Data Collection Survey on Promotion of Agro-industry and Industrial Human Resource Development in Tanzania

FINAL REPORT

October 2014

Japan International Cooperation Agency (JICA)

International Development Center of Japan Inc.

Overseas Merchandise Inspection Co., Ltd.

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Exchange Rate
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USD 1 = ¥ 109.45
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(JICA Rate)

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Draft Final Report

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Abbreviations and Acronyms

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3ADI:	African Agribusiness and Agro-industry Development Initiatives
ACT:	Agricultural Council of Tanzania
AfDB:	African Development Bank
AGITF:	Agriculture Input Trust Fund
AMCOM:	Agricultural Market Cooperative Societies
ASDP:	Agricultural Sector Development Programme
ASDS:	Agricultural Sector Development Strategy
ATC:	Arusha Technical College
BDG:	Business Development Gateway
BDS:	Business Development Service
BOB:	Bank of Baroda
BOT:	Bank of Tanzania
BOT:	Build Operate and Transfer
BRELA:	Business Registration and Licensing Authority
CAD:	Computer-aided Design
CBE:	College of Business Education
CEO:	Chief Executive Officer
CEZOSOPA:	Central Zone Sunflower Oil Processors Association
CIP:	Comparative Industrial Performance
CNC:	Computerized Numerical Control
Co., Ltd.:	Company Limited
CRDB:	CRDB Bank
CTI:	Confederation of Tanzania Industries
DANIDA:	Danish International Development Agency
DB:	Doing Business
DBSA:	Development Bank of Southern Africa Limited
DFATD:	Department of Foreign Affairs, Trade and Development, Canada
DIT:	Dar es Salaam Institute of Technology
DP:	Development Partner
DRC:	Democratic Republic of Congo
DSM:	Dar es Salaam
DTB:	Diamond Trust Bank
EAC:	East African Community
EMC:	Engineering, Manufacturing and Construction
EU:	European Union
FAO:	Food and Agriculture Organization
FMM:	Federation of Malaysia Manufacturers
FSDT:	Financial Sector Deepening Trust
FYDP:	Five Year Development Plan
GDP:	Gross Domestic Product
GOT:	Government of Tanzania
GREEN:	Global action for Reconciling Economic Growth and Environmental Preservation
HEST:	Higher Education, Science and Technology
HP:	Horsepower

HRDF:	Human Resources Development Fund
ICT:	Information and Communication Technology
IFAD:	International Fund for Agricultural Development
IFC:	International Finance Corporation
IFPRI:	International Food Policy Research Institute
IGC:	International Growth Centre
IIDS:	Integrated Industrial Development Strategy
ILO:	International Labour Organization
Inc.:	Incorporated
ISCED:	International Standard Classification of Education
ISCO:	International Standard Classification of Occupations
ISIC:	International Standard Industrial Classification
ISO:	International Organization for Standardization
ISOs:	Industrial Support Organizations
IUMP:	Industrial Upgrading and Modernization Project
JBIC:	Japan Bank for International Cooperation
JICA:	Japan International Cooperation Agency
KCB:	Kenya Commercial Bank
KOICA:	Korea International Cooperation Agency
LLPTI:	Leather and Leather Products Technology Institute (Ethiopia)
MAFC:	Ministry of Agriculture, Food Security and Cooperatives
MFI:	Microfinance Institution
MIC:	Middle Income Country
MIT:	Ministry of Industry and Trade
MIVARF:	Marketing Infrastructure, Value Addition and Rural Finance Programme
MLFD:	Ministry of Livestock and Fisheries Development
MoEVT:	Ministry of Education and Vocational Training
MUST:	Mbeya University of Science and Technology
MUVI:	Muunganisho wa Ujasiriamali Vijijini
MVA:	Manufacturing Value Added
NACTE:	The National Council for Technical Education
NAIVS:	National Agricultural Input Voucher Scheme
NBC:	National Bank of Commerce
NBS:	National Bureau of Statistics
NGO:	Non-governmental Organization
NMB:	National Microfinance Bank
NPL:	Non-performing Loan
NTA:	National Technical Award
NVA:	National Vocational Award
NVTI:	Nakawa Vocational Training Institute
OD:	Ordinary Diploma
ODOP:	One District One Product
OJT:	On-the-Job Training
OSHA:	Occupational Health and Safety Authority
PASS:	Private Agriculture Sector Support
POPC:	President's Office, Planning Commission
SACAW:	South Africa Council of Confederation of Agriculture
SACCOS:	Savings and Credit Co-operatives

