market chains Faida Mali has developed an useful entry point, being the Business Platforms, where actors from all stages in the chain are invited to a round table meeting, and discussions facilitated to work towards improvements or new developments in the chain.
4.2.2  FARMER MARKETING GROUPS AND COLLECTIVE CONTRACT

Usambara Lishe Trust (ULT) with approximately 4 groups of 50 members each successfully fulfils contracts from end users in the high-end urban market (Hotels, up-market shops, flight-catering) (See also Chapter 3, Description of Channel 4). Despite practical problems that ULT is facing (managerial), the concept has proven to be successful, farmers receive higher prices through the ULT collective contracts.

AMSDP (Agriculture Marketing Support Development Program) in co-operation with Faida Mali have initiated 40 groups of 40 producers in order to market their products in Hai & Siha Districts (Kilimanjaro). The AMSDP groups were formed of producers of maize, beans and vegetables. The groups have been trained in entrepreneurship, running the organisation, participatory market research and saving and credit schemes. There are successes, such as the collective marketing of (dried) mushrooms, and a group finding a market in Comoros for the tomatoes and in order to satisfy that market the producers changed to growing another variety (Tanya). Some groups also sell tomatoes to Mombassa traders, and there is direct communication with these traders about orders. The farmers take the produce up to the border (Holili) where the produce is handed over to the Mombassa traders. In this way other middle men are avoided and more profit comes to the farmers.

A modest form of collectively arranged control systems was encountered with a group of tomato growers in Arusha district. The group was organized and formally registered as an association with the support of the DALDO. The farmers grow tomatoes in an organic way (although not certified). A small portion of their fields is managed collectively and the gains of this collective production are used as a financial reserve for the association. The group signed a contract with a major hotel / lodge in Arusha to deliver 300 kilograms of tomatoes every week. A peer to peer control system was set up in which farmers monitor each others fields and check upon progress in production (estimate supply) and refraining from use of chemicals. The client is supplied collectively. Social control is mentioned as a very effective tool in complying with set rules and standards.

(WI-WUR, 2007)

Following from these examples the following value chain is proposed.
The most simple form is if farmers market together and sell to traders who take the produce to the wholesale market (the traditional system of spot market arrangements). When the groups develop, the trader can join the value chain and selling can be through collective contracts. Further steps are to sell through collective contracts to end-users in the market, take in market information and collectively plan production accordingly.

A critical note has to be made at this stage, being that in Tanzania farmer organisations have not yet widely shown to easily function successfully. And putting forward as solutions improved value chains that depend on the Farmer Association to be the chain leader, is not an easy option. It has to be taken into account that assistance and time is needed to get this system to be sustainable. Certain critical requirements have to be met, such as good leadership, transparent administration and others.

Note: The latest development in SHOP is that the project has decided to focus on strengthening the ULT channel. The project has had initial meetings with ULT and is in the process to run strategic planning workshops and carrying out a needs assessment. SACCOS will be developed and a grant for developing infrastructure is part of the support. SHOP has only a project period of two years. Additional support might be needed to continue support after SHOP has phased out in the end of 2009.
### 4.3 CRITICAL SUCCESS FACTORS

Table 15: Critical Success factors

<table>
<thead>
<tr>
<th>Market Segment</th>
<th>Critical success factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up market hotels</td>
<td><strong>Order qualifying</strong>&lt;br&gt;Supply of a variety of vegetables&lt;br&gt;Consistent and high quality products&lt;br&gt;Delivery according to contract or orders&lt;br&gt;<strong>Order winning</strong>&lt;br&gt;Good communication on supply, availability and pricing&lt;br&gt;Ability to plan production according to needs&lt;br&gt;Smaller quantities available&lt;br&gt;Flexibility&lt;br&gt;Quality control system in place</td>
</tr>
<tr>
<td>Large supermarkets</td>
<td><strong>Order qualifying</strong>&lt;br&gt;Supply of a variety of vegetables&lt;br&gt;Consistent supply of high quality products&lt;br&gt;Delivery according to contract or orders&lt;br&gt;<strong>Order winning</strong>&lt;br&gt;Good communication on supply, availability and pricing&lt;br&gt;Ability to plan production according to needs&lt;br&gt;Quality control system in place</td>
</tr>
<tr>
<td>Retail shops</td>
<td><strong>Order qualifying</strong>&lt;br&gt;Consistent supply of high quality products&lt;br&gt;Supply of a variety of vegetables&lt;br&gt;Delivery according to contract or orders&lt;br&gt;<strong>Order winning</strong>&lt;br&gt;Good communication on supply, availability and pricing&lt;br&gt;Competitive price</td>
</tr>
</tbody>
</table>
5 SUB SECTOR / VALUE CHAIN DEVELOPMENT

