Agribusiness innovation in six African countries: The Tanzanian experience

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AGRIBUSINESS INNOVATION IN SIX AFRICAN COUNTRIES

THE TANZANIAN EXPERIENCE

REPORT PREPARED FOR THE WORLD BANK INSTITUTE

By

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Sokoine University of Agriculture
P. O. Box 3000 Chuo Kikuu, Morogoro, Tanzania
May, 2008

Morogoro, Tanzania
TABLE OF CONTENTS

Table of Contents
Executive Summary
Acknowledgement
List of Acronyms

1. BACKGROUND INFORMATION
   1.1 AGRICULTURAL SECTOR IN TANZANIA
   1.2 AN OVERVIEW OF CASSAVA, SUNFLOWER AND DAIRY SUB-SECTORS IN TANZANIA
      1.2.1 Cassava
      1.2.2 Sunflower
      1.2.3 Dairy industry
   1.3 INNOVATION CONCEPT

2. OBJECTIVE OF THE STUDY

3. METHODOLOGY
   3.1 RESEARCH QUESTIONS
   3.2 AREAS OF STUDY
   3.3 STUDY SAMPLE
   3.4 STUDY TOOLS
   3.5 DATA ANALYSIS
   3.6 ORGANIZATION OF THE REPORT

4. STUDY FINDINGS
   4.1 AGRICULTURE AND POLICY CONTEXT IN TANZANIA
      4.1.1 Vision
      4.1.2 Policies
      4.1.3 Strategies
   4.2 INNOVATIONS WITHIN A VALUE CHAIN FRAMEWORK
      4.2.1 Dairy industry value chain
      4.2.2 Sunflower value chain
      4.2.3 Cassava value chain
   4.3 INNOVATIONS WITHIN VALUE CHAINS
      4.3.1 Dairy sub-sector
      4.3.2 Cassava sub-sector
      4.3.3 Sunflower sub-sector
      4.3.4 Input suppliers
      4.3.5 Manufacturers of agro processing equipment
      4.3.6 Transporters
EXECUTIVE SUMMARY

The concept of Agricultural Innovation Systems tends to recognize a broader range of actors and sectors involved in innovation including the private sector and its roles in value chain. In recent years African continent has seen increasing vitality of technology and innovation. However, there are many examples where technology investments in African countries have not been successful. Therefore, the study of agribusiness innovation in Africa with focus on agriculture and food industry was aimed at obtaining a better understanding of the current situation and how it can be made to work better for Africa. This study looked at the policy framework/environment for innovation across the whole chain from production decisions, management aspects, handling (processing, grading, packaging etc.) and finally marketing. In the case of Tanzania the study looked at dairy, cassava and sunflower value chains in 9 districts. The interviews involved agribusiness firms, representatives of NGOs, business associations and applied research centres, and representatives from the ministries.

The study found that agriculture features well in policies and strategies. It was observed that there are already a number of good agriculture related policies already in place. However, the main challenges and difficulties arise from their
implementations and some policies lack implementation strategies and guidelines. Also, the issue of the agribusiness firm’s awareness towards these policies was found to be low especially with those lower in the value chain such as farmers where policy issues are understood based on constraints and opportunities. Respondents pointed out that Agriculture and Livestock Policy, Cooperative, SME, Trade as being commendable as they address important issues that are sensitive amongst farmers. Moreover, respondents applauded government effort to open markets for investment in various sectors as explained in trade and investment policy. On the other hand some of the policies that are perceived as impeding agricultural innovation included trade, energy, land and labor policies.

The majority of the firms tend to seek new ideas and knowledge as they innovate. Of the three value chains, dairy sub-sector is more innovative. Examples of innovations that were observed include those related to technical, product and organizational aspects. In the quest to innovate, agribusiness firms tend to engage in networks. It was reported that there are various important external actors that influence agribusiness firms in decision making including consumers, public sector, R&D institutes, input suppliers, extension services and business and farmers associations. It was observed from this study that in the case of Tanzania, the drivers of innovation include; consumers (markets), agribusiness firms themselves and R&D institutions.

It is concluded from this study that most policies are positive but lack translation into actions and participatory evaluation at local level. It is therefore recommended that more effort should be put towards policy implementation and that the private sector should be given more priority in the effort to promote agricultural innovation in Tanzania. Furthermore, interactions between agribusiness firms and the main external actors and drivers of innovations such as R&D institutions need to be supported more.
ACKNOWLEDGEMENT

The authors of this report wish to thank the World Bank Institute (WBI) team for giving us an opportunity to participate in this study. Special thanks go to Dr. Kurt Larsen and Mr Ron Kim. Also we are very grateful to the Coordinator of this study Dr. John Lynam as well as Dr. William Saint and our fellow researchers from Ghana, Kenya, Uganda, Mozambique and Rwanda for sharing with us their experiences and information.

We are also very grateful to the research assistants who assisted us in carrying out field survey and data analysis. In particular special thanks go to Messrs David Msolla, Faustin Fabian and Jerry Makindara for their tireless efforts.

We appreciate our contact persons in the districts (Kinondoni, Kibaha, Rufiji, Morogoro Urban, Kilosa, Iringa Urban, Hai, Singida Urban, and Arumeru) for their support and for making the important arrangements on the ground. In particular we wish to thank Mr. John Msemo of Kibaha Sugarcane Research Institute and the District Agricultural Research Officers from all 9 participating districts for cooperation extended to our team.

The Tanzanian team benefited from the support, knowledge, help and advice of so many individuals whose names are not mentioned in this short preface. We kindly ask them to accept our sincere thanks.
# LIST OF ACRONYMS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>ARI</td>
<td>Agricultural Research Institute</td>
</tr>
<tr>
<td>ASDS</td>
<td>Agricultural Sector Development Strategy</td>
</tr>
<tr>
<td>CAN</td>
<td>Calcium Ammonium Nitrate</td>
</tr>
<tr>
<td>CATIC</td>
<td>China Aero- Technology Import Export Corporation</td>
</tr>
<tr>
<td>DANIDA</td>
<td>Danish International Development Cooperation Agency</td>
</tr>
<tr>
<td>DANIDA</td>
<td>Danish International Development Assistance</td>
</tr>
<tr>
<td>FOCAL</td>
<td>Future Opportunities and Challenges in Agricultural Learning</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>ICT</td>
<td>Information Communication Technology</td>
</tr>
<tr>
<td>IITA</td>
<td>International Institute of Tropical Agriculture</td>
</tr>
<tr>
<td>MAFC</td>
<td>Ministry of Agriculture Food and Cooperative</td>
</tr>
<tr>
<td>MAFS</td>
<td>Ministry of Agriculture and Food Security</td>
</tr>
<tr>
<td>MCST</td>
<td>Ministry of Communication Science and Technology</td>
</tr>
<tr>
<td>MVIWATA</td>
<td>Mtandao wa Vikundi vya Wakulima Tanzania (Tanzania Farmers Network)</td>
</tr>
<tr>
<td>NEMC</td>
<td>National Environment Management Council</td>
</tr>
<tr>
<td>NFAST</td>
<td>National Fund for Advancement of Science and Technology</td>
</tr>
<tr>
<td>NGO</td>
<td>Non Governmental Organization</td>
</tr>
<tr>
<td>NSGRP</td>
<td>National Strategy for Growth and Reduction of Poverty</td>
</tr>
<tr>
<td>PANTIL</td>
<td>Programme for Agricultural and Natural Resources Transformation for Improved Livelihoods</td>
</tr>
<tr>
<td>PBFP</td>
<td>Property and Business Formalization Program</td>
</tr>
<tr>
<td>PRSP</td>
<td>Poverty Reduction Strategies Paper</td>
</tr>
<tr>
<td>SACCOS</td>
<td>Savings and Credit Cooperation Society</td>
</tr>
<tr>
<td>SIDO</td>
<td>Small Industry Development Organization</td>
</tr>
<tr>
<td>SME</td>
<td>Small and Medium Enterprises</td>
</tr>
<tr>
<td>SUA</td>
<td>Sokoine University of Agriculture</td>
</tr>
<tr>
<td>Acronym</td>
<td>Full Form</td>
</tr>
<tr>
<td>---------</td>
<td>-----------</td>
</tr>
<tr>
<td>TAFOPA</td>
<td>Tanzania Food Processors Association</td>
</tr>
<tr>
<td>TAMISEMI</td>
<td>Tawala za Mikoa na Serikali za Mitaa (Regional and Local Governments)</td>
</tr>
<tr>
<td>TAMPA</td>
<td>Tanzania Milk Processors Association</td>
</tr>
<tr>
<td>TAMPRODA</td>
<td>Tanzania Milk Producers Association</td>
</tr>
<tr>
<td>TARP</td>
<td>Tanzania Agricultural Research Project</td>
</tr>
<tr>
<td>TAS</td>
<td>Tanzanian Shillings</td>
</tr>
<tr>
<td>TCCIA</td>
<td>Tanzania Chamber of Commerce Industries and Agriculture</td>
</tr>
<tr>
<td>TDB</td>
<td>Tanzania Dairy Board</td>
</tr>
<tr>
<td>TFDA</td>
<td>Tanzania Food and Drugs Administration</td>
</tr>
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<td>UDSM</td>
<td>University of Dar Es Salaam</td>
</tr>
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<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
<tr>
<td>WBI</td>
<td>World Bank Institute</td>
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</tbody>
</table>
1. BACKGROUND INFORMATION

1.1 AGRICULTURAL SECTOR IN TANZANIA

Tanzania is endowed with high potential base for agriculture development. Yet it is among the poorest (one of the last 20 in the rank) developing countries (UNDP, 2004). Agriculture (including crop production, livestock and natural resources) is one of the leading sectors of the economy. Apart from providing food, it remains to be the country’s main source of income for the rural population, which forms 80% of the total population and employs 70% of the active labor force. In the year 2005 agriculture contributed about 50% to GDP, crop production alone contributed 55% of the agricultural GDP followed by livestock, which accounted for 30% (MAFS, 2005) and natural resources accounted for 15% Smallholder farmers dominate agriculture with farm sizes ranging from 1 to 3 hectares. Wide variety of crops can be grown in Tanzania due to its wide climatic variation and agro-ecological conditions. Maize and rice are principal food crops as well as commercial crops, while cassava and banana are important subsistence crops. Traditional export crops include coffee, cashew nuts, cotton, tea and sisal. Other widely grown crops include beans, sorghum, millet, sweet potatoes, and a wide variety of fruits, vegetables, oilseeds and flowers.

1.2 AN OVERVIEW OF CASSAVA, SUNFLOWER AND DAIRY SUB-SECTORS IN TANZANIA

1.2.1 Cassava

Cassava (*Manihot esculenta* Crantz), is a drought resistant crop grown mainly in dry areas and contributes significantly to the nutrition and livelihood of many farmers. Cassava is more productive per unit of land and labor than even the high yielding cereals and the highest producer of carbohydrate of all cereals and tubers. Cassava plays an increasingly important food security role in areas where the risk of drought is high; it also provides a source of income to large numbers of the people who grow and market it in rural and urban communities (Mtambo, 2007).
In Tanzania cassava contributes, on the average, 15% in the national food production basket and is second to maize, which is the leading staple food crop for many Tanzanians (Mtambo, 2007). It is mainly grown in Mtwara, Coast, Mwanza, Kigoma, Tanga, Morogoro, Mara, Ruvuma, Shinyanga and Lindi regions. It is also increasingly becoming important in the fresh, boiled, roasted and fried forms (Ndunguru et al., 1994 and Nweke, 1994). Cassava production trend from 2000/01 to 2004/5 is shown in Table 1.

Cassava is used as a raw material in the manufacture of processed foods, animal feeds and industrial products. There are indications that novel cassava product will continually be adopted as an ingredient in the manufacture of convenient fast foods for urban consumers and in the industry in some African countries (Mtambo, 2007). The use of cassava as animal feed is expected to rise as the government of Tanzania is trying to encourage investment in livestock production and meat processing industries and the response from private investors has shown positive trends (Mtambo, 2007).

**Table 1. Cassava production from 2000/01-2004/2005 (‘000 tonnes)**

<table>
<thead>
<tr>
<th>S/N</th>
<th>REGION</th>
<th>‘00/01</th>
<th>‘01/02</th>
<th>‘02/03</th>
<th>‘03/04</th>
<th>‘04/05</th>
<th>‘05/06</th>
<th>‘06/07</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Arusha</td>
<td>30.48</td>
<td>6.80</td>
<td>2.20</td>
<td>3.67</td>
<td>11.23</td>
<td>37.57</td>
<td>27.78</td>
</tr>
<tr>
<td>2</td>
<td>Coast</td>
<td>215.0</td>
<td>409.0</td>
<td>302.50</td>
<td>63.2</td>
<td>220.39</td>
<td>37.57</td>
<td>119.01</td>
</tr>
<tr>
<td>3</td>
<td>Dar es Salaam</td>
<td>-</td>
<td>70.79</td>
<td>37.50</td>
<td>50.43</td>
<td>40.47</td>
<td>37.92</td>
<td>28.04</td>
</tr>
<tr>
<td>4</td>
<td>Dodoma</td>
<td>74.21</td>
<td>178.20</td>
<td>90.90</td>
<td>137.45</td>
<td>74.61</td>
<td>105.28</td>
<td>77.84</td>
</tr>
<tr>
<td>5</td>
<td>Iringa</td>
<td>17.8</td>
<td>38.3</td>
<td>56.8</td>
<td>80.90</td>
<td>34.16</td>
<td>22.76</td>
<td>20.38</td>
</tr>
<tr>
<td>6</td>
<td>Kagera</td>
<td>170.7</td>
<td>625.5</td>
<td>112.8</td>
<td>338.16</td>
<td>279.45</td>
<td>194.35</td>
<td>166.9</td>
</tr>
<tr>
<td>7</td>
<td>Kigoma</td>
<td>29.05</td>
<td>182.50</td>
<td>222.20</td>
<td>291.94</td>
<td>217.29</td>
<td>110.71</td>
<td>118.00</td>
</tr>
<tr>
<td>8</td>
<td>Kilimanjaro</td>
<td>18.78</td>
<td>24.08</td>
<td>35.59</td>
<td>5.39</td>
<td>23.26</td>
<td>10.27</td>
<td>7.73</td>
</tr>
<tr>
<td>9</td>
<td>Lindi</td>
<td>166.65</td>
<td>90.96</td>
<td>60.23</td>
<td>135.17</td>
<td>103.58</td>
<td>175.55</td>
<td>135.56</td>
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<tr>
<td>10</td>
<td>Manyara</td>
<td>-</td>
<td>-</td>
<td>1.30</td>
<td>3.02</td>
<td>4.57</td>
<td>31.86</td>
<td>23.56</td>
</tr>
</tbody>
</table>
Sunflower \((Helianthus annuus \text{ L.})\) is one of the most important oilseed crops in Tanzania. The crop is adaptable over a wide range of environments and therefore it is widely cultivated in Tanzania. The crop is popular in the Eastern, Central, Northern and Southern Highlands of Tanzania. Sunflower is gaining popularity and current data shows that local production of both factory and home extracted oils contributes to about 40% of the national cooking oil requirement with the remaining 60% being imported (ARI Ilonga, 2008). Table 2 shows sunflower production in Tanzania during the cropping season from 2000/01 to 2004/05.