SADC:	Southern African Development Community
SAGCOT:	Southern Agricultural Growth Corridor of Tanzania
SDL:	Skill Development Levy
SIDO:	Small Industries Development Organization
SME:	Small and Medium Enterprise
SUA:	Sokoine University of Agriculture
TADB:	Tanzania Agricultural Development Bank
TBS:	Tanzania Bureau of Standards
TCCIA:	Tanzania Chamber of Commerce, Industry and Agriculture
TCU:	Tanzania Commission of Universities
TDC:	Technology Development Centre
TELMS:	Italia-Tanzania Technical Education and Labour Market Support Programme
TEMDO:	Tanzania Engineering and Manufacturing Design Organization
TET:	Technical Education and Training
TFDA:	Tanzania Food and Drugs Authority
TIB:	Tanzania Investment Bank
TIC:	Tanzania Investment Centre
TIN:	Taxpayer Identification Number
TIRDO:	Tanzania Industrial Research and Development Organization
TLO:	Technology Licencing Office
ToT:	Training of Trainers
TPSF:	Tanzania Private Sector Foundation
TVET:	Technical and Vocational Education and Training
TVETDP:	Technical and Vocational Education and Training Development Programme
UNIDO:	United Nations Industrial Development Organization
URT:	The United Republic of Tanzania
UUT:	Upgrading Unit of Tanzania
VET:	Vocational Education and Training
VETA:	Vocational Education and Training Authority
VSO:	Voluntary Service Overseas
WB:	The World Bank
WRS:	Warehouse Receipt System

EXECUTIVE SUMMARY

1 Introduction

Entering the 2000s, Tanzania has experienced a steady economic development. Yet the poverty rate remains still high, and the efforts for poverty reduction have not seen significant improvement so far. The poverty in Tanzania largely stems from that of rural areas, and the growth in the agricultural sector, in which three quarters of the working population are engaged, is the key for poverty reduction. The Government of Tanzania (GOT) in Tanzania Mainland has set the policy for modernization and commercialization of agriculture; however, the progress has not been highly satisfactory.

Looking at the manufacturing sector, most of the manufacturers are micro and small enterprises. Thus, raising the levels of micro, small and medium enterprises is significant to induce further development and attract both foreign and domestic investments in the sector. On the other hand, those enterprises have not had enough opportunities to gain financial supports and business development services such as advice on technological development and business management. In addition, the absence of proper human resource development system in the sector hampers the growth of the industry.

Against this backdrop, this study aims at understanding the current situation of agro-industry promotion and analysing its challenges in order to consider possible future supports in the sector. In addition, the study also collects data on the current situation and the needs of industrial human resource development to examine possible interventions.

The study was conducted with the following procedure. First, the study team identified high potential agricultural commodities and conducted their value chain analysis to clarify the areas of intervention. Second, the team collected the data on present situation and constraints of agriculture and business finance as well as agro-industry promotion. Third, the team collected the data on present situation and constraints of industrial human resource development with focus on the manufacturing sector to understand the skill development needs. Finally, the team consolidated the findings and recommendations in terms of agro-industry promotion and industrial human resource development.

2 Agricultural Processing and Marketing

2.1 Data Collection of the Production, Exports and Imports

Food self-sufficiency in Tanzania has almost been achieved. However, the production is vulnerable to the weather largely due to its rain-fed agriculture system. Food deficiency is caused in the rural areas, because of the difference in their production yields and poorly developed infrastructure for agricultural marketing. The northern areas in Tanzania plunged into food shortage in 2010/2011 due to the short rainfall during the rainy season. The production trends of major agricultural products in Tanzania show significant increases for every crop except cassava, which decreased 0.88-fold from the amount in 2008/09 to that in 2012/13. Both maize and rice, major staple foods, increased 1.6-fold and sunflower seed and sesame increased significantly.

Traditional export crops such as cashew nuts, tobacco, dried peas, coffee and cotton occupy top positions in the export items of agricultural products every year. Sesame shows a rapid increase in export due to global demands for sesame seed in recent years. The export of processed agricultural products from Tanzania includes by-products such as bran of wheat and maize, cake of cotton and soybean seed, and cotton lint, but these products are not highly value added ones.

Though there are some variations in import amount by year, it can be estimated that 1 million tons of wheat, 200,000 tons of palm oil and 100,000 tons of refined sugar are continuously imported annually in Tanzania. Other constant imported products are barley and malt for beer production. Rice is also imported occasionally, but not in every year.

The import situations for major agricultural and processed agricultural products in neighbouring countries are very much similar to those to Tanzania; namely wheat, vegetable oil such as palm oil and refined sugar occupy the high position in every year. Kenya and Mozambique import some amount of rice every year. Thus, it is apparent that the strategy to challenge the development of agricultural and processed agricultural products for Tanzania is to increase sugar and sunflower oil production as import substitutes and rice for export promotion to neighbouring countries.