5.1 GENERIC (SUB SECTOR) INTERVENTIONS

• Develop markets for business services, including training on technical issues, marketing, IPM and organic training and business awareness training, making use of the existent supply of training by established organizations.
• Support the upgrading knowledge and skills of extension workers, and improving their means to reach the farmers.
• Support Horti Tengeru Revive the knowledge and expertise built up in the GTZ-IPM project.
• Initiate the setting up of a platform for sharing information where the supporting organizations join (Horti Tengeru, AVRDC, SHOP, TAHA, MAFC, etc)
• Support the dissemination of innovative knowledge from research done in Institutes such as AVRDC.
• Improve access to irrigation for horticulture producers.
• Supporting development of an effective system to provide market information to farmers
• Support the implementation of Business platforms in relevant channels, in order to bring actors together and to look for steps to work towards developing value chains (Faida Mali).
• Disseminate lessons learned from the Rural Improved marketing programme (Mvwata), to other areas.
• Improve access to SACCOS or other financial services for small holders in vegetable production.
• Enforce the introduction and use of standardized measurements
• Stimulate farmers to start organizing themselves in order to form farmer marketing groups
• Develop quality control systems for TZ niche markets (organic, high quality)
• Support relevant institutions to improve the keeping of records in order to establish a reliable data base.

5.2 VALUE CHAIN DEVELOPMENT STRATEGIES

Two potential value chains have been identified in the preceding chapter. Both of these value chains exist.

1. The first proposed value chain, the Institutional Marketing Value Chain, exists in Morogoro, where Mvwata has established improved rural markets. In order to follow this example in the Northern corridor, it is important to learn more from Mvwata and from the actors in that value chain. On the basis of the results from that evaluation, steps to take to develop an Institutional Marketing Value Chain can be designed. In the Mvwata model the District Authorities play an important role, so, if following that same model it is important to discuss and prepare the idea carefully with the District Authorities.

2. The second proposed value chain, the Collective marketing Value Chain, exists most clearly in the channel described as the Usambara Lishe Trust channel. The ULT channel is hampered by lack of good management and marketing, this sign has to be taken serious in the development of new Collective marketing Value Chains. The first step should be the selection of feasible production areas, where farmer groups can be formed around one or more potential product-market combinations. These groups need proper support in building capacity and meeting the specific requirements to function well. Where groups show a potential, business platforms can be held where all the actors, including the producers meet in order to build a value chain.

For both chains, taking up the above mentioned generic recommendations is of importance in order to increase the chance for success.

5.3 WAY FORWARD

Proposed way forward for SCF and its partners can be categorised in three stages i.e. Short term interventions, medium term interventions and long term interventions.
SHORT TERM
Short term interventions should be realised in a few months after completion of this study. These could include but are not limited to;
• Dissemination of study finding and emphasis on the opportunities;
• Build up an inventory of resource people and organisations that have expertise in horticulture, working with small holders or market linkage;
• Set up shared planning with TAHA, SHOP, using AVRDC, MAFC, Horti Tengeru and possibly others;
• Meet with Mviwata, in order to learn about their Improved Rural Marketing Programmeand pos replicate
• Carry out a training need assessment focused at producers and extension staff and compare that with the training offered currently;

MEDIUM TERM
Medium term interventions could be achieved within two years from now i.e. and these could include but not limited to the following areas;
• Development a market for business awareness training;
• Develop ways to disseminate information to small holders and their organisations (market information, research results, innovative knowledge, etc);
• Stimulate the forming of farmer groups or associations.
• Give follow up on the newly established platform of supporting organisations (TAHA, SHOP, AVRDC, MAFC, Horti Tengeru and possibly others)