<table>
<thead>
<tr>
<th>No.</th>
<th>District</th>
<th>2000/01</th>
<th>2001/02</th>
<th>2002/03</th>
<th>2003/04</th>
<th>2004/05</th>
<th>2005/06</th>
<th>2006/07</th>
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<td>11</td>
<td>Mara</td>
<td>75.60</td>
<td>215.20</td>
<td>82.10</td>
<td>254.50</td>
<td>220.83</td>
<td>77.67</td>
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<td>12</td>
<td>Mbeya</td>
<td>24.7</td>
<td>101.8</td>
<td>14.48</td>
<td>65.34</td>
<td>79.34</td>
<td>30.97</td>
<td>22.90</td>
</tr>
<tr>
<td>13</td>
<td>Morogoro</td>
<td>87.57</td>
<td>210.30</td>
<td>274.0</td>
<td>229.41</td>
<td>181.11</td>
<td>108.89</td>
<td>82.31</td>
</tr>
<tr>
<td>14</td>
<td>Mtwara</td>
<td>257.15</td>
<td>262.16</td>
<td>306.0</td>
<td>414.68</td>
<td>365.99</td>
<td>515.11</td>
<td>409.05</td>
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<tr>
<td>15</td>
<td>Mwanza</td>
<td>177.10</td>
<td>272.31</td>
<td>290.40</td>
<td>241.78</td>
<td>248.70</td>
<td>120.15</td>
<td>116.89</td>
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<td>16</td>
<td>Rukwa</td>
<td>43.21</td>
<td>175.10</td>
<td>193.82</td>
<td>186.33</td>
<td>133.85</td>
<td>26.88</td>
<td>19.88</td>
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<tr>
<td>17</td>
<td>Ruvuma</td>
<td>37.14</td>
<td>115.44</td>
<td>106.02</td>
<td>194.98</td>
<td>154.29</td>
<td>61.75</td>
<td>50.25</td>
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<tr>
<td>18</td>
<td>Shinyanga</td>
<td>65.54</td>
<td>160.67</td>
<td>96.13</td>
<td>74.50</td>
<td>73.59</td>
<td>35.59</td>
<td>50.17</td>
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<tr>
<td>19</td>
<td>Singida</td>
<td>32.80</td>
<td>17.30</td>
<td>151.60</td>
<td>10.66</td>
<td>11.07</td>
<td>90.17</td>
<td>67.11</td>
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<tr>
<td>20</td>
<td>Tabora</td>
<td>53.70</td>
<td>114.70</td>
<td>99.00</td>
<td>101.70</td>
<td>102.15</td>
<td>55.68</td>
<td>62.98</td>
</tr>
<tr>
<td>21</td>
<td>Tanga</td>
<td>121.91</td>
<td>149.79</td>
<td>177.67</td>
<td>113.85</td>
<td>271.19</td>
<td>79.65</td>
<td>49.92</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>1698.9</td>
<td>3420.5</td>
<td>2843.5</td>
<td>2956.5</td>
<td>3060.0</td>
<td>1732.9</td>
<td>2052.7</td>
</tr>
</tbody>
</table>

(Source: Ministry of Agriculture Food and Cooperatives, 2008)

1.2.2 Sunflower

Based on the importance of sunflower, the MAFC carries sunflower research from ARI Ilonga in Kilosa District. In 1999, the oilseeds research sub programme at Ilonga, imported 20 accessions to start testing them in multi location trials (ARI Ilonga, 2008). It has been observed that from these accessions, two of them PI 364860 and PI 289624 recorded high yields and oil contents. Plans are underway to take them for on-farm, farmer’s verification and assessment before they are officially released. However, the issue of seeds is still a problem because of lack of readily available high yielding varieties. Most farmers use their own seeds from previous seasons mainly because of high price and low availability of seeds from stockists.
Table 2. Annual estimates of sunflower production from 2000/2001-2004/2005 ('000 tonnes)

<table>
<thead>
<tr>
<th>S/N</th>
<th>REGION</th>
<th>2000/01</th>
<th>2001/02</th>
<th>2002/03</th>
<th>2003/04</th>
<th>2004/05</th>
</tr>
</thead>
<tbody>
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<td>7.40</td>
<td>0.44</td>
<td>0.06</td>
<td>0.11</td>
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<td>2</td>
<td>Dodoma</td>
<td>-</td>
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<td>6.58</td>
<td>34.64</td>
<td>16.66</td>
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<tr>
<td>3</td>
<td>Iringa</td>
<td>-</td>
<td>16.30</td>
<td>7.30</td>
<td>63.48</td>
<td>12.21</td>
</tr>
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<td>4</td>
<td>Kagera</td>
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<td>-</td>
<td>0.10</td>
<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td>5</td>
<td>Kilimanjaro</td>
<td>-</td>
<td>-</td>
<td>3.72</td>
<td>2.80</td>
<td>0.29</td>
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<td>6</td>
<td>Manyara</td>
<td>-</td>
<td>-</td>
<td>6.37</td>
<td>12.11</td>
<td>5.01</td>
</tr>
<tr>
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<td>Mara</td>
<td>10.50</td>
<td>-</td>
<td>0.01</td>
<td>0.35</td>
<td>0.19</td>
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<td>1.81</td>
<td>1.71</td>
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<td>-</td>
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<td>0.07</td>
<td>0.02</td>
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<td>0.60</td>
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<td>-</td>
<td>0.01</td>
<td>0.40</td>
<td>1.54</td>
<td>1.45</td>
</tr>
<tr>
<td>13</td>
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<td>7.80</td>
<td>8.80</td>
<td>0.46</td>
<td>2.57</td>
<td>2.84</td>
</tr>
<tr>
<td>14</td>
<td>Singida</td>
<td>25.20</td>
<td>42.50</td>
<td>21.34</td>
<td>72.64</td>
<td>67.00</td>
</tr>
<tr>
<td>15</td>
<td>Tabora</td>
<td>-</td>
<td>0.63</td>
<td>0.15</td>
<td>0.74</td>
<td>0.89</td>
</tr>
<tr>
<td>16</td>
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<td>-</td>
<td>0.01</td>
<td>0.03</td>
<td>0.00</td>
<td>1.87</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>80.87</td>
<td>104.40</td>
<td>55.04</td>
<td>247.84</td>
<td>134.36</td>
</tr>
</tbody>
</table>

(Source: Ministry of Agriculture Food and Cooperatives, 2008)

Post harvest management is an important aspect of sunflower production as well. Normally sunflower is harvested manually. In the Eastern Zone harvesting takes place in July - September while in Central Zone it is between May - June. After threshing sunflower seeds are pressed to extract sunflower oil which is further purified into edible oil used for cooking. The cake is used as livestock feed. According to a recent study conducted at ARI Ilonga the production cost for one acre is TAS 380,000/- and one acre can produce up to 16 bags of 70
- 80 kg each. If those bags are processed into oil, then the revenue from sale of oil (TAS 800,000/-) and cake (TAS 59,520) making a total of TAS 859,520/-. This leaves a profit margin of TAS 479,520/- per acre. The sunflower sub-sector is faced with a number of constraints which include:

(i) Lack of improved and sufficient seeds; this force farmer to use own seeds
(ii) Unreliable market and low prices for sunflower seeds
(iii) Diseases such as downy mildew
(iv) Insect pests and other pests before and after germination
(v) Inadequate improved tillage implements such as ox-plough or tractors
(vi) Unreliable rainfall
(vii) Inadequate knowledge on improved sunflower production techniques due to poor extension services.
(viii) Stiff competition from edible oil imports

Sunflower as a cash crop, can contribute to increase household income and security and thus raising the standard of living of rural people, if promotional activities are encouraged. It has a high potential for quick expansion to ensure an adequate supply of cooking oil. With the increased installation of processing machines for oil pressing in various localities, jobs can be created and consequently contributing to reducing unemployment among youths. In general, sunflower has a potential of contributing to poverty reduction if rigorous promotional activities are put in place. However, since one of the major constraints to sunflower production is lack of improved seeds, it is suggested that existing improved varieties should be popularized to create awareness among farmers and other stakeholders.

1.2.3 Dairy industry

It is estimated that from the total 88.6 million hectares of land resource in Tanzania, 60 million hectares are rangelands ideal for livestock grazing (Koggani, 2005). However, only 40% of the rangelands are utilized mainly for keeping 17.7 million cattle; 12.5 million goats, 3.5 million sheep, 0.8 million pigs, 47 million poultry and other species. Over 90% of the livestock population is of indigenous type that is known for their low genetic potential. Also, the total contribution of livestock sector including dairy sub-sector to the total GDP and agricultural GDP is estimated at 18% and 30% respectively.

1 USD=TAS1200
The sector has a potential to contribute more. In the recent years efforts are being made to revamp the industry through private sector involvement and establishment of business association bodies such as TAMPRODA, TAMPA and TDB.

It is widely agreed that the dairy sub-sector has a huge potential as a tool in the poverty eradication in Tanzania. The major milk zone of Tanzania are North (Kilimanjaro and Arusha regions), East (Tanga, Coast, Dar es Salaam and Morogoro regions), South (Iringa and Mbeya regions) and Lake (Shinyanga, Mwanza, Mara and Kagera regions). The development of dairy sub-sector in Tanzania can be divided into the following four phases:

(i) Colonial phase (1921 – 1960)
(ii) After independence phase (1961 -1984)
(iv) The private sector phase (1996 – to date)

Milk production in Tanzania is divided into two main systems namely traditional and modern production systems. The traditional dairy sector is further divided into traditional livestock and modern dairy (Shem and Mdoe, 2002). The traditional livestock system involves both the highly mobile Masai and Barbaig and the less mobile cattle grazers known as agro-pastoralists (Shem, 2004). It has been reported that under the traditional livestock system, milk marketing is unorganized and often benefit the middlemen/women buying milk cheaply. On the other hand modern sector is characterized by keeping of exotic breeds from Europe and elsewhere. This system is characterized by commercial dairy farms as well as medium and small scale (small holder dairy farms). Modern dairy sub sector is concentrated in Arusha, Kilimanjaro, Kagera, Iringa, Mbeya, Tanga and in urban and peri-urban areas.

In the recent years Tanzania has seen some efforts to revamp the dairy sector. This has included a Small holder Dairy Development Program (SDDP) which facilitated formation of Tanzania Milk Producers Association (TAMPRODA). Other developments have included formation of Tanzania Dairy Board (TDB) and Tanzania Milk Processors Association (TAMPA).
1.3 INNOVATION CONCEPT

Under this study the concept of innovation is used in its widest sense. However, different types of innovations are distinguished and this includes product, production process, equipment, organizational structures, work processes and management. There are different ways in which firms participate in the innovation process which basically refers to the key features of the input to and output from an innovation strategy in agribusiness. The innovation process within a firm may comprise of several elements such as set objectives that new products and/or processes or agribusiness routines are designed to address along with array of sources (external or internal) that contribute to their development and benefits that innovation brings to the agribusiness firm along with factors that hamper activities.

Firms can participate in innovation process in agribusiness in such ways as through developing new agribusiness products that may reach new evolving markets, developing new products to carter for the existing markets, improving production routines that may lead to price advantage over competitive firms.

It can therefore be summarized that firm’s participation in the Innovation Process may often take the form of (a) Production (Improving production flexibilities, reducing lead times, improving working conditions and reducing labor costs) (b) Product (Improving product quality, replacing products and extending range) (c) Market strategies (Opening new domestic or foreign markets and simply maintaining current market share).

2. OBJECTIVE OF THE STUDY

In recent years African continent has seen increasing vitality of technology and innovation. However, there are many examples where technology investments in African countries have not been successful. Poor and inadequate infrastructural services, lack of human skills and institutions to support the use of technology are important factors in explaining the relative slow progress in many African countries. In this context the Danish Government (represented by DANIDA) and the Danish Ministry of Science, Technology and
Innovation have partnered with the World Bank Institute to organize a Forum on “Developing Technology and Innovation in Africa: Focus on Agriculture and Food Industry”. In order for the Forum to have a clear relevance and concrete follow-up activities, it has been limited to six countries; Ghana, Kenya, Mozambique, Tanzania, Uganda and Rwanda and to focus on the following technology sectors: agriculture, food industry, rural energy and physical environment including water. Therefore, the study of agribusiness innovation in Africa with focus on agriculture and food industry to obtain a better understanding of the current situation and how it can be made to work better for Africa is imperative. The overall purpose of the study was to establish a clear understanding of the effect that the policy environment has on agricultural innovation, particularly within the private sector.