2.2 Agricultural Processing and Marketing (Value Chain Analysis of sample products)

Distinguishing features of Rice Value Chain

The per-capita consumption of milled rice in Tanzania exceeds 39.4kg per year, which is very high among African countries, but the rice mill industry is not well developed as yet. Commercial rice millers who buy paddy and sell milled rice are not well developed. The distinguishing features of the rice value chain situation can be summarized as follows: (1) Distribution cost of both paddy and milled rice is very high due to middlemen being actively involved, (2) Rice farmers normally sell their paddy individually and have little bargaining power with middlemen, (3) Most small scale rice mills are milling service providers, not commercial millers, (4) The majority of small rice mill machines are Chinese-made, one-pass type equipped with paddy husking and milling section in one body. Locally made rice mills are not available except for the ones converted from coffee mill machine, and (5) Most rice consumers pay little attention to the quality of rice.

Distinguishing feature of Sunflower Oil Value Chain

Sunflower seed production for oil extraction is expanding at an explosive pace. The distinguishing features of the sunflower oil value chain situation can be summarized as follows: (1) Middlemen for seed collection and oil distribution and processors encourage farmers for more production by supplying sunflower seed in advance, (2) Large scale oil mills are few but small scale oil mills are shooting up, (3) Large scale oil mills employ refining processes but small mills just make crude oil, (4) Some small scale oil mills have installed processing oil tanks for the de-acidification of fatty acids in the crude oil but are not commonly used yet, (5) Small scale oil mills sell oil cake as a feed material at low prices because no solvent extraction devices are available, and (6) Crude sunflower oil is acceptable for human consumption if it is consumed immediately after the extraction, however it can be oxidised and may cause health hazard when time passes. That is the reason why internationally refining process is required for sunflower oil. The current TBS sunflower oil standard permits production and sale of crude sunflower oil as a tentative measure to protect the newly born infant industry, however, the industry should equip refining facilities to market the products in distant market. The establishment of an oil millers' cooperative to construct a large scale and modern oil refining plant is recommended.

Distinguishing feature of Hides & Skins and Dairy Products

The tanning ratio of raw hides and skins is only about 40% in Tanzania. Currently 6 tanneries are working but only 2 factories out of the total produce finished leather in 2013. The other 4 companies just produce wet blue for export. The export levy was abated to 0% for wet blue and 60% for dried raw hides and skins in July 2014 from the previous 90%. MLFD is afraid of being short of the supply of finished leather to the domestic leather market. However, the local demands for genuine leather in consideration of the competition with synthetic leather have not been clearly evaluated. The distinguishing feature of the hides and skins industry is that the majority of their operations is tanning service for hide exporters instead of commercial operation. Ethiopia has the largest livestock population in African countries. The government levies export tax of 150% on the selling price of wet blue hides and skins in order to increase domestic finished leather production since January 2010.

There were 62 milk processing companies listed in all regions of Tanzania in 2011/12 and their capacity utilization is calculated as low as 30% on average. Most fresh milk is basically obtained from grazing cows, not from ranches. Because the grazing zones move around during the rainy season and dry season, it is difficult to collect fresh milk continuously. The distribution of fresh milk in simple plastic bags at ambient temperature is more common than those in sealed pouches which are pasteurized and kept in refrigerators. The per capita milk consumption in Tanzania is estimated at 43 litres per year. This amount is only 20% of recommended amount by FAO. There is plenty of scope for increasing milk consumption in Tanzania, but an increase in collecting centres/points is urgently required.

2.3 Agricultural Inputs

Agricultural machinery (Tractor, Power Tiller, Sprayer, Water pump, etc.)

Mechanization of agriculture plays an important role in agriculture commercialization but agricultural mechanization in Tanzania is low. The number of tractors is calculated as 7 units per 100 square km in Tanzania, while Kenya and South Africa have 27 units and 43 units per 100 square km, respectively. Major dealers import large tractors ranging from 50 to 75 HP from Europe, the United States and India. Most buyers of tractors are large farms but middle size farms also started buying similar large tractors with financial support from SACCOS, etc. recently. The marketing style of large tractors is mostly direct sale to the end users by dealers. Small machines such as power tillers, chemical sprayers, etc. are handled by wholesalers who buy machines from

the agents then sell them to end users directly. The middlemen for these transactions are few.