LONG TERM
• Sust Access to finance and financial services;
• Support district auth improved access to irrigation facilities district devt plans infra srutcture
• Suppot enforcement Standardise measurements in the trading;
• Develop quality control systems.
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- EVD website (http://www.evd.nl)
- National bureau of statistics Tanzania (http://www.nbs.go.tz)
- FAO website (http://www.fao.org)

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2 WI: Wageningen International; WUR: Wageningen University and Research Centre.
CD&CI: Capacity Development and Institutional Change Programme
ANNEXES

1. List of all vegetables grown in North Tanzania
2. Overview of measurements of vegetables
3. SHOP and TAHA – Summarized Profiles
4. International studies and initiatives to support the horticulture sector in Tanzania
5. Case: Improved traditional markets
6. Persons contacted
## ANNEX 1: LIST OF VEGETABLES PRODUCED IN TANZANIA

### VEGETABLES COMMONLY FOUND IN MAIN GROWING REGIONS OF TANZANIA

<table>
<thead>
<tr>
<th>No.</th>
<th>Vegetable</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lima bean</td>
<td>Phaseolus lunatus</td>
</tr>
<tr>
<td>2</td>
<td>Water cress</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>14. Okra</td>
<td>Abelmoschus esculentus</td>
</tr>
<tr>
<td>4</td>
<td>African eggplant</td>
<td>Solanum microcarpa</td>
</tr>
<tr>
<td>5</td>
<td>Amaranths</td>
<td>Amaranthus oleraceus</td>
</tr>
<tr>
<td>6</td>
<td>Beet</td>
<td>Beta vulgaris</td>
</tr>
<tr>
<td>7</td>
<td>Bitter gourd</td>
<td>Momordica charantia</td>
</tr>
<tr>
<td>8</td>
<td>Bottle gourd</td>
<td>Leganaria siceraria</td>
</tr>
<tr>
<td>9</td>
<td>Broccoli</td>
<td>Brassica oleraceae</td>
</tr>
<tr>
<td>10</td>
<td>Bush bean</td>
<td>Phaseolus vulgaris</td>
</tr>
<tr>
<td>11</td>
<td>Cabbage (white)</td>
<td>Brassica oleraceae var. capitata</td>
</tr>
<tr>
<td>12</td>
<td>Carrot</td>
<td>Daucus carota</td>
</tr>
<tr>
<td>13</td>
<td>Cassava (leaves)</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Cauliflower</td>
<td>Brassica aleraceae (botrytis)</td>
</tr>
<tr>
<td>15</td>
<td>Chinese cabbage</td>
<td>Brassica chinensis</td>
</tr>
<tr>
<td>16</td>
<td>Chinese cabbage</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Cowpea (vegetable)</td>
<td>Vigna unguiculate</td>
</tr>
<tr>
<td>18</td>
<td>Cucumber</td>
<td>Cucumis sativus</td>
</tr>
<tr>
<td>19</td>
<td>Eggplant</td>
<td>Solanum melongena</td>
</tr>
<tr>
<td>20</td>
<td>Ethiopian mustard (Loshu)</td>
<td>Brassica</td>
</tr>
<tr>
<td>21</td>
<td>Jute mallow</td>
<td>Corchorus olitorius</td>
</tr>
<tr>
<td>22</td>
<td>Kale (Sukuma wiki)</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Kholrabi</td>
<td>Brassica gongylodes</td>
</tr>
<tr>
<td>24</td>
<td>Lablab</td>
<td>Lablab niger</td>
</tr>
<tr>
<td>25</td>
<td>Melon</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Mungbean (vegetable)</td>
<td>Phaseolus mungo</td>
</tr>
<tr>
<td>27</td>
<td>Mustard</td>
<td>Brassica juncea</td>
</tr>
<tr>
<td>28</td>
<td>Nightshades (leaves)</td>
<td>Solanum nigrin</td>
</tr>
<tr>
<td>29</td>
<td>Onion</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Papaya (Pawpaw)</td>
<td>Carica papaya</td>
</tr>
<tr>
<td>31</td>
<td>Pepper - hot</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Plantain</td>
<td>Musa spp.</td>
</tr>
<tr>
<td>33</td>
<td>Pumpkin (leaves and fruit)</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Pumpkin (Winter squash)</td>
<td>Cucurbita moschata</td>
</tr>
<tr>
<td>35</td>
<td>Radish</td>
<td>Raphanus sativus</td>
</tr>
<tr>
<td>36</td>
<td>Radish</td>
<td>Raphanus sativas</td>
</tr>
<tr>
<td>37</td>
<td>Ridge gourd</td>
<td>Luffa acutamgula</td>
</tr>
<tr>
<td>38</td>
<td>Snap bean</td>
<td>Phaseolus</td>
</tr>
<tr>
<td>39</td>
<td>Soya (vegetable)</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>Spinach</td>
<td>Spinacea oleracia</td>
</tr>
<tr>
<td>41</td>
<td>Sweet pepper</td>
<td>Capsicum annum</td>
</tr>
<tr>
<td>42</td>
<td>Sweet potato (leaves)</td>
<td>Ipomea batatas</td>
</tr>
<tr>
<td>43</td>
<td>Swiss chard</td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>Taro (Dasheen)</td>
<td>Colocasia esculentua</td>
</tr>
<tr>
<td>45</td>
<td>Tomato</td>
<td>Lycopersicon esculentum</td>
</tr>
<tr>
<td>46</td>
<td>Turnip</td>
<td>Brassica napa</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>Watermelon</td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>Wax gourd</td>
<td>Benincasa hispida</td>
</tr>
<tr>
<td>49</td>
<td>Yardlong bean</td>
<td>Vigna sesquipedalis</td>
</tr>
</tbody>
</table>
# ANNEX 2 – MEASUREMENTS OF VEGETABLES