3. METHODOLOGY

On the overall, this study looked at the whole policy framework/environment for innovation across the whole value chain for selected agricultural crops in three main categories (a) Basic food crops (b) High value agricultural products, and (c) Fisheries, poultry and livestock.

In the case of Tanzania the study looked at the following agricultural commodities under the categories which were agreed during the planning meeting in Nairobi in December 2007.

- Cassava - *(Basic food Crop)*
- Oilseeds/Sunflower – *(High value products)*
- Dairy - *(Fisheries, Poultry Livestock)*

The study looked at the policy framework/environment for innovation across the whole chain from production decisions, management aspects, handling (processing, grading, packaging etc.) and finally marketing. The general approach that was used was participatory, involving different participatory tools whereby different stakeholders participated in the process. The general approach involved combination of document review (desk study), field interviews and expert opinion.
3.1 RESEARCH QUESTION

The research questions formulated for this study were:

- How do agribusiness representatives and other informed observers assess the overall public policy climate for innovation in the agricultural sector?
- Which policies and/or public institutions are playing a useful role in this regard, and which are not?
- What changes in policies and/or public institutions would be most conducive to improved prospects for agricultural innovation in the country? Are some policies in conflict with others, e.g., commodity focused agricultural research policies that are not supported by trade policies?
- What types of technical, financial and marketing/export services might support this goal?

3.2 AREA OF STUDY

The study was conducted for selected firms in the Eastern Agricultural Zone of Tanzania (Morogoro, Coast and Dar es Salaam regions), Southern Highland Zone (Iringa region), Central Zone (Singida region) and Northern Zone (Hai and Arusha regions). A total of 9 districts were involved in the study. The study assessed the whole policy framework and environment for innovation across the whole value chain for selected agricultural crops value chains for Tanzania. The regions were chosen as representatives because of their climatic variability and high potential to grow the above mentioned crops and/or carry out dairy production.

3.3 STUDY SAMPLE

The interviews were conducted in three stages. The first stage involved 55 interviewees from the seven regions mentioned earlier making about 7 interviewees per region. In the second stage, representatives of NGOs, business associations and applied research centres were interviewed for their opinion. During stage three the team interviewed 5 representatives from the
Ministry of Agriculture and Cooperatives, Ministry of Industries, Trade Industry and Marketing and Ministry of Economic Planning and Empowerment.

3.4 STUDY TOOLS

A number of tools and/or knowledge and information sources were used/consulted for successful execution IMPLEMENTATION of the study. These included literature review, interviews/questionnaires, national statistics, past reports, expert’s opinion, reports (NGOs, local Institutions) and policy guidelines.

3.5 DATA ANALYSIS

This was a qualitative study so specific issues were highlighted from specific themes and/or specific agribusiness firm and reported. Despite being a qualitative study, some of the data collected from questionnaires were conveniently coded and analyzed using SPSS software package.

3.6 ORGANIZATION OF THE REPORT

This report is organized and presented into the following chapters:

(i) Background information
(ii) Objectives of the study
(iii) Methodology
(iv) Study findings
(v) Conclusion and recommendations
(vi) Appendices

4. STUDY FINDINGS

The Agribusiness Innovation study was conducted in four Agro Ecological zones of Tanzania namely the Eastern zone, Central zone, Northern and the Southern Highlands zone. Districts covered in the Eastern zone included Kinondoni district in Dar es Salaam Region, Kibaha and Rufiji Districts in Coast region and Mvomero district, Morogoro Municipality and Kilosa districts in Morogoro region. In the central zone the team interviewed firms from Singida
District in Singida Region, whereby firms from Hai and Arumeru Districts were covered in the Northern Zone in Kilimanjaro and Arusha regions, respectively. The Southern Highland zone was represented by sampled firms from Iringa District in Iringa Region. In this respect, the majority of respondent (75%) were from the Eastern zone, followed by the Northern zone and the Southern Highland zone that were represented by about 11% and 9% respondents respectively, and 6% of respondents were interviewed from Central zone. This study was qualitative in nature and was not meant to have equal representation from all agro-ecological zones in Tanzania.

The obtained results showed that scale of operation of the interviewed firms differed from small scale to large scale. The majority of the firms that participated in this study (83%) were under small scale, whereas about 11% of the interviewees were from medium scale firms with the remaining 6% being from large scale firms. The study revealed that most of small scale firms do not employ many permanent workers, therefore the working staff ranges from a single (in most cases agribusiness) employee to 11 as opposed to large scale firms which employs up to 100 permanent working staff.

4.1 AGRICULTURE AND POLICY CONTEXT IN TANZANIA

Agriculture is the mainstay of the economy of Tanzania and therefore it features in many of the country policies as illustrated below.

4.1.1 Vision

*Tanzania Development Vision (Vision 2025)*: This vision envisage agricultural sector that by the year 2025 is modernized, commercial, highly productive and profitable, utilizes natural resources in an overall sustainable manner and acts as an effective basis for inter sectoral linkages.

4.1.2 Policies

*Land Policy of Tanzania of 1997*: The overall objective of this Policy is to promote and ensure a secure land tenure system so as to encourage optimal use of land resources. The government through this policy recognizes the
growing conflicts between agriculture and other land uses as both human and animal population increases. The policy therefore intends to give some guidelines on what should be done to ease the land tension. Within the Land Policy one notes that the government encourages multiple land use techniques in areas of conflict. The policy also states that agricultural land will be identified and set aside for agricultural use and protected against encroachment by pastoralists. The policy covers issues related to rangelands management and livestock keeping. However, the challenge remains on how to enforce these policies as conflicts have continues to occur.

_National Higher Education Policy of 1999:_ It is clearly stated in this policy that agriculture will continue to be the backbone of the economy and therefore the policy gives agricultural related disciplines high priority. Furthermore the policy puts emphasis on the strengthening of laboratories as part of research and training effort. These laboratories are also used for assisting in solving farmers problems.

_National Employment Policy of 1997:_ Another policy that dwells on the aspects of agriculture is the National Employment Policy that dwells on both wage employment and self employment. It is clearly stated within this policy that the agriculture sector is an important employer and it absorbs a total of 9,115,932 people and out of these 53.8% or 4,918,200 are women. Also, it is acknowledged within the National Employment Policy that there are several problems that are facing agriculture which need to be addressed. It is clear that through this policy the government regards agriculture as a very important industry. The policy puts emphasis on the use of appropriate technologies, development of employment in rural areas, involvement of women and youths in employment programs and initiation of self employment activities. It is also stated in the Employment Policy that since more than 70% of Tanzanians live in rural areas, there is a need to ensure that there is effective utilization of labour force in improving agriculture and livestock production. The policy further sets strategies to realize this through increased agricultural productivity by improving farm supportive services as well as improved use of farm implements, fertilizers and pesticides. Other strategies include sensitization for investment in agriculture and issuance of land occupancy rights to nationals. The policy also puts emphasis on the
improvement of the infrastructure such as roads, water supply, electricity, loans, and good prices to farm produces.

*National Science and Technology Policy of 1996:* This policy aims at organizing and sustaining the science and technology capacity that is realistic, efficient and productive. The National Science and Technology Policy acknowledge also the importance of agriculture for Tanzania’s economy. Therefore this policy aims at maximization of productivity through introduction of improved methods of farming such as good seed varieties, improved livestock production and better methods of food and crop processing, preservation and storage. The National Science and Technology Policy aims at enhancing the development of agricultural mechanization and irrigation technologies. The policy enumerates strategies that will be followed in order to meet the above objectives of the policy through:

(i) Agricultural research (National gene banks, vaccines etc)
(ii) Research and Development in animal production (Animal health, vaccines etc)
(iii) Agricultural productivity and extension (Training of extension workers)
(iv) Agricultural mechanization
(v) Use of agricultural wastes (manure, bio fuel)

*Agricultural and Livestock Policy of 1997:* Another important policy as far as agricultural sector is concerned is the Agricultural and Livestock Policy of 1997. This policy dwells only on agriculture with the ultimate goal of improving the well being of the people whose principal occupation and way of life is based on agriculture. The objectives of this policy are:

(i) Ensuring basic food security for the nation
(ii) Improvement of the standard of living in rural areas through increased income from agriculture and livestock production
(iii) Increased forex earnings
(iv) Production of raw materials for local industries
(v) Development of new technologies which increase productivity of labour and land
(vi) Promote integrated and sustainable use and management of natural resources

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2 This policy is currently being reviewed.
Development of human resources within the agricultural sector
Provide support to agricultural sector

It is stipulated in this policy that the government would provide its services using the following tools:
(i) Agricultural extension, using extension workers
(ii) Agricultural research, using ARI and other research centres
(iii) Training so as to optimize the human resources
(iv) Provision of regulatory services such as seeds and seed production, plant protection and animal health services, agricultural information and marketing of inputs and outputs. Others are cooperative development services, technical services such as agricultural mechanization and soil conservation.

The policy does cover a number of important crops such as oilseeds, pulses, fruits and vegetables. It has been observed that the National Agricultural and Livestock Policy of 1997 puts emphasis on the role of the private sector in achieving its policy objectives but limits the role of the Government to public sector support functions. Such support sectors include Policy formulation and supervision, research, training, extension and information services, sanitary regulations, quality control and protection of the environment, and creation of conducive environment for agricultural growth, specifically in relation to the development of markets and marketing systems for inputs and outputs.

*Cooperative Development Policy of 1997:* Both agricultural production and processing Cooperatives are regarded as part of the diverse nature of cooperative sector. The policy sets strategies for agricultural marketing Cooperatives, rural financial services, livestock cooperative and industrial cooperatives just to mention but a few.

4.1.3 Strategies

*Agricultural Sector Development Strategy (ASDS)*: The agriculture sector was also the base of the Agricultural Sector Development Strategy (ASDS) that set agricultural vision for time frame 2002 – 2005. The primary objective of ASDS was to create an enabling and conducive environment for improving the productivity and profitability within the sector.

*National Strategy for Growth and Reduction of Poverty (NSGRP)*: This strategy recognizes the importance of agriculture in poverty reduction efforts. The NSGRP keeps in focus the aspiration of Tanzania Development Vision (Vision 2025). The strategy recognizes many pertinent issues which tend to diminish contribution of agricultural sector towards poverty eradication. Such issues include nuisance taxes and levies imposed on farmers as well as backward and forward linkages to agricultural production.

4.2 INNOVATIONS WITHIN A VALUE CHAIN FRAMEWORK

As explained in the introductory part, the current study on agribusiness innovation was conducted among firms whose main activities are based on the dairy industry, oilseeds sector (sunflower) and cassava. The study investigated the whole value chain looking at different stages of the value chain and interactions within the value chain itself. Aspects of production, processing, storage, marketing and types of consumers were investigated. Also the study looked at the linkages that exist between the key players in the value chain and their service providers such as input suppliers, manufacturers of processing machines, transporters and distributors.

4.2.1 Dairy industry value chain

Dairy industry in Tanzania involves small, medium and few large scale actors. There are several important stages within the value chain in the dairy industry that includes milk production, processing and marketing of dairy products.
Milk production is further linked to supply of well bred cows and input supplies such as feeds and drugs. It was therefore established that if milk production is regarded as the central focal point within the value chain, then one can establish backward and forward linkages within the value chain. Based on responses obtained during the study in the surveyed area/zones the value chain for Dairy Industry were as indicated in Fig 1.

The backward linkages in value chain for milk involves livestock keepers, milk collectors, transporters and processors of milk. In the case of large firms it is possible to find that the firms carry out all activities in the value chain on itself and only subcontracts others to supplement the extra requirements depending on the processing capacities. This chain is represented in the flow chart in Fig 1. In the case of forward linkages in the dairy value chain with milk processing as a starting point, it was revealed that the key players are suppliers of spare parts and other consumables including packaging materials, transporters, distributors and consumers. In the case of distributors these may include retail shops, or distributing centres where retailers obtain the products they sale. However, in some cases the processors themselves have their own section that deals with marketing that include distribution to retailers. This forward linkage within the value chain is represented in the flow chart indicated below:
Fig 1. Value chain linkages within milk value chain
4.2.2 Sunflower value chain

The value chain for sunflower is also subdivided into backward and forward linkages (Fig 2). At the starting point of the chain farmers are the focal point. The farmer has a backward linkage with input suppliers mainly for seeds, chemicals and fertilizers. Also farmers are dependent on farm machinery
owners (operators) for farm tillage operations. These are usually done on contractual basis. After carrying out post harvest operations sunflower follows different routes to reach the processing shops. Farmers may sell direct to the mills or they sell through the middle men who pass through the farms to buy seeds. Also at this stage transporters have a role of transporting the seeds to the mills. In some cases it was reported that the millers also own trucks which go around collecting seeds sometimes in conjunction with the collectors (middlemen) with whom they have some contract to supply. The millers also have linkages with suppliers of machinery, spare parts and packaging materials.

Marketing activities start after oil has been processed, filtered and packaged. This activity includes stockists or wholesalers, transporters, distributors and retailers. It was noted also that for small scale operators there is a direct link with consumers who come directly to buy oil from the millers. Another relationship within the value chain is between small oil mills which tend to depend on one relatively well equipped mill when it comes to filtering the oil. It was noted during the survey that few oil millers are equipped with filtration units which allows them to offer services to other millers at a cost.
Fig 2. Value chain linkages for sunflower oil processing

Plate 3. Flowering sunflower crop that is later processed into cooking sunflower oil
Plate 4. (a) A sunflower oil press used in oil expression and (b) Customer with extracted and filtered ready for home consumption

4.2.3 Cassava sub-sector value chain

As for the case of sunflower, the value chain for cassava is also similar in nature with the main nodes being the farmers, processors and consumers (Fig 3). The backward link starting with farmers is towards the input suppliers. There is no established linkage to agro mechanics since cassava is mainly grown in small farms which are prepared using hand hoe.

However the need for planting materials, especially the improved ones from agricultural research centres, is very high. The most common variety is Kiroba which is high yielding and disease tolerant. On the other hand the forward linkage after farm production involves middle men involved in buying,
retailers of raw cassava, transporters, agro processors, retailers of finished products and consumers.

Fig 3. Value chain linkages within cassava industry
Plate 5. (a) Cassava crop ready for harvesting (b) Motorized cassava grater

Plate 6. (a) Well packaged cassava flour (b) Cassava products sold along side other products in a supermarket

4.3 INNOVATIONS WITHIN VALUE CHAIN

According to the results obtained from this study, 68% of all respondents reported that their firms tried new ideas or used new knowledge during the last three years. On the other hand, 32% of all respondents have not tried new innovation and continue to use the existing technologies available to them. The new ideas and technologies that were tried depended on the type of value chain that is involved. For example, for sunflower farmers, it was reported that the new ideas or new knowledge tested included growing improved seeds and use of new inputs such as fertilizers in the case of sunflower and cassava.
In the case of manufacturers of agro processing equipment for cassava and sunflower, they reported also use of stainless steel in the parts that are in contact with food materials. This is a new innovation as in the past they were using mild steel for the manufacture of the entire agro-processing machines. Another area of innovation that was reported was marketing whereby the use of diversified package sizes and widening of a distribution area were reported.

According to cassava processors, accessing of new processing and packaging technologies was also reported. For example whereas in the past they were using manual processing technologies, they are now able to use small to medium scale processing equipment. About four percent of the respondents reported blending cassava flour with maize and combining this with packaging into smaller packages of 1, 2 and 5 kg. For sunflower oil processor, the issues of new ideas and knowledge featured as well and some respondents reported building stores, filter rooms and provision of better sanitation systems at their premises. The issue of buying sunflower was also reported as an area where new ideas were tested. This included buying sunflower in bulk during harvest and processing during the period of scarcity thus increasing the profit margin.

For manufacturers of sunflower and cassava processing machines it was also reported that new ideas have been tried. This included designing of new dehullers (SB 50) and a 30 tones press for oil expression. The study found different levels of innovation within the three value chains. However, it was interesting to note that most of the firms have tried innovations although at different level.

4.3.1 Dairy Industry

It seems that there are relatively more innovations in the Dairy Farming Industry as compared to other commodities that were investigated. Results showed that 100% of the interviewed dairy firms have been innovating at different levels and stages. On the other hand no innovations were reported to take place within the milk traders although milk collectors, processors and
marketing firm reported being innovators with 80% of them having tested new ideas.

Regarding testing of new forms of organization i.e. organizational innovation within the dairy industry, the survey showed that 60% of the interviewed firms have carried out organizational innovation. As in the case of use of new ideas, milk collectors and processors and marketing firms were more innovative with 90% reporting to have carried out organizational innovation. Different types of innovations were reported within the dairy industry. For example, dairy farmers reported having tried to access new markets.

In the case of milk processors, new innovations such as using honey as yoghurt sweetener were reported. Other innovations involved accessing new markets such as supermarkets by improving their product quality and packaging. Other innovations involved testing new forms of packaging in particular the use of cup as opposed to traditional package in sachets. Firms collected information about consumer preference and upgraded their products accordingly. Other organizational innovations included starting of a small testing laboratories and strengthening the organization of their marketing section. Firms also participated more in agricultural shows and trade fair as an innovative way of promoting their products and establishing contacts and networks.

### 4.3.2 Cassava industry

The cassava value chain involves farmers and processors. Results from this study showed a low level of testing new ideas among cassava farmers. This is seen from the collected data whereby only 29% reported having tested new ideas or used new knowledge during the last three years. However, the level of testing new ideas and knowledge was higher among cassava processors where 75% reported as having tested new ideas and knowledge. The only innovations that were reported included use of high yielding and disease tolerant variety (Kiroba) and in one case farmers are participating in fertilizer trials together with researchers from ARI Mlingano in Tanga.
On the other hand, cassava processors were more innovative with 100% reporting to have tested organizational innovation. Cassava processors reported organizational innovation to enable them to access new markets. This was reported by 87% of cassava processors and included things such as strengthening marketing departments, improved packaging and labeling and participation in Agricultural shows and trade fairs. These firms were able to develop new packaging and labeling based on consumer’s feedback.

4.3.3 Sunflower industry

The study investigated the use of new ideas and new knowledge within firms which are involved in sunflower based agribusiness. The study indicated that majority of sunflower farmers have used new ideas and knowledge in the past 3 years. On the other hand about 60% of sunflower processors have used new ideas and knowledge. In the case of new forms of organizing activities or procedure, it was reported that about 67% farmers have tested new ideas. However, there is more testing of new ideas among the processors of sunflower oil than farmers. The type of innovations that were reported included oil pressing that is done by farmers as part of value addition. This meant that they were able to increase profit that is realized from the sales. Another innovation among farmers involved organizing themselves well so as to have close supervision and therefore improve quality. This enabled them to increase yield as they take charge of supervising thus ensuring right farming practices.

4.3.4 Input suppliers

The study also covered input suppliers who were involved in supplying inputs to sunflower, cassava growers and dairy farmers. The input suppliers reported that they have tried new ideas and knowledge in the past 3 years. Regarding new form of organization of activities about 6% of input suppliers reported having organized using new ideas.

The reported innovations by input suppliers included organizing the firms so as to access new markets for their products. Also, they reported investing more in agro inputs with high demand of industrial fertilizer such as CAN
while reducing the amount of other inputs. The firms reported that they also diversified on the type of input they sell to include even small implements and inputs for poultry farmers. Other innovations included repackaging of the inputs e.g. chemicals so as to fit with purchasing power of the customers and establishment of own seed farms.

4.3.5 Manufacturers of agro processing equipment

The study interviewed some firms which are involved in manufacturing of the agro processing equipment especially sunflower oil presses and cassava processing machines mainly chippers, graters and slicers. It was revealed that all interviewed firms in this category have tried new ideas and knowledge in the past. Also, all interviewed firms reported having experienced with new forms of organizing activities or procedures during the last three years. Examples of innovations carried out by these firms included accessing new clients through expanding range of products and participating in trade fairs and agricultural shows. These firms have also tried new manufacturing approaches such as use of stainless steel in manufacturing high quality machines.

Additionally manufacturing firms work closely with the Universities such as SUA and UDSM thus organizing themselves to try new technologies developed by the Universities. For example, some of them diversified into manufacturing agro processing machines for other commodities such as sorghum, groundnuts etc. New markets that these firms have tried to access include cassava processing in Mozambique and Malawi for the case of Intermech Engineering Ltd.
Box 1: Sample of noted innovations from the three value chains:

1. **TAN DAIRIES, P. O. BOX 7911 DAR ES SALAAM, (Milk Processor)**
   - Established Tandiaries Milk Collection Centres in Tanga (Pongwe, Muheza and Mkanyageni) and Morogoro (Dakawa, Kimamba and Mdaula) to ease collection and control quality along the value chain. TANDAIRIES is subcontracting private transporters to collect milk from the centres and deliver it to the factory as a strategy to significantly lower the running cost.
   - Introduced yoghurt that uses honey as sweetener as a new product in the market.

2. **MATACHA ENTERPRISES LTD P. O. BOX 30427 KIBAHA, TANZANIA (Small scale dairy farmer)**
   - The firm has developed a method of concentrating milk to enhance its shelf life. The entrepreneur uses own milk and those obtained from other dairy farmers in the neighbourhood. The concentrated milk has longer shelf life and ready market in Dar Es Salaam.
   - Introduction of a cross breeding program whereby exotic breeds are crossed with local breeds as a means to improve yield and control diseases at the firm’s farm.

3. **POWER FOODS COMPANY P. O. BOX 23437 DAR ES SALAAM (Cassava processor)**
   - Establishment of a system of training farmer’s groups on better cassava handling and processing techniques from harvesting to processing level to minimize cyanide and reduce Aflatoxin levels.
   - Accessed more customers through diversification of packaging by using several smaller packing units as opposed to the old system where Power Foods was having only small range of flour packages of 20kg and 50kg. Currently the firm packs its flour products in packages ranging from 1 - 50kg to cater for different customers needs.

4. **MANG’ANA AGRO VET P. O. BOX 30427 KIBAHA, TANZANIA (Input supplies)**
   - The firm decided to establish its own seed farms for production of vegetable seeds as opposed to an earlier arrangement whereby seeds were purchased from contract farmers. This ensures availability of seeds in the right quantity and quality. After harvesting, seeds are processed (dried, sorted, tested and labeled) and distributed.
4.3.6 Transporters

Due to the nature of Tanzanian economy, which is agricultural based, transportation sector contributes significantly through haulage of agricultural produces as well as the processed products. However, transporters pointed out that the price of fuel has risen tremendously and they complained on energy and trade policies which have not taken action on controlling the prices of imported good such as fuel thus hurting the end users.

The policy relating to taxation was viewed as a burden to transporters. For example, it was reported that they are required to pay about TAS\(^3\) 36,000 per year as packing fee, TAS 350,000/- as a road license, as well as other Municipal Council fees which amount to TAS 500/- per each trip whereas in villages they pay TAS 1,000/- as vehicle levy per trip. Transporters also perceive the increase in running cost of the business as a major constraint.

\(^3\) 1USD = TAS 1200
They cited increase in the price of spare parts and fuel as being the most hindering factors, with others being availability of customers and poor roads (especially in rural areas) that cause periodic damage to their vehicles.

With regard to innovations, they pointed on extending their links and networking with customers through use of ICT and especially the mobile phones that are used to make calls to their contacts asking on availability of goods to transport. Others include organizational innovation such as setting routines for timely maintenance of vehicle to avoid breakdown. More examples of innovations are explained in Box 1.

4.4 INNOVATION FINANCING

The study looked also at the innovation finance outputs and marketing. In general the sources of investment finances for the interviewed firms were reported as follows:
(i) Credit from non banking financial institution and individuals
(ii) Own funds raised from various sources
(iii) Personal savings accumulated over time
(iv) Accumulation from farming activities
(v) Loans from Banks
(vi) SACCOS
(vii) Member contributions within groups.

Some of the innovations that require funding include:
(i) Improving collection and transportation of raw materials
(ii) Expanding range of raw materials and improving scale of operations
(iii) Diversification of products and improving quality
(iv) Acquiring new and innovative technologies such as packaging
(v) Enhancing marketing access

According to the study, about 22% of the respondents have accumulated funds from farming activities as well as dairy industry, which they re-invest into the business. Also, 16% reported to have accumulated funds from other sources of income such as salaries. It was interesting to note that 14% of the respondents have acquired loans from banks. Savings from Livestock related
incomes were also reported by 12%. About 6% reported as having obtained loan from non-banking institutions such as the SACCOS and individual borrowers. Other sources reported included retirement funds. It was interesting to note that although loans are important, other sources of financing are used to finance investments. Also, small-scale firm mentioned that they don’t rely much on loans for financing their agribusiness but rather on other sources.

Further investigation on the level of adequacy of the raised investments indicated that the raised funds are not adequate with 74% of the respondents saying so and only 26% considering it as being adequate. To address the lack of enough funds for investment, it was reported that firms strive to diversify their products so as to capture other markets. For example, instead of manufacturing a machine for pressing only one type of oilseeds, entrepreneurs are now manufacturing multipurpose machines for use with a wide variety of seeds. Moreover, it was reported by dairy farmers, collectors, processors and marketing firms that collection of milk to meet the required quantities is the main challenge. On overall cassava farmers, milk traders, sunflower farmers and agro processing equipment manufacturers reported funding investment as being inadequate.

Regarding the issue of funding and credit facilities, the study found that some firms tend to seek more institutional support so as to cope with a fast changing market. Other suggestions included formation of organizations, associations or networks to ease firm’s access to loans. These networks may be between farmers themselves or farmers and processors. Joint lobbying towards softening of some of the conditions such as need of strict rules regarding collateral needs tied up to loans especially from Banks was also mentioned as a strategy. Also, some of the firms suggested an establishment of a grant scheme that will specifically target SMEs in Tanzania, which shows that some of the recent government initiatives have not caught the awareness of some of the interviewed agribusiness firms.

The issue of putting money back into firms operations was also explored. Results show that majority of the respondents did put back some money into their operations. This shows that the majority of firms are willing to re-invest
and this includes trying out new innovations. Respondents also reported that the surplus or profit is the one that is ploughed back into the business as most of the respondents reported putting back into business the profit they are making. It is only few respondents who reported as having found resources elsewhere to put into operations. On overall this trend shows that firms are willing and committed to continue with their business. The money put back into operations is used for purchase of inputs such as fertilizers, seeds, etc obtained from input suppliers and for services and products from research institutions, Universities and even overseas consultant companies in the case of large firms.

4.5 POLICY PERCEPTIONS BY AGRIBUSINESS FIRMS

The issue of legal constraints related to labour and land was also reported. Milk collectors, processing and marketing firms, as well as sunflower farmers reported to have been constrained more by various legal issues. On the other hand, input suppliers and processors reported experiencing least or no constraints with respect to land issues.