<table>
<thead>
<tr>
<th>Crop</th>
<th>Measurement</th>
<th>Approx kg</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomatoes</td>
<td>Bucket</td>
<td>25 kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tenga</td>
<td>150 kg</td>
<td>6 buckets &gt; Dar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>200 kg</td>
<td>8 buckets &gt; Z’bar</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>52-53 tenga’s on a Fusso</td>
</tr>
<tr>
<td></td>
<td>Crate</td>
<td>50 kg</td>
<td>= 2 buckets</td>
</tr>
<tr>
<td>Cabbage</td>
<td>piece</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>gunia</td>
<td>130-150 pieces</td>
<td>35 gunias fill a lorry (Fusso)</td>
</tr>
<tr>
<td></td>
<td>field</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kentar truck</td>
<td>2500 pieces</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fusso truck</td>
<td>5500 pieces</td>
<td></td>
</tr>
<tr>
<td>Carrot</td>
<td>Roba</td>
<td>50 kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gunia</td>
<td>100 kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rumbesa</td>
<td>150 kg</td>
<td>= ’Roba-tatu’</td>
</tr>
<tr>
<td>Transport</td>
<td>Fusso</td>
<td>7 ton</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kenter</td>
<td>5 ton</td>
<td></td>
</tr>
</tbody>
</table>
ANNEX 3 – SHOP AND TAHA – SUMMARIZED PROFILES

SHOP (Smallholder Horticulture Outgrower Promotion), Arusha
SHOP is USAID funded and Chief of Party is Alexander Fernando.
The project has started by October 2007, so it is still in a phase of setting up, activities in the field have not yet started. SHOP Project seeks to foster economic growth by strengthening horticulture export market linkages for high-value vegetables through increased productivity and improved management of natural resources. SHOP will concentrate its activities in the northern highlands of Arusha, Kilimanjaro and Tanga (Lushoto) areas.
SHOP activities will build the capacity of small farmers in these areas to integrate into profitable export markets for high-value vegetable products through three project components:
1. Productivity Enhancement: Technical assistance, training and commodity support grants to increase on-farm per unit productivity, reduce production costs, improve product quality and select a profitable range of high-value vegetable products. This component will have two activities:
   • Strengthen Farmer Organization Capacity: SHOP will organize farmers into viable associations that can be used as an effective platform to provide extension services, technology and market linkages to small farmer members.
   • Improve Extension Services: SHOP will also enhance the supply of extension services by working closely with both public and private sector extension agents to identify the needs of farmers and facilitate efficient delivery of advisory services.
2. Strengthening Market Linkages: The project’s advisory services will link small farmers into profitable market chains by helping them identify and successfully pursue group market opportunities. This component will have two activities:
   • Expand Export Market Outgrower Schemes: SHOP will build the capacity of farmer associations to deliver high-quality products reliably and commercially to exporter partners by facilitating communication and technical transfer between farmer groups and exporters to engender mutually-beneficial business relationships.
   • Expand Domestic Market Outgrower Schemes: As a stepping stone towards increasing export-quality production capability, this activity will help farmer associations increase sales of high-value vegetables to supermarkets, such as Shoprite and to the hospitality industry in Northern Tanzania, Dar es Salaam and Zanzibar and to catering companies.
3. Commodity Grant Fund: The Project will administer a grant fund to materially support smallholder farmer groups with seed investment for equipment or services to upgrade productivity and marketing.