The main concern with legal constraints is in relation to the minimum wage being too high, and this tends to affect most of the interviewed firms. While issues of minimum wage seems to be an important constraint to processors, input suppliers and milk traders; on the other hand, land conflicts were mainly reported by firms involved in farming activities.

Also, processors reported some legal constraints associated with business regulations and licensing, land ownership and environmental issues including disposal of waste materials. Another constraint included bureaucracy in registration of businesses, compliance with Tanzania Bureau of Standards (TBS) regulations, high tax rates and restriction on plastic container uses. It was therefore suggested that the following may assist in reducing these constraints that included:

(i) Reducing bureaucracy in land access and issuance of land title deeds for both farms and building plots.
(ii) Reducing unnecessary bureaucracy and pre-requisites to promote investments
(iii) Allowing negotiations between employer and employees on the minimum wage
(iv) Enforcement by the Government of the land laws.
(v) Waive some of the taxes such as building and land tax as it is a burden to the firms
(vi) There should be some deliberate effort to empower farmers/processors organizations such as TAMPRODA so that they can speak on behalf of the farmers.

Results also showed that there are already existing weights, quality, and environmental safety standards that are used by agribusiness firms in Tanzania. Majority of firms within the value chains reported of such existence and that to a large extent they are enforced. Some of the enforcing agents include TFDA, TBS, NEMC and Tanzania Scales and Weights Agency.

Regarding results on whether the trade policies help or hinder the business prospect of the interviewed firm, majority of the respondents indicated that the trade policies are hindering their firm’s prospects. However, some of the firms in dairy and manufacturing of agro processing equipment reported that trade policy is helpful to them. Factors that were reported as contributing towards this perception included:
(i) Tax waiver for agro related products
(ii) Government support through trade fairs\(^4\) which enables firms to display their products
(iii) Arrangements enabling local firms to access loans with affordable conditions such as when promoting local products such as milk.

On the other hand sunflower and cassava farmers and processors, some of the manufacturers of the machines and milk traders indicated that trade policies are hindering their business. The reasons that make agribusiness firms to feel trade policy as impeding their growth included:
(i) High tax rates which indirectly make prices of inputs higher
(ii) Lack of subsidies for veterinary inputs
(iii) Free market which creates unfair competition from overseas products

\(^4\) Such fairs are either free of charge or highly subsidized by the Government or NGOs
(iv) High import tax for raw materials that lead to higher selling prices which become uncompetitive.

(v) Lack of policy awareness amongst the firms which leads to them not utilizing the trade policy for their benefit and hence regarding it only as impeding their growth

The perception of agribusiness firms towards the support of public officials in promoting technological change in agriculture provided a mixed picture with it reported as being resistant, indifferent and sometimes supportive. With regard to government officials who are resistant, the study found that most of such officials are regarded as being more interested with enforcing tax collection without listening to the actual performance levels of the firms especially during calculation of annual incomes. Also, cassava growers, milk traders, sunflower processors reported that some government officials are not interested in the business carried out by private firms and do not seem to be interested in supporting firms to acquire new knowledge and innovations.

It was reported by input suppliers, dairy farmers and manufacturers of processing machines and processors of milk that some of government officials are not very supportive of entrepreneurs and private sector as a whole. Furthermore, public officials are perceived as being involved in frequent changes of policies which affect the performance of the firms. As for the public officials being indifferent, it was reported that these officials are not assisting in the implementation of policies.

Regarding the issue of the existence of internal or external incentives for firms to update or expand their use of technology, only about one third of the interviewees cited existence of such incentives whereas others indicated non-existence of incentives. The reported incentives were in the form of (i) access to seminars where new ideas and knowledge is gained and exposure and exchange of experience (ii) fertilizer and seeds subsidies and (iii) loan guarantee.

With sunflower farmers the issue of seeds and fertilizer subsidies from the Government as well as NGOs was noted and recommended as being supportive towards innovation. Also, manufacturers of agro processing
equipment and processors of cassava reported to a larger extent the presence of incentives such as participation in trade fairs and farmer’s days.

The issue of government sharing the risks of new investments with firms was also investigated and the majority of respondents reported that normally the government does not share responsibilities such as assisting in raising capital. However, the government tends to share responsibilities when it comes to provision of loan guarantees and insurance coverage which gives them confidence to risk investment into new ventures.

Another important factor affecting the experimentation with new ideas was the tax system. It was reported that higher taxes tend to discourage promotion of firm’s programs hence limiting firm’s performance. It was reported that the current taxes are so high and tend to offset the profit margins. Also, it was reported that when income tax is not properly calculated, the agribusiness firms are deprived of their income. Another constraint with taxing system is raising taxes on almost yearly basis without considering the actual profit margins obtained by agribusiness firms.

### 4.6 COORDINATING LINKAGES THROUGH THE VALUE CHAIN AND ORGANIZATIONAL INNOVATIONS

The firms also shared their experiences with respect to the main external actors that affect firm’s performance and influence their decision-making. It was reported that public sectors such as utility companies as well as other agribusiness firms, input suppliers, consumers, and business associations as being the main actors. Other important main external actors mentioned were research institutes, extension services and the public in general, including farmers.

For those firms that reported public sector as being the main external factors affecting their firms, they explained that it ensures availability of public services which are important for the success of their firms. Eleven percent of the respondents reported legal support, promotion of market and capacity building as being the major inputs from the public services. Other important roles of public sector that were reported included provision of standards for
quality control from such organizations as TBS and TFDA. Also, the public sector tends to advocate and carry out activities that are aimed at facilitating tax collection and compliance, which in turn enables agribusiness firms to carry out their activities uninterrupted. Other key roles of the main actors included:

(i) Issuance of licenses and standards for quality control (by government agencies). These help the firms to be legally recognized and to run and operate profitably.

(ii) Ensuring the availability of public services which facilitate functioning of the firm. Many important utilities such as water and electricity are provided by the government (public) agencies.

(iii) Promotion of market and capacity building and assistance in acquiring land, licenses etc.

Moreover, input suppliers are among the main external actors that were mentioned and their roles is mainly providing inputs for the firms. The input suppliers involve those providing agricultural inputs such as seeds and fertilizer as well as those providing raw materials and packaging materials etc. Input suppliers tend to share new information and innovations with the firms as they have an interest in selling their products. For example, seed suppliers inform farmers on availability of new high yielding seeds and even fertilizers and planting space. These are innovations which farmers try in their fields and later adopt depending on their performance. As for machine manufacturing, input suppliers were reported of sharing information about new raw materials and innovative fabrication techniques.

Consumers are also important external actors and their role is mainly buying and utilizing products from agribusiness firms. It has been reported that consumers tend to provide feedback and share their experiences with firms about the products such as sunflower oil, milk and products such as yoghurt and cassava flour which is useful information as they try to innovate. It was reported that some consumers go a step further and share information regarding details of other competitor’s products and marketing strategies and provide advice on what the firm can also do.
Based on results obtained from the study, the decision making process in almost all firms seems to be influenced by external actors in one way or the other. However, the surveyed firms reported different levels of influences from different actors. Table 3 shows responses about external actors’ influence on technical change and facilitating relationship for each type of firms. In general the trend shows that there is a good relationship with most of the external actors.
Table 3. Summary of responses from the interviewees about external actor’ influence on technical change and facilitating relationship.

<table>
<thead>
<tr>
<th>TYPE OF FIRM</th>
<th>EXTERNAL ACTOR THAT INFLUENCES THE FIRM</th>
<th>MAIN ROLE OF THE ACTOR</th>
<th>FIRMS PERFORMANCE IN SUPPORTING TECHNICAL CHANGE</th>
<th>FACILITATING RELATIONSHIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input supplier</td>
<td>Public sector</td>
<td>- Legal, tax, standards and provision of public services&lt;br&gt;- Trainings&lt;br&gt;- Seminars</td>
<td>Good to moderate</td>
<td>Good to moderate</td>
</tr>
<tr>
<td>Other input suppliers</td>
<td>- Provision of inputs to the firms</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
</tr>
<tr>
<td>Collective business associations</td>
<td>- They are customers</td>
<td>Good</td>
<td>Good to moderate</td>
<td>Good to moderate</td>
</tr>
<tr>
<td>Consumers</td>
<td>- Buying (consumers) of my products&lt;br&gt;- Providing feedback</td>
<td>Moderate to insufficient</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>Cassava processing</td>
<td>Public sector</td>
<td>- Licensing and public services</td>
<td>Good</td>
<td>Mainly good minority to moderate</td>
</tr>
<tr>
<td>Input suppliers</td>
<td>- Provision of inputs</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
</tr>
<tr>
<td>Collective business associations</td>
<td>- Consumers – buyers of products</td>
<td>Insufficient</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>Sunflower processing</td>
<td>Public sector</td>
<td>- Provision of public service, tax issues, and quality control standards</td>
<td>Good to moderate</td>
<td>Good</td>
</tr>
<tr>
<td>Milk processing firm</td>
<td>Public sector</td>
<td>- Provision of standards for quality control public service and taxation</td>
<td>Good</td>
<td>Good</td>
</tr>
<tr>
<td><strong>Collective business associations</strong></td>
<td><strong>Customers - buying products and sharing feedback</strong></td>
<td><strong>Good</strong></td>
<td><strong>Good</strong></td>
<td></td>
</tr>
<tr>
<td>-------------------------------------</td>
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<td></td>
</tr>
<tr>
<td>Consumers</td>
<td><strong>Buyers of products</strong></td>
<td><strong>Good</strong></td>
<td><strong>Good</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Cassava growers</strong></td>
<td><strong>Provision of public services</strong></td>
<td><strong>Good</strong></td>
<td><strong>Good</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Farmers</strong></td>
<td><strong>Provision of input to the firms</strong></td>
<td><strong>Good</strong></td>
<td><strong>Good</strong></td>
<td></td>
</tr>
<tr>
<td>Consumers</td>
<td><strong>They are my customers</strong></td>
<td><strong>Insufficient to moderate</strong></td>
<td><strong>Good</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Sunflower (growers) farming</strong></td>
<td><strong>Provision of public services</strong>, <strong>Quality control</strong>, <strong>Taxation</strong></td>
<td><strong>Good</strong></td>
<td><strong>Good</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Dairy farming</strong></td>
<td><strong>Advocates quality standards, public services and taxation</strong></td>
<td><strong>Good</strong></td>
<td><strong>Good</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Input suppliers</strong></td>
<td><strong>Sharing information on input price and availability</strong></td>
<td><strong>Good to moderate</strong></td>
<td><strong>Good to moderate</strong></td>
<td></td>
</tr>
<tr>
<td>Consumers</td>
<td><strong>Sharing information of milk supply, customers of my products</strong></td>
<td><strong>Good to moderate</strong></td>
<td><strong>Bad (Consumer complaining about selling prices)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Milk traders</strong></td>
<td><strong>Sharing information on quality and quantity to be supplied</strong></td>
<td><strong>Good</strong></td>
<td><strong>Good to moderate</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Manufacturers of Agro-related machines</strong></td>
<td><strong>Provision of license</strong>, <strong>Provision of standards, public services and taxation issues</strong></td>
<td><strong>Good</strong></td>
<td><strong>Good</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Collective business association</strong></td>
<td><strong>Customers - buying products and sharing feedback</strong></td>
<td><strong>Good</strong></td>
<td><strong>Good to moderate</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Input suppliers</strong></td>
<td><strong>Sharing information on input price and availability</strong></td>
<td><strong>Good</strong></td>
<td><strong>Good</strong></td>
<td></td>
</tr>
</tbody>
</table>
It was also noted that business associations play a major role as external actors. Business associations share new knowledge and markets with agribusiness firms and are also involved in organizing business expositions. Some of the business associations that were mentioned as being important included TAFOPA and SIDO which provide assistance with respect to packaging and labeling materials. Other important associations include the Incubator initiatives. In the case of milk production and processing, TAMPRODA and TAMPA were mentioned as being important associations. The manufacturers of agro-food processing equipment mentioned the Metal Cluster Initiative of the College of Engineering and Technology of the University of Dar es Salaam and TCCIA as being important associations.

According to the study, majority of the respondents indicated that facilitation relationship with the main external factors such as input suppliers and consumers is good. Among the few firms that regard the facilitating relationship as being bad cited the issue of selling price whereby consumers complain of prices being high mainly as a result of taxes and poor linkages including infrastructure within the value chains. Generally facilitating relationship is good with collective business associations. However, associations and consumers were ranked high as they are regarded as being very supportive to technical change and innovations (Table 4).

Table 4. Firm’s perception of external actors on supporting technical change

<table>
<thead>
<tr>
<th>External Actor</th>
<th>% respondents regarding external actor’s support towards technical changes as being good</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public sector</td>
<td>51%</td>
</tr>
<tr>
<td>Input supplier</td>
<td>60%</td>
</tr>
<tr>
<td>Consumers</td>
<td>71%</td>
</tr>
<tr>
<td>Association</td>
<td>81%</td>
</tr>
</tbody>
</table>

The study indicated that there exists different level of partnership from one firm to another. However, there were some cases where no partnerships were reported to exist. This was mainly with small scale firms. Firms that reported
as having some kind of partnership included those involved in cassava processing, manufacturers of agro-related machines, and milk trading firms. The remaining firms revealed relatively weak partnerships.

Respondents also reported on the kind of partnerships that existed among the firms. The study showed that firms processing both milk and sunflower oil cooperated in both technical and investment matters. Conversely, dairy farmers and sunflower oil processors had their partnerships based on technical matters. In the case of input suppliers and sunflower processor the study has shown that these firms tend to have partnership which is based on financial matters.

The influence of government in facilitating such partnerships was also reported. For example, the partnerships among cassava and sunflower growers are to some extent influenced by the government. For the case of input suppliers and dairy farming it was reported that some of the partnerships are influenced to some extent by the government, while others are influenced by factors such as the need for raw materials or collective lobbying. As for milk traders and sunflower processors their partnerships are not influenced by government but rather have links to other initiatives such as collective lobbying.

For the partnerships that were facilitated by the government, respondents identified some kind of incentives, which drove such partnerships to take place among firms. For example, the main motivation that were reported as having led to sunflower growers being involved in partnership included the guarantee for loans from financial institutions, joint market access and access to legal and business support. For those who work in partnership, it was revealed that the kind of partnership is based on (i) the need to cooperate and share experiences in technical matters (ii) sharing in firm’s investment in terms of time and finances. On the other hand, firms involved in input supplies and cassava growers indicated that joint market access was their main motivation.

Moreover, it seems that these partnerships are facilitated by the firms themselves. This is corroborated by the fact that 67% reported lack of
facilitation from government side. The government facilitation seems to be mainly in form of loan guarantees from financing institutions.

The issue of networking was also reported during the survey. It was reported that some firms participate in networks and maintain communication with other firms outside the country. Some of overseas organizations which were mentioned included

(i) European firms in Germany and Holland such as, PACCO - Europe
(ii) Chinese Company - CATIC for spare parts used in agro-processing machines
(iii) Foreign firms based in Tanzania such as USA Embassy, IITA, USAID
(iv) Farmers and entrepreneurs from neighbouring countries such as Kenya, Zambia and Malawi mainly to share information on marketing and agro-processing innovations.

With respect to firm’s participation in collective associations, results indicated that manufacturers of agro-related products machines, sunflower processor and dairy processors tend to have active participation in agribusiness activities under collective associations as compared to other firms. The reported collective business associations include Tanzania Milk Producers Association (TAMPRODA), Tanzania Milk Processors Association (TAMPA) and Innovation Clusters. It was also reported that such a situation may be due to the fact that the above mentioned firms are more organized than others. The majority of firms which participate in collective business associations, indicated that ease of access to loans and sharing of business management are some of the motivations for their collaborations. This was reported particularly by input suppliers, manufacturers, sunflower and cassava growers, and cassava processors. In addition to sharing business management, dairy milk processors were also motivated by the access to collective markets. In this arrangement firms tend to cooperate in issues related to marketing whereby market information is exchanged and cooperation developed.

Despite the firms networking being reported, only few firms currently participate actively in the collective associations. Such association includes
TCCIA, TAMPA, TAMPRODA and MVIWATA. The motivations for those who participate in such collective associations include:

(i) Accessing collective markets
(ii) As a pre-condition for accessing loans
(iii) Sharing business Management skills and new technology information
(iv) Getting an easy linkage to government as they lobby together.

In recent years, Universities such as SUA and UDSM have been active in collaborative research programs such as TARP II, FOCAL and PANTIL which involve collaborative research projects that involve farmers in the projects. Also, UDSM is involved in incubator and cluster programs.

4.7 PUBLIC-PRIVATE SECTOR INTERACTIONS

Generally the public-private sector interactions are still low. Firms explained factors contributing to such poor interactions. About half of the respondents reported that there are no incentives for collaboration. This indicates that firms prefer to continue on their own, as they don’t see much to gain from initiating such collaborations. On the other side some of the firms do collaborate in order to get access to technical knowledge, machines and financial assistance. Such collaborations are directed towards research institutions and other technical organizations such as SIDO.

Other incentives for collaboration included market improvement, disease control mainly for cassava and sunflower and accessing loans and markets. The study also revealed that most of interviewed firms do not cooperate with other firms or organizations in financing the development and testing of new products, processes or technologies.

Contacts between government officials and firms were investigated during the study. It seems that the contacts by government officials are made based on normal routine execution of duties. Respondents reported having contacts with local government and normally this is done on monthly basis. All respondents reported that they rarely meet with members of National
Parliament or Ministers. Most of these meetings are initiated by government officials with firms initiating contacts in only few occasions. The purposes of such meetings include:

(i) Normal routine of inspecting the performance of the firm.
(ii) Taxation and licensing matters
(iii) Assisting on technical matters/advice
(iv) Inspection on the safety and quality
(v) Offering agronomical advice
(vi) On site training and sensitization
(vii) Financing and empowering

Regarding the aspects of transmission and application of knowledge, the survey showed that firms tend to seek ways of obtaining new knowledge relevant to their business operations and information on the market conditions which affect firm’s competitive performance. Most firms reported to have obtained new knowledge mainly from research institutions both from within and outside the country. The mentioned institutions include Universities (Sokoine University of Agriculture, University of Dar es Salaam), research institutions (Kibaha Sugarcane Research Institute - Cassava Research Group and ARI Ilonga), (IITA) and Consultants from overseas (Mainly Germany and Holland). Also, firms reported to have received new knowledge from extension/agricultural officers and from other firms. Table 5 shows results of where the firms obtain new knowledge relevant to their business operation.

Table 5. Indicated sources of knowledge for the firms
<table>
<thead>
<tr>
<th>Value chain category</th>
<th>Sources of knowledge</th>
</tr>
</thead>
</table>
| Agricultural input supplier | Research centers  
University (SUA)  
National Veterinary Research Centre, Temeke  
Manufacturers  
Extension and Agricultural Officers  
Similar firms |
| Cassava farmers | Extension Officers  
Agricultural Officers  
Agricultural Research Institute (Kibaha) |
| Dairy farmers | University (SUA)  
Own experience  
Research Centres |
| Manufacturers of processing of equipment | Universities (SUA and UDSM)  
Research Institute -IITA/ ARI Kibaha  
Internet  
Centres from Abroad |
| Collectors processing and marketing of milk | Universities (SUA and UDSM)  
Research Centres, Customers and Internet  
Business Management and Consultants (BAMACO)  
Internet |
| Sunflower farmers | Research Centre (mainly ARI Ilonga)  
Extension Officers  
Experts from overseas |
| Sunflower oil processor | Internet  
Visits to others processors  
Research Centres  
Own experience  
Customers  
Business and Management Consultants (BAMACO) |
| Cassava processors | Research Institute - IITA/ ARI Kibaha/ SUA  
Other firms involved in cassava processing  
Kibaha district Extension and Agricultural Officers  
Own experience |
With regard to accessing information that tends to affect firm competitiveness, it was observed that some of firms are using Internet, mobile telephones and make physical visits to obtain new knowledge and information. Firms reported that these sources of knowledge were very useful in their operations and helped them in improving quality of their products. In addition, it empowers them with entrepreneurship skills as well as being the source of innovative ideas. It has also been shown that there are different levels of government sponsorship or facilitation in agricultural expositions among representatives of the agricultural value chain. However, such facilitations reach only a small fraction of agribusiness firms with only 31% of the respondents receiving government sponsorship and facilitation.

Those who were sponsored explained that the main activity was participation to exhibit their products in national farmer’s day (known as *Nane Nane* agricultural shows) and the annual *Saba Saba* trade fairs. In addition, respondents cited SIDO and TCCIA Trade fairs, World Food Day, and fairs organized by SIDO which is under the Ministry of Industry, Trade and Marketing as being the other avenues.

It was also reported that a good relationship does exist between farmers and other respondents and public agricultural research centers such as ARI Ilonga and Kibaha in The Eastern Zone. That has enabled them to access new knowledge and information. However, about one third reported no close relationship and exchange of knowledge. In general, the respondents perceived these relationships as being very useful with respect to the access of information and knowledge that may lead to firm’s prosperity. Respondents reported the following aspects as being the most useful:

(i) Accessing results of research activities via reports and Internet

(ii) Creating awareness about appropriate processing technologies - For crops such as cassava farmers have benefited with technologies from SUA, ARI Kibaha and UDSM.

(iii) Enabling firms to acquire better processing tools such as chippers, graters and presses

(iv) Enhancing entrepreneurship skills mainly through participation in trainings and exhibitions
(v) Improving sunflower production skills through improved agronomic skills whereby research institutes have had some contacts with sunflower farmers.

(vi) Used as channel to advertise firms products. Customers feel more comfortable if firms show some interactions with Universities or other established research institutions.

Regarding the working relationship with public agricultural research centers in terms of access to knowledge and information, the majority of dairy farmers, input suppliers manufacturers of agro processing equipment, cassava processors and collectors, processors and marketers of milk both reported it as being very good. However, small scale cassava farmers reported that they don’t have close contacts/working relationship with public agricultural institutions except occasionally when in need of planting materials or advice on diseases.

Some of the most useful aspects of the relationship include:
(i) Accessing experts’ opinion from the Universities, research institutions
(ii) Assisting firms in analytical work.
(iii) Assisting firms in the aspects such as analytical tests of the products

It was also revealed that there exists to some extent, some working relationship with local and National Universities in terms of access to knowledge and information. Results showed that about half of respondent had relationship that has enabled them to access knowledge from Universities. Most of the remaining firms reported that the most useful aspect of these relationships is access to knowledge and creating confidence among consumers of their products which leads to their products being marketed more easily. Other respondents cited improved market access as the main benefit from these relationships.

Majority of firms also have good working relationship with input suppliers in terms of access to knowledge and information. For example, about half of the respondents reported having good communication system with input suppliers whereas about one third have moderate relationship with input supplier. The other remaining firms reported having bad relationship mainly due to pricing issues.
Regarding the issue of how the firms tackle their technical problems, it was observed that agricultural input suppliers tend to turn to Sokoine University of Agriculture (SUA) and fellow firms when they have technical problems. On the other hand, cassava growers tend to depend on their fellow farmers and agricultural research institutes. The dairy farmers tend to rely on research institutions such as SUA for solving their technical problems. Fellow firms are also relied upon by collectors and processors of milk and sunflower oil processors. Milk processors also tend to rely on consultants who include those from local universities. Local institutions and consultants are preferred due to the fact that they are easily accessed and do not cost much. The University of Dar Es Salaam was also reported as being consulted by the manufacturers of agro processing equipment in the case of technical problems related to engineering and manufacturing procedures.

The use of Information and Communication Technology (ICT) was also investigated and it was found that most of the larger firms use ICT. Such ICT include mobile phones, computers and fax machine. All firms involved in milk processors and manufacturers of agro processing equipment, sunflower oil and cassava processors reported that they regularly use computers. In addition, the use of computers is common among cassava processors. The reported computer use is mainly on word processing and spread sheets. On the other hand, the use of Internet is limited. Internet use was reported mainly by milk processors, manufacturers of agro processing equipment, sunflower processors and some of the sunflower growers. Some of these firms such as Power Foods (cassava), ASAS (Dairy) and Intermech Engineering (Agro processing machinery) have created their own websites.

Regarding the issue of firms organizing themselves to identify and learn from relevant experiences, it was reported that firms have done this through:
(i) Establishing communication with foreign companies/organization
(ii) Putting in place Internet facilities or planning to have one in place
(iii) Creating own website/webpage to facilitate communication

4.7.1 Linkages on education and human resources
The survey showed that 15% of the firms employed graduates in their firms. Out of these only 20% reported getting the skills that they needed for their firms operations. Also, firms reported some differences in the way they perceive quality of graduates from Universities as compared to those from polytechnic and technical colleges. For example, it was reported that generally graduates from Universities lack practical skills although they seem to have competence on theoretical aspects. Among the shortcomings identified by firm from the graduates they employed are:

(i) Lack of practical skill
(ii) Over ambitious in terms of getting higher pay packages
(iii) They admire administrative duties than those related to their technical skills

Majority of the respondents reported that generally graduates as being source of innovation whether as employees, or on internship. However, some firms do not see a clear distinction between graduates being source of innovation or being just contributing to the firm’s innovations. It seems also from the firms that government is providing incentives to accept students. Firms reported that government provides incentives such as financial support to students. Such support enables students to work without the firm topping up any amount as allowances. This is an important incentive in the sense that firms benefit without having a need to pay allowance to student.

It was also reported that to a lesser extent the government has been providing incentives to upgrade workers skills. The specific incentives mentioned by the firms included opportunity to attend seminars and workshops organized by the Government and other public institution such as Universities. Eleven percent of the respondent cited government study tours both within and outside the country as another incentive. Also, it was mentioned that the government has facilitated firms to participate in the agricultural shows and seminars. During these events they are able to learn of new innovations and also capture new markets thus increase profit which may be re-invested in the form of financing new innovations.

On the other hand it has been observed that there is less consultations between the Universities and the firms with very few firms reporting as having
been consulted by technical institutions (including agricultural institutions) in setting their strategic priority. Equally low or lack of representations of the firm into institution’s governing bodies was reported. Certainly this situation is likely to affect the rate of success of activities which tend to be initiated by the Universities and which target the agribusiness firms. With respect to Universities in particular it was reported that to some extent UDSM and SUA in particular collect some opinion from firms including farmers’ groups. However, the level of private firm’s engagement still leaves a lot of room for improvement. Firms view close linkages with research or technical institutions and Universities as being vital for innovation and they expect these institutions to play a key role in enhancing innovations in their activities.

Suggestions on issues which the current education and research system need to ensure that the educational output is more relevant to them included:

(i) Incorporating more practical skills in their education system
(ii) Considering organizing farmer training as part of their extension/outreach activities
(iii) Enhancing technical and practical skills in the present teaching curriculums
(iv) Incorporating aspects of agribusiness entrepreneurship in their curriculum so as to make graduates more entrepreneur and therefore more innovative.

5. POLICIES AND INNOVATIONS IN AGRIBUSINESS

5.1 SUPPORTING POLICIES

According to this study, there are several policy issues that are in favour of private sector. For example, it was reported that policies that support marketing systems are supportive and encourage firms to innovate. Also, policies that streamline availability of loans from financial institutions are perceived favourably.