Note: In the design phase of the project it turned out to be not possible to work with outgrowers producing for the export market. At present there is only one fresh vegetable exporter Tanzania – Serengeti Fresh – and negotiations for the co-operation in this project were not fruitful. SHOP will concentrate on strengthening the ULT, for higher urban markets.

TANZANIA HORTICULTURAL ASSOCIATION (TAHA), Arusha
Chief Executive Officer is Jacqueline Mkindi.
Summary of Profile:
The Tanzania Horticultural Association (TAHA) was registered in the country in April, 2004. TAHA is a result of reconstitution of the now defunct Tanzania Flower Association (TAFA). This was a necessary step because the defunct TAFA was only focused on the flower industry which is still quite small. The new association is highly representative of the burgeoning floral, vegetable, fruit, seed and cutting exporters whose primary market is Europe and specifically, the Netherlands.
OVERALL OBJECTIVES OF TAHA
It was established with the aim of promoting horticulture and addressing the general and specific needs of its members. This involves among several things providing a collective voicing platform for issues affecting the sector, providing a common front for promoting the members businesses in and outside the country, advocacy for the improvement of the environment in which the sector operates.

TAHA MISSION AND VISION
Mission
To promote the Horticulture sector in Tanzania to become more profitable, sustainable, and participate more effectively in the development of the country.
Vision
A vibrant, prosperous and sustainable horticultural production in Tanzania.

TAHA ROLES
The main activities include:
• Lobbying and advocacy
• Information dissemination
• Technical support
• Promotion of the horticultural sector and members products

MEMBERS:
Currently TAHA has 45 members (ORDINARY AND ASSOCIATE), involved in the PRODUCTION and EXPORT of cut roses, vegetables, flower cuttings, fruits and seed. Associate members include: individuals/Professionals in different fields, small growers groups/associations, consultancy companies, development partners, etc.

MEMBER'S LOCATION
Most of the members currently have their businesses set up in the Northern Zone, mainly Kilimanjaro and Arusha area. However, other members are located in Iringa, Dar es salaam, and Dodoma areas.
ANNEX 4: INTERNATIONAL STUDIES AND INITIATIVES TO SUPPORT THE HORTICULTURE SECTOR IN TANZANIA

There is interest from international organisations and researchers for the horticulture sector in Tanzania as the sector is growing very fast. Examples are:

- The Annual Programme Statement of USAID that offered funds for projects in horticulture including a focus at small holders, the projects took off in 2007 (among which is the SHOP). There is a possibility that there will be a new round in 2008.

- Market-driven development and poverty reduction: A value chain analysis of fresh vegetables in Kenya and Tanzania, commissioned by GTZ-BEAF (Beratungsgruppe Entwicklungsfundierte Agrarforschung), carried out in 2007. The study was carried out in co-operation with: AVRDC and ICIPE, associated partners were GTZ-PSDA Nairobi and Ministry of Agriculture Kenya. Focal points of the study were: i) Potential for Poverty Reduction and market driven development, ii) Examination of the cross-border trade between Tanzania and Kenya, iii) Comparison of the product specific value chains of both countries. Reference: GTZ-BEAF.

- Long Chains And Small Margins: Analyzing Institutional Arrangements in the Fresh Fruit and Vegetable Sector in Tanzania, Wageningen International Capacity Development and Institutional Change Programme, October, 2007. A study done to provide information to the debate on the role of agriculture in development.

- IFOAM (International Federation of Organic Agriculture Movements) has done a study into the awareness of consumers in East Africa about organic food. The study was done in 2006. The outcome was that there are several organic marketing initiatives in African Countries. East Africa is relatively active as the organic sectors have been well developed in the last few years. (Ref: Rundgren & Lustig, Organic Markets in Africa, 2007)

  The goal of the project is to contribute to a vital rural economy of Tanzania and Kenya through the development of effective and integrated field vegetable chains for the domestic and regional market in East Africa by:
  - participatory development and implementation of innovative, economic feasible and sustainable production methods in line with market demands,
  - empowerment of public institutions to sustain the foregoing and
  - generate policy relevant information and recommendations.
  The purpose of the project is to support the development of a restricted number of pilot product-market chains with a high market potential in close cooperation with relevant private and public actors as well as generating and dissemination relevant information for the development of the regional vegetable market in East Africa.
  Citing from document: “If you think you could contribute to the goals of AfrìVeg in any way, please contact the Programme management.”

<table>
<thead>
<tr>
<th>Mr. C.L.M. de Visser</th>
<th>Mr. A. de Jager</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Plant Research P.O. Box 430</td>
<td>Agricultural Economics Research Institute</td>
</tr>
<tr>
<td>8200 AK Lelystad</td>
<td>P.O. Box 29703</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>2502 LS Den Haag</td>
</tr>
<tr>
<td>Phone: +31 320 291691</td>
<td>The Netherlands</td>
</tr>
<tr>
<td>Fax: +31 320 230479</td>
<td>Phone: +31 320 291691</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:chris.devisser@wur.nl">chris.devisser@wur.nl</a></td>
<td>Fax: +31 320 230479</td>
</tr>
<tr>
<td></td>
<td>E-mail: <a href="mailto:andre.dejager@wur.nl">andre.dejager@wur.nl</a></td>
</tr>
</tbody>
</table>
ANNEX 5: MVIWATA RURAL MARKET DEVELOPMENT PROGRAMME (RMDP)

From: Long chains and small margins, WI-WUR

The major cause of high transaction costs in traditional spot markets is the lack of long term trade relations. Trade partners engaged in long term trade arrangements allowing for developing trust between trade partners, building reputation and developing routines in transactions are largely missing. The quest is to develop institutional arrangements which enable building of trust and do away with suspicious feelings between chain partners (suppliers and buyers).

The MVIWATA Rural Market Development Programme (RMDP) has established exactly such an institutional arrangement in which chain partners are joined in a multistakeholder platform around a commonly managed rural market. The produce in rural areas in Morogoro and Kongwa districts in a sustainable and replicable way. Four rural bulk markets have been improved, established facilities including improvement of feeder roads. Three key areas of improvement are:
- transparency (transactions, market rules, standardization of measurements, taxes)
- accessibility (improve communication & product flows)
- security (of transactions, cash, people, assets and produce)

The project was successful in tackling some of the major constraints in the marketing of fresh fruits and vegetables at spot markets including addressing formal & informal institutions.

The installed Marketing Boards function as innovative institutional arrangements allowing for bridging distrust between marketing parties, through improving access to information to all parties involved, installing clear rules and regulations and enforcement mechanisms. As a result chain transactions are moving from a supply chain built on conflicting interests between chain partners and very competing behaviour to a chain more oriented towards common interests and fostering mutual trust and collaboration. The marketing Board functions as a multi-stakeholder platform, having in the effective functioning and operation of the market, a mutual responsibility and interest. The platform functions as an instrument for dialogue, also addressing other issues dividing actors like taxes or levies. Due to creating an institution allowing dialogue and fostering joint interests, government, traders and producers were able to settle issues otherwise dividing the parties like levies and local taxes in mutual agreement. The bridging function allowing for growth of trust and understanding is perhaps the most exiting success of the project.

The project took a multi-stakeholder perspective which partly explains its success. The market provides advantages to all stakeholders including local governments as rules of the markets dictate proper pay of local taxes and levies and default in measurement is absent. The traders find plenty of supply, good loading conditions and safe storage facilities, transporters are assured of load and accessible roads, and producers have a competitive market in which they gained bargaining power by increased knowledge of pricing.