Many respondents pointed out that Agriculture and Livestock Policy by itself is highly commendable as it addresses many aspects that are sensitive amongst farmers. However, this is only if it was to be implemented effectively.
Conversely, land policy is also supportive especially when it comes to provision of title deeds whereas cooperative policy is supportive on issues of formation of co-operative societies. It was noted that effort has been made to empower Tanzanian communities to fight poverty through such strategies as stipulated in the Poverty Reduction Strategies Paper (PRSP), National Strategy for Growth and Reduction of Poverty (NSGRP) and Property and Business Formalization Program (PBFP). Moreover, respondents applauded government effort to open markets for investment in various sectors as explained in trade and investment policy. This has promoted more investment that may reflect more income and employment. In addition, respondents noted the Dairy Act of 2004 as being ideal in supporting dairy industry. The Act emphasizes on promotion of dairy industry and institutional support programs on livestock development. It also stipulates the role of dairy board despite of not mentioning clearly on strategic implementation of the programs.

Other policies such as the National Science and Technology policy are not widely known although they have potential of guiding firms as they innovate. This means more sensitization is needed with regard to understanding of the policy.

5.2 IMPEDING POLICIES

Similarly interviewees noted that there are several policies that impede and undermine innovation. For example, price for agricultural inputs is reported as being too high thus discouraging firms from investing and also there is inadequate marketing policy and guidelines. Furthermore there is inadequate infrastructure and high tax rates that offset the profit margin. Additionally, high running cost due to high energy costs also affects the performance of agribusiness firms.

The study also found that there is a weak link between National Agricultural Research System (NARS) with the agribusiness firms. This is due to the fact that research conducted in most NARS tends to put more emphasis on production aspects as opposed to post harvest issues. Moreover, it was noted that policies have been changing unnecessarily as was the case of the dairy industry sector. Such changes have caused inconveniences to the community and the nation at large due to loss of revenue and employment opportunities.
In addition, key informants cited poor milk consumption among Tanzanian despite having a policy that stipulates strategies for sensitizing milk utilization such as school feeding programs. They pointed out the main contributing factor is inadequate policy strategies and implementation. One of the problems is that there are many implementors who do not act on the way that reflect the objectives of the stated policies and there is no mechanism for measurement and evaluation relating to compliance to the set policy objectives.

Also, respondents cited existence of low understanding of policy issues among the community along the value chain. They added that it is difficult to obtain at least a copy of a policy in most Tanzanian villages where farmers and other stakeholders are, leading to more difficulties in implementation.

Another aspect is land policy whereby provision of title deeds to private investors in most cases has taken place without full participation of the community, resulting to creation of problems. Furthermore, conflicts between farmers and pastoralists were reported as a hindering factor.

It was reported that unclear distribution of responsibilities among the implementors results into confusion among the value chain actors. It was reported that Dairy Act of 2004 was regarded as being over regulated since about 17 organs in Tanzania are mandated to regulate the milk sector. As a results, dairy firms are responsible to Tanzania Dairy Board, Tanzanian Food Drugs and Cosmetic Act (TFDA) and local government authorities through Regional Administration and Local Government (RALG) just to mention but a few. This has created difficulties to milk entrepreneurs.

6. DRIVERS AND CONSTRAINTS ON AGRICULTURAL INNOVATIONS

It was observed form this study that the drivers of innovation include consumers, agribusiness firms themselves, Research and Development institutions which include Universities and research institutes. The drivers of innovations have some ongoing interactions. The issue of research institutions making consultations with agribusiness firm’s in setting research priorities was seen as being vital for enhancement of innovations in the
country. However, it seems from the obtained results that this is happening only at a very low level as little consultation was reported. It was noted that there is lack of agribusiness firm’s representation in the research institutions bodies such as councils and boards. However, it was noted that to a limited extent, research institutions do collect some data\(^5\) from agribusiness firms which they then use in setting their research priorities in addressing their research agenda.

The issue of firms testing new ideas and innovations before they are applied is also very important. Majority of the respondents reported carrying out some in-house research. However, the level and kind of research differed from one firm to the other. There are different types of in-house research that were reported including research on new marketing strategies for their products. Other important areas that have been researched included effective means of minimizing cost and research on new products. Other mentioned in-house research included that on the investigation of the impact of better feeding practices on milk yield as reported by dairy farmers. It was also reported that in-house research has contributed towards improved income through reduction of production costs, increased yields and increased quality.

It was also observed that majority of firms were not contracting others to conduct research on their behalf. However, local arrangements where joint projects could be initiated with local existing institutions were reported.

The study captured different ways in which firms seek to innovate in production and marketing. Some aspects include:

(i) Opening of new sales office in other towns where firms were not operating before
(ii) Another product innovation involved blending of milk with honey
(iii) Product diversification – e.g. seeds and cuttings supplies.
(iv) Promote sales of sunflower cake as animal feed.
(v) Buying sunflower direct from farmers
(vi) Designing and fabricating new machines

The low level of innovation is mainly contributed by such factors as:

\(^5\) Production, marketing statistics etc
(i) Inadequate funding for research  
(ii) Lack of enough time to conduct research  
(iii) Lack of knowledge to develop and conduct research queries  
(iv) Lack of institutional support in terms of research materials  
(v) Lack of manpower and equipment or facilities required for conducting research.

It was observed that majority of firms did not received any support as part of the incentive package for conducting private research. It was only few firms that reported to have received limited amount of assistance to support research.

7. DISCUSSION WITH GOVERNMENT OFFICIALS

Interviews on the influence of policy in Agribusiness Innovation were conducted with government officials dealing with policy issues in the Ministry of Agriculture, Food Security and Fisheries, Ministry of Livestock Development and Fisheries, Ministry of Communication, Science and Technology, Ministry of Industry Trade and Marketing and the Ministry of Economy, Planning and Empowerment.

It was observed that there is a need of strengthening linkages between policy makers and other stakeholders at the grassroots (target) level. This will help to address a number of constraints that are facing agribusiness innovation in the country. It was highlighted that lack of resources (funds and manpower) is one of the major limiting factors for Agribusiness Innovation. Lack of funds and human resources have contributed to other problems such as inadequate networking and poor linkages. This hinders local entrepreneurs including farmers and processors from being exposed to new ideas and innovations.

It was also pointed out that constraints facing agribusiness innovators could be minimized by empowering agribusiness entrepreneurs to access resources for their investments. The government has initiated some interventions such as the presidential fund to support local entrepreneurs in the regions. The government strives to reach more entrepreneurs and a pilot study is underway to engage community Banks in Mufindi, Mbinga and Mwanga districts by
linking them with farmers. On the other hand, the National Microfinance Bank (NMB) has also entered into agreement with the Ministry of Agriculture Food Security and Cooperatives to facilitate loan services to farmers. In addition, there are several ongoing initiatives such as those by the Ministry of Communication Science and Technology that is reviewing the Science and Technology policy to come up with Science Technology and Innovation Policy as well as its implementation plan and guidelines. Also, the MCST is currently drafting the National Research Policy. Other initiatives include plans to facilitate formation of an Innovation fund and reviewing the National Fund for Advancement of Science and Technology (NFAST). Improvement on the issuance of Science and Technology Awards (STA) is another area where the government is working on. In addition, the strategy devised by the Ministry of Agriculture, Food Security and Cooperative and supported by the Ministry of Industry, Trade and Marketing to waive tax related to goods intended for agro investment was noted.

It was further revealed that during 2004/05 the government had set aside about TAS 14.5 billion for fertilizer programmes, and Rukwa region alone was allocated about TAS 19.5 Billion for the same purpose in 2007. The main objective of this initiative was to subsidize fertilizers so as to attract more investment and hence more innovation in agriculture. It was noted however that such initiatives are limited by resource availability to cover operational costs like transportation. The Government is also conducting a pilot study in Kilombero and Mbarali districts to sell fertilizers to farmers under special receipt (voucher) system whereby linkage between NMB and farmers has been initiated with the aim of creating easy access to services. Such receipts (vouchers) would be recognized by NMB.

It was generally agreed that most policies such as SME and S&T are good and geared toward establishing better environment where opportunities for higher income generation and employment are created to the communities with poor resources. However, although most of the policies are in favor of agricultural innovation, there is a concern with the level of their implementation as noted earlier. The lack of implementation is contributed by inadequate follow up that is accelerated by inadequate government capacity in form of human resource and funds. Also, lack of national policy on Innovations and also
Intellectual Property Rights (IPR) tend to impede agribusiness innovations in the country. Furthermore, although we have Science and Technology policy but there is no strategic plan and guidelines on its implementation which deprive its effectiveness.

The perception from various Ministries on the issue of poor linkages was similar especially with regard to the root causes of this scenario with only slight variations. Respondent from MAFC supported observations raised by stakeholders (entrepreneurs) and further suggested that the main cause of poor linkages between the government and the private investors is inadequate extension workers to cater for a national demand. They noted that the situation has been aggravated by lack of continued capacity building through employment of extension officers for the past 15 years. Other contributing factors include lack of strong inter-ministerial networking at lower levels and lack of strong PPP strategies among the stakeholders which leads to poor involvement of key players from both private and public sectors. However, it was noted that the government is now focused on recruiting new staff to fill the existing gap and to start with the Ministry of Agriculture, Food security and Cooperative has revived its Agricultural colleges to ensure an enrolment of about 3000 candidates per year. Furthermore, the Ministry of Regional Government and Local Governance (TAMISEMI) is currently employing graduates from Universities such as SUA to take part in training in colleges and to provide extension services at the district level. Also, existing incentives through funds such as NFAST are being strengthened. Also it was reported that currently, there is a process of enacting a Science and Technology Law that will help in the implementation of Science and Technology policy.

Regarding support in research activities, respondents reported that the government has a priority in research activities in all aspects relating to development. They added further that government research institutions are given mandate to conduct research not only for public services but also to support private sector in achieving its objectives. However, more need to be done to support innovation through provision of incentives.

As for the challenges facing policy makers in creating awareness and promoting policy implementation, respondents noted inadequate funding as
being among the limiting factors. Lack of consistence in formulating the Ministries was also mentioned as contributing towards poor implementation of the policies. An example of the marketing section in the MITM was cited as been affected by these changes in setups of ministries. Another challenge is increasing funding for Science and Technology from the current levels which is much lower than the target which is at least 1% of the government budget. There is need to increase S&T representation in various governance bodies to enhance the current situation. This can be done through formation of Science and Technology committee in the parliament that may lead to speedier improvement of facilities and incentives for scientists.

8. CONCLUSIONS AND RECOMMENDATIONS

The study has shown that Tanzania has several good policies that recognize the importance of agriculture development but the main problem is on the implementation. Also the inadequate capacity to implement the current policies on the part of the government tends to aggravate the situation. It is therefore important that the policy implementation and evaluation is improved. Challenges such as review process to make policies more effective are important. Some of the policies are supposed to be translated into action programs at local government level. But capacities of these local government is small hence making policy implementation difficult.

The majority of the firms tend to seek different levels of new ideas and knowledge depending on the firm’s size as they innovate. Of the three value chains, dairy sub-sector is more innovative mainly since dairy industry has various bodies such as Dairy Board, TAMPRODA and TAMPA which tend to assist in the organization and support within the sub-sector. Examples of innovations that were observed include those related to technical, product and organizational aspects. In the quest to innovate, agribusiness firms tend to engage in networks and they create linkages. However, such linkages are still weak and they need to be strengthened through networking and collaborative research and dissemination of results into the communities. It was also reported that there are various important external actors that influence agribusiness firms in decision making including consumers, public sector, R&D institutes, input suppliers, extension services and business and farmers.
associations. It was observed from this study that in the case of Tanzania, the drivers of innovation include; consumers (markets), agribusiness firms themselves and R&D institutions such as the Universities and Research institutions.

8.1 RECOMMENDATIONS

(i) The private sector should be given more priority in the agricultural planning and government programs in general
(ii) The government should allocate more funds to support drivers of innovations such as R&D institutions such as the Universities and research centres
(iii) The government should strive to enhance the involvement of agricultural stakeholders in policy formulation, implementation and evaluation
(iv) There should be specific and defined policies and guidelines with clear roles of all implementors so as to avoid duplication of roles which brings confusion to the agribusiness firms.
(v) Comparison of the findings between countries and value chains need to be carried. This will enable comparison and sharing of experiences.