Nyandira marketing Board: an innovative multi-stakeholder institution

| Mviwata, the largest and most prominent federation of farmers in Tanzania, has implemented the Rural Market Development Programme. Within the framework of the programme a new institutional arrangement was set up by establishing a marketing Board responsible for managing the improved rural markets. The Boards are representing all major stakeholders: farmers, traders, transporters and savings& Credit Unions. The market is owned by the district authorities. The Marketing Board manages the market on their behalf but has an own legal entity, owning some assets on the market grounds (machinery, toilets, computers etc.). The Board pays a monthly rent to the district authorities. The market is in operation every day during peak agricultural season and two days a week during off-season. The market is financed by demanding fees for services. Traders pay a fee per traded volume: 1-600 kg = 300 Shilling, 60-200 kg = 1500 Shilling. |
Producers pay 2 Shilling per kilogram for the obligatory use of the weighing equipment. During high season, a profit is made which is put at the SACCOS to cover for costs during low season when income is insufficient to recover costs due to low turnover. In total Nyandira market serves 10,000 farmers coming from 11 surrounding villages.

MVIWATA approaches the marketing problem in an integrated way, improving not only market conditions but enhance farmers entrepreneurial capacities (amongst others by establishing study groups of farmers) and access to market information (radio, bulletin) and improve access to financial services by promoting the establishment of SACCOS in the area.

Furthermore, farmers groups exchange information about their intended supply to the markets, actually collectively planning supply in order to avoid over-supply and thus low prices. The scale (in number of participating villages and farmers) and level of coordination Mviwata has brought into this initiative is crucial for its success.

The most exiting result of the project is that it does tackle formal and informal institutions which were hampering effective transactions in the market by creating a new institutional arrangement which takes into account the interests of all stakeholders, not only farmers. The institutional arrangement around management of the market place fosters the building of joint interests, trust and longer term trade arrangements and successfully fights opportunistic behaviour. Transaction costs are reduced at all three phases:

Contact: the market place attracts large numbers of producers and traders and transporters. As they meet in the market, the role of agents, bulking for traders in the villages, by contacting individual producers, has decreased. Also arrangements between traders and transporters are eased. The large number of traders has increased competition for supply and improved the bargaining power of producers. Prices at the improved markets are reported to be higher than in neighbouring rural markets.

Contract: The lack of proper use of measurement standards complicated performance measurement causing default (moral hazards) from farmers and traders’ side and increased costs for contracting. The obligatory use of standardized weighing machines and the obligatory use of kilograms in transaction arrangements has improved transparency and diminished default.

Control: As all stakeholders are organized and operate as legal entities, keeping up reputation has become an issue. In the case of disagreement parties are no longer anonymous and going to civil court is an option. This discourages fraud, fosters the building of mutual interests and building of longer term trade relationships.

Moreover, the position of smallholder farmers has improved significantly by creating a better competitive context in which numerous traders have to compete for supply and improving their access to market and pricing information. Farmers fetch significantly higher prices on the improved market. Transaction costs have decreased benefiting all business partners.
ANNEX 6: PEOPLE CONTACTED FOR THE STUDY

<table>
<thead>
<tr>
<th>Institute</th>
<th>Town</th>
<th>Contact person</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVRDC</td>
<td>Arusha (Makumira)</td>
<td>Hassan Mndiga</td>
<td>Researcher</td>
</tr>
<tr>
<td>Farmer group</td>
<td>Tengeru (Arusha)</td>
<td>Eliza</td>
<td>Farmer</td>
</tr>
<tr>
<td>Frolesia</td>
<td>Marangu</td>
<td>Evelyne Kosilima</td>
<td>Co-ordinator</td>
</tr>
<tr>
<td>Frolesia</td>
<td>Marangu</td>
<td>Albert Samson</td>
<td>Trainer</td>
</tr>
<tr>
<td>Frolesia</td>
<td>Marangu</td>
<td>Samson Shaidi</td>
<td>Trainer</td>
</tr>
<tr>
<td>Horti Tengeru</td>
<td>Tengeru (Arusha)</td>
<td>Ignas Swai</td>
<td>Researcher</td>
</tr>
<tr>
<td>Maweni Farm</td>
<td>Soni, Lushoto</td>
<td>Juma Kahema</td>
<td>Previous in SECAP</td>
</tr>
<tr>
<td>Usambara Lishe Trust</td>
<td>Lushoto town</td>
<td>Mary Rimoy</td>
<td>District Horticulture Officer / co-ordinator of ULT.</td>
</tr>
<tr>
<td></td>
<td>Lushoto town</td>
<td>John Stephano</td>
<td>Farmer/ ULT representative</td>
</tr>
<tr>
<td>Farmer</td>
<td>Lushoto</td>
<td>Bena Saleh</td>
<td>farmer / trader</td>
</tr>
<tr>
<td>Trader, middleman</td>
<td>Lukozi, Lushoto</td>
<td>Mr Daniel Ikera</td>
<td>Trader for high value veg.</td>
</tr>
<tr>
<td>District Office Moshi Rural</td>
<td>Moshi</td>
<td>Mrs Elisa Bwana</td>
<td>Daldo</td>
</tr>
<tr>
<td>District Office Moshi Rural</td>
<td>Moshi</td>
<td>Mr Uraru Lyatuu</td>
<td>District Extension Officer</td>
</tr>
<tr>
<td>Moshi Rural District office</td>
<td>Moshi Rural</td>
<td>Mrs Colleen</td>
<td>Horticulture Subject Matter Specialist</td>
</tr>
<tr>
<td>Hai District Office</td>
<td>Boma Ng'ombe</td>
<td>Mrs Mushii</td>
<td>Daldo</td>
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<tr>
<td>Siha District office</td>
<td>Boma Ng'ombe</td>
<td>Mr Cornelus Ngudungi</td>
<td>DED</td>
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<td>Dr L. Kweka</td>
<td>Daldo</td>
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<td>Mrs Flora Swai</td>
<td>Subject matter specialist</td>
</tr>
<tr>
<td>Kilimo Office Kilimanjaro West</td>
<td>Siha</td>
<td>Mr M.P. Kizigha</td>
<td>Extension officer</td>
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<tr>
<td>Moshi Main Market</td>
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<td>Mr Godi</td>
<td>Market vegetable trader</td>
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<td>Mrs Mfoy</td>
<td>Horticulturalist/ marketing</td>
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<td>Individual</td>
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<td>Joachim Weber</td>
<td>Former farm manager Irene farm Lushoto</td>
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<td>SHOP</td>
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<td>Alexander Fernando</td>
<td>Chief of Party</td>
</tr>
<tr>
<td>Tancert</td>
<td>Dar Es Salaam</td>
<td>Leonard Mtama</td>
<td>Manager Tancert</td>
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<td>TOAM</td>
<td>Dar Es Salaam</td>
<td>Jordan Gama</td>
<td>Executive Secretary</td>
</tr>
<tr>
<td>Poverty Girls</td>
<td>West Kilimanjaro</td>
<td>Joke Bruinsma</td>
<td>Managing Director</td>
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<tr>
<td>Faida Mali</td>
<td>Arusha</td>
<td>Maria Ijumba</td>
<td>Manager</td>
</tr>
<tr>
<td>TAHA</td>
<td>Arusha</td>
<td>Jacqueline Mkindi</td>
<td>Manager</td>
</tr>
<tr>
<td>Incubator Project, College of Engineering and Technology (CoET)</td>
<td>University of Dar ES Salaam</td>
<td>Mushtaq Osman</td>
<td>Principal Instructor CoET/Member Traceability-T</td>
</tr>
<tr>
<td>Fruits of the loom</td>
<td>Dar Es Salaam</td>
<td>Mr Raza Ibrahim</td>
<td>Shop owner</td>
</tr>
<tr>
<td>FreshMark Tanzania</td>
<td>Arusha</td>
<td>Mr Stanley</td>
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<tr>
<td>Feshmark Tanzania</td>
<td>Arusha</td>
<td>Mr Jesse</td>
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<tr>
<td>Shoprite Purchasing manager</td>
<td>Dar Es Salaam</td>
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<td>Veg box scheme</td>
<td>Dar Es Salaam</td>
<td>Mari Pennanen</td>
<td>Organisers</td>
</tr>
<tr>
<td>ScanTan</td>
<td>Dar Es Salaam</td>
<td>Francis Lukwaro</td>
<td>Lushoto born businessman who offers to pull things forward</td>
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</tbody>
</table>