9. REFERENCES

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APPENDICES

Appendix 1: PARTICULARS OF THE INTERVIEWED AGRIBUSINESS FIRMS

<table>
<thead>
<tr>
<th>SN</th>
<th>Firms name</th>
<th>Principal activities</th>
<th>Contact person</th>
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<tr>
<td>1</td>
<td>INTERMEC ENGINEERING Ltd</td>
<td>Manufacturing of Agro-related machines and spare parts</td>
<td>Eng.Peter Chisawilo</td>
<td>P.O. Box 1278, Morogoro Tel. Phone, 0713 771182 Email: <a href="mailto:pchisawillo@yahoo.com">pchisawillo@yahoo.com</a></td>
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<td>2</td>
<td>VYAHUMU</td>
<td>Manufacturing of Agro-related machines and spare parts</td>
<td>Ms. Maria Elphasi</td>
<td>P.O. Box 1278, Morogoro Tel. Phone, 0784 415053 Email: <a href="mailto:vyahumu@yahoo.com">vyahumu@yahoo.com</a></td>
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<td>3</td>
<td>ABDALLAH SAID ENTERPRISE</td>
<td>Processing and marketing of Sunflower seeds</td>
<td>Said Bakhamis</td>
<td>P.O. Box 20 Kilosa, Morogoro Tel. Phone, 0784 450045</td>
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<td>4</td>
<td>TUIAMBOLE FARMING GROUP</td>
<td>Processing of Cassava</td>
<td>Alhaji Suleyman Kipandamkuya</td>
<td>P.O. Box 30112, Kidimu Kibaha, Pwani Tel phone: 0713692526</td>
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<td>POWER FOODS</td>
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<td>Mrs. Anna Temu</td>
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<td>8</td>
<td>FRESH FOOD PROGRAM</td>
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<td>Salvatory Kessy</td>
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<td>TANDAIRIES</td>
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<td>MATACHA ENTERPRISES LTD</td>
<td>Input supplying</td>
<td>Nuru Mohamed</td>
<td>P.O. Box 45903, Kilosa, Morogoro, Tel: 2623455</td>
</tr>
<tr>
<td>45</td>
<td>MANG’ANA AGRO VET</td>
<td>Input supplying</td>
<td>Mrs. Doroth Mang’ana</td>
<td>P.O. Box 30427, Kibaha, Pwani, Tel: 0754 314061</td>
</tr>
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<td>45</td>
<td>PEMBEJE O SHORP</td>
<td>Input supplying</td>
<td>Ally Chaliga</td>
<td>Kilosa, Morogoro, Tel: 0786 373 784</td>
</tr>
<tr>
<td>46</td>
<td>MAMKWE OIL MILL</td>
<td>Processing and Marketing of Sunflower seeds</td>
<td>Japhet Mamkwe</td>
<td>P.O. Box 299, Kilosa, Morogoro, Tel: 0784 611 002</td>
</tr>
<tr>
<td>47</td>
<td>MUSA MOSH FARM AND OIL MILL</td>
<td>Processing and Marketing of Sunflower seeds</td>
<td>Mussa Moshi</td>
<td>P.O. Box 181, Kilosa, Morogoro, Tel: 0786 297 807</td>
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<tr>
<td>48</td>
<td>FELICIAN FARM</td>
<td>Production and marketing of milk</td>
<td>Felician Felix Mohamed</td>
<td>P.O. Box 30112, Kibaha, Pwani, Tel: 0754 515 442</td>
</tr>
<tr>
<td>49</td>
<td>MILK TRADING</td>
<td>Collecting and marketing fresh milk</td>
<td>Dotto Papa Muya</td>
<td>Sokoine Area, Mvomero, Morogoro, Tel: 0754 628 987</td>
</tr>
<tr>
<td>50</td>
<td>GEORGE FARM</td>
<td>Production Processing and Marketing of Sunflower seeds</td>
<td>George Charles</td>
<td>P.O. Box 98, Kilosa, Morogoro, Tel: 0786 525744</td>
</tr>
<tr>
<td>51</td>
<td>Dr. SHEM’S FARM</td>
<td>Production and marketing Dairy products</td>
<td>Dr. Ndabikunze</td>
<td>P.O. Box 3000, SUA, Morogoro, Tel: 0754 397700, <a href="mailto:Bndabikunze@suanet.ac.tz">Bndabikunze@suanet.ac.tz</a></td>
</tr>
</tbody>
</table>
### Appendix 2: INTERVIEWEES WITH TRANSPORTERS

<table>
<thead>
<tr>
<th>SN</th>
<th>Contact</th>
<th>Company Name</th>
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<tbody>
<tr>
<td>1</td>
<td>Mr Ally Idd</td>
<td>Mwanga Transport</td>
</tr>
<tr>
<td>2</td>
<td>Mr Deo Chacha</td>
<td>Chamu Transport</td>
</tr>
<tr>
<td>3</td>
<td>Mr Mussa Iddi</td>
<td>Rahma Transport</td>
</tr>
<tr>
<td>4</td>
<td>Mr Saidi Maguruwe</td>
<td>Shubira Transport</td>
</tr>
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</table>

### Appendix 3: INTERVIEWEES FROM THE SELECTED RELEVANT MINISTRIES

<table>
<thead>
<tr>
<th>SN</th>
<th>MINISTRY</th>
<th>RESPONDENT</th>
<th>CONTACT ADDRESS</th>
</tr>
</thead>
</table>
| 1  | Ministry of Agriculture food Security and Cooperative | Ms. N.J. Simkanga      | Officer In charge - Sector Policy  
P.O Box 9192  
Dar Es salaam  
Phone No:0713562665/2864305  
E-Mail: njsimkanga@kilimo.go.tz |
<table>
<thead>
<tr>
<th>No.</th>
<th>Ministry of Economic Planning and Empowerment</th>
<th>Department of Economic Empowerment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Mr. Clifford K. Tandai</td>
<td>P.O. Box 9242 Dar Es Salaam</td>
</tr>
<tr>
<td></td>
<td>Mr. Robert Mtengule</td>
<td>Mobile: 0754 377295 E-Mail: <a href="mailto:ctandari@yahoo.com">ctandari@yahoo.com</a></td>
</tr>
<tr>
<td></td>
<td>Mr. John Moshi</td>
<td>Mobile 0713 503383</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mobile 0784 590764 E-Mail: <a href="mailto:jomoshi@plancom.go.tz">jomoshi@plancom.go.tz</a></td>
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</table>

<table>
<thead>
<tr>
<th>3</th>
<th>Ministry of Industry Trade and Marketing</th>
<th>Principal Economist – Policy Section</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mr. Chibole Manumbu</td>
<td>P.O. Box 9503 Dar Es Salaam</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Phone No: 0784 414 467/0773 390 417/0732 103 509</td>
</tr>
<tr>
<td></td>
<td></td>
<td>E-Mail: <a href="mailto:chibolema@yahoo.co.uk">chibolema@yahoo.co.uk</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4</th>
<th>Ministry of Livestock Development and Fisheries</th>
<th>In-charge - Sector Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ms. Leocardia Mkira</td>
<td>P.O. Box 9152 Dar Es Salaam</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Phone No: 0784 725 459 E-Mail: <a href="mailto:lkashindye@yahoo.co.uk">lkashindye@yahoo.co.uk</a></td>
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</tbody>
</table>

**Appendix 4:**

**SURVEY - QUESTIONNAIRE FOR AGRIBUSINESS INNOVATION IN SIX AFRICAN COUNTRIES**

*How National Public Policies Encourage or Impede Agribusiness Innovation*

*A Country Study - TANZANIA*
FIRM IDENTIFIERS:
Agro-Ecological Zone: ........................................
Firm’s Name: ...................................................... Code Nr: ........
Enumerator: ....................................................... Coordinator: ..............................................

Date of interview: dd mm yr
Name of firm interviewee: 
Address P. O. Box Tel/ Mob: 
Email: 
District/Town: 
Region: 

FIRM CHARACTERISTICS:

a) Scale of operation: .................................................................
   Number of employees: ............................................................
   Annual volumes produced or traded: ...........................................
   Gross sales: ........................................................................

b). Is the firm registered under the companies act, as a micro-enterprise, or not registered;
   ................................................................................................................
   for companies, is it publicly traded on the stock market or privately owned.
   ................................................................................................................

c). Describe the principal activities of the business: .........................
   ..............................................................................................................

d) Describe principal departments, eg sales, marketing, production, purchasing.....
   ..............................................................................................................

SECTION A: BUSINESS AND ENTERPRISE
A1. Has your firm tried new ideas or used new knowledge during the three years?
   For example, new crop variety, shipping techniques, etc. Yes/no............
   If yes, How did it do this?
   ..............................................................................................................
A2. Has your firm experimented with new forms of organizing activities or procedures during the past year? For example, new marketing arrangements or more efficient product processing. Yes/No ........... If Yes Explain:
.................................................................................................................................

A3. What do you see at present as the main impediments to improved productivity and/or sales by your firm?
.................................................................................................................................

A4. Do you face any legal constraints (related to labour, land, etc.) that affect your firm’s operations? Yes/No.............. If yes please mention:
.................................................................................................................................
What do you suggest to minimize those constraints ?.................................

A5. Are there any existing standards for weights, quality, environmental safety, etc.? Yes/No......................... If yes, are they enforced?
.................................................................................................................................

A6. Do government trade policies help or hinder the business prospects for your firm? Please explain.................................................................

A7. How would you characterize the attitude of public officials (Central, Regional, Municipal/ District) towards the challenge of promoting technological change in agriculture? Is it resistant, indifferent or supportive? What examples do you have to support this conclusion?
.................................................................................................................................

SECTION B: INNOVATION FINANCE, OUTPUTS AND MARKETS

B1. What are your sources of investment finance? Is the funding adequate? (If no, what are some examples of innovation that need funding?) What can be done to improve the situation?
.................................................................................................................................

B2. Does your firm put back money into its operations? Yes/no................. If Yes, How does your firm find the resources it needs to test and evaluate new ideas? Can you give an example?
.................................................................................................................................

B3. Are there internal or external incentives for firms like yours to update or expand their use of technology (e.g., loan guarantees, fertilizer subsidies, equipment subsidies, seed subsidies)? Yes or No:............ If Yes mention:
.................................................................................................................................
B4. Does government share the risks of new investments with firms in any way? If yes, how is it done?
............................................................................................................................................................

B5. What incentives are there for institutional collaboration with your firm? Does your firm cooperate with other firms or organizations in financing the development and testing of new products, processes or technologies? If so, please explain how this occurs.
............................................................................................................................................................

B5: Does the tax system encourage or penalize experimentation and risk taken by your firm? Yes/No:…… Please explain your answer?
............................................................................................................................................................

SECTION C: INNOVATION INTERACTIONS AND LINKAGES

C1. Who are the main external actors that affect your firm’s performance and influence its decision-making? (Public sector? Other firms? Collective or business associations?)
............................................................................................................................................................

For each identified actor, (i) characterize its main role from the perspective of your firm, (ii) assess its facilitating/impeding relationship to your business activities, and (iii) evaluate its performance in supporting technical change and innovation.

<table>
<thead>
<tr>
<th>Actor</th>
<th>Main Role</th>
<th>Facilitating / Impeding relationship</th>
<th>Its performance in supporting technical change and innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collection Business Association</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C2. Do you work in partnership with any other firms or agencies? Yes/No:…… If yes, Please mention what kinds of partnerships?.
............................................................................................................................................................

Are these partnerships facilitated by any government incentives or public agencies? Yes/No:………… If Yes please mention
............................................................................................................................................................
C3. What is the frequency of your firm’s contacts with Local Government, National Parliament, and Ministries?

<table>
<thead>
<tr>
<th>Local Govt</th>
<th>Tic</th>
<th>National Parliament</th>
<th>Tic</th>
<th>Ministries</th>
<th>Tic</th>
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<tr>
<td>Weekly</td>
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<td>Biannual</td>
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<td></td>
<td>Annual</td>
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<td>Annual</td>
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</table>

Who initiates these contacts?

What is their main purpose?

C4. Do you participate in networks or maintain occasional communications with any firms or organizations outside the country? Yes/No....
If yes please mention those organizations and the main purpose of these communications?.

C5. Does your firm participate in any business for collective associations? Yes/No....
If yes, what is the main motivation for doing so?

SECTION D: TRANSMISSION AND APPLICATION OF KNOWLEDGE

D1. Where does your firm obtain new knowledge relevant to your business operation and information on the market conditions which affect your firm’s competitive performance?

How helpful are these sources of knowledge?

D2. Does the government sponsor or facilitate agricultural expositions or other encounters among representatives of the agricultural value chain at which
information can be shared and new ideas disseminated? Yes/No ........ If yes please explain.

D3. What is your working relationship with public agricultural research centres in terms of access to knowledge and information?

What do you find to be the most useful aspects of these relationships?

D4. What is your working relationship with local or national universities in terms of access to knowledge and information?

What do you find to be the most useful aspects of these relationships?

D5. What is your working relationship with input suppliers in terms of access to knowledge and information?

What do you find to be the most useful aspects of these relationships?

D6. If there is a technical problem in your firm, to whom do you turn to?

Which organizations do you find particularly most helpful in this regard?

D7. To what extent does your firm make use of Information and Communications Technologies?

Does your firm have computers, Internet access, etc. for its operations and for what purposes are they used?

D8. How does your firm organize itself to identify and learn from relevant experiences outside the country?

D9. Does your firm share its knowledge and practices with others? Yes/No ........ If yes please explain.

SECTION E: Education and Human Resources

E1. Are you getting the skills you need from your graduates employees?
Is there a difference between the quality of graduates from Universities and those from Polytechnic or Technical colleges?

What is the most common shortcoming that characterizes new graduates hired by your firm?

Are new graduates a source of innovation?

E2. Does the government provide any incentives to firms like yours to accept student work placements? Yes/No....... If yes what incentives?

E3. Does the government provide any incentives to firms like yours to upgrade workers skills through training or other investments in skills development? Yes/No....... If yes please explain

E4. Do universities or technical institutes consult firms like yours in setting their strategic priorities, or incorporate representatives from private enterprise into their institutional governance bodies such as University Councils? Yes/No....... If yes please explain

E5. What can be done to make the education system (University/Polytechnic/Technical College) more relevant to your firm?

SECTION F: CREATION OF NEW KNOWLEDGE

F1. Do government research institutes consult firms such as yours in setting their research priorities, or incorporate representatives from the private sector into their governing boards? Yes/No

If yes please mention

F2. Does your firm conduct any research ‘in-house’? Yes/No....... If Yes, what type(s) of research ?

Also, what impact did it have for your business?

If No, do you pay others to conduct the research? Please mention

F3 Does your firm seek to innovate in any aspect of production or marketing? Yes/No............
If yes, how does it seek to do this?

Does it invest in research?

F4. What do you see as the main impediments to research activities within your firm?

F5. Does the government or other institutions (such as international donors) provide any incentives or support for private sector research?

F6. Are you aware of the National Science and Technology policy? Yes/No

If Yes, to what extent does National Science and Technology policy support the efforts of private firms in the agricultural sector?