Agriculture and food processing machines

In general, large scale agricultural and food processing factories employ large imported machines and equipment from developed countries and they normally are satisfied with the performance. They can also cope with some mechanical troubles within their factories with their employees. They keep spare parts in stock periodically. On the other hand, small-scale agricultural and food processing factories employ machines and equipment locally made or imported from China at relatively inexpensive costs. A lot of troubles occur with those machines, and some processors are not satisfied with the performance, durability or availability of necessary spare parts. There are many kinds of locally produced machines in markets produced by TDC of SIDO, or small manufacturers. Locally fabricated machines are made by metal sheets and shaft processing. In order to meet local production of more complex, sophisticated and robust machines and equipment at reasonable prices, adoption of proper cast iron parts should be developed.

Agricultural inputs (seed, fertilizer, agrichemicals)

During 2010/11 season, 80% of the total commercial seed was supplied from the private sector and the remaining was taken by the public enterprises. A lot of foreign seed companies have business bases in Tanzania. Despite the increase of available commercial seed, only 27% of cropped area for maize is estimated to have used improved seed. In rice cultivation, this proportion is much lower; only 1% of cropped area for rice is estimated to be planted with certified seed. The seed to grain price ratio for maize hybrid seed is 10:1, which is very high. There are a lot of issues to be improved, such as lack of farmers' awareness about the use of improved seed for higher yields, quality issues of seed in the markets, etc.

There was a sharp increase in total chemical fertilizer use in recent years in Tanzania but the average fertilizer application rate of 19.3 kg/hector is still low. In comparison, Kenya and South Africa's fertilizer application rates are 100 kg/hector and 120 kg/hector respectively. The reason for low fertilizer use is that practical information among farmers about the proper use of fertilizer is limited and many farmers need to travel long distances to buy fertilizer because dealers mainly have shops in district towns, not in villages. Most chemical fertilizer is imported but there are several local producers

working in Tanzania. The use of agrichemicals increases year by year along with increasing vegetable production, especially in the areas near the main cities. All agrichemicals are imported. Input dealers with shops in district towns distribute seeds, fertilizers and agrochemicals by cash sales to farmers, normally. Farmers in rural villages are in a difficult position to be able to access these agricultural inputs.

3 Agriculture and Business Finance

3.1 Financial Landscape of Tanzania

Tanzania's banking sector is dominated by few banks. Three big banks in terms of total assets and loan portfolio, namely; CRDB Bank (CRDB), National Microfinance Bank (NMB) and National Bank of Commerce (NBC), account for 44 percent of total assets owned by 47 banks and 45 percent of the average loan portfolio as of 2012. Taking top ten plus government owned Tanzania Investment Bank (TIB) into account; the ratio will go up to 75 percent and 72 percent respectively. The oligopolistic nature of financial institutions is one of the reasons of the high spreads obtained by commercial banks. According to the Economic Bulletin 1st quarter of 2014, commercial banks' overall average 12 month deposit rate is 11.21 percent while average overall lending interest is 16.47 percent as of March 2014. The spread between 12 month deposit rate and one year lending rate as of March 2014 is 3.53 percent. According to the same Bulletin, out of total commercial banks' total loan outstanding amounts of 10.6 trillion Tsh, loans provided to agriculture, hunting and forestry and manufacturing sectors are 1.1 trillion Tsh (10.2 percent) and 1.2 trillion (10.9 percent) respectively. Consumer and trade loans dominate significant shares, such as 1.8 trillion Tsh (16.9 percent) and 2.1 trillion Tsh (19.9 percent) respectively.

3.2 Present situation and constraints associated with agriculture finance

CRDB, NMB and TIB are the major agriculture loan providers. CRDB and NMB have provided various products targeting for cash crops such as sugar, coffee, sunflower, tobacco, cotton, etc. tailored to agriculture through 'out-growers' scheme and 'warehouse receipt system'. CRDB has provided microloans to small scale farmers and traders through its associated SACCOS and the subsidiary CRDB Microfinance Bank. NMB has reached over 500,000 individual small scale farmers with the Kilimo Account Programme and collaborated with the government to provide credit to agro-input dealers in rural areas within the framework of the 'National Agricultural Input Voucher Scheme' (NAIVS). TIB is a wholly owned government development bank and has provided loans

to agricultural producers through the off balance asset of 'Agriculture Window' since 2010.

Definition of 'agriculture loans' varies according to banks. As of December 2013, CRDB's agriculture loans are 379 billion Tsh and those of NMB are 35 billion Ths. TIB has 120 billion Tsh loan portfolio for both agriculture production and processing and marketing and 42 billion Tsh for Agricultural Window at off balance basis.

About 50 to 60 percent of loans are provided to crop purchasers and those provided to agro-processing enterprises is limited in Tanzanian agriculture value chain. There are several constraints associated with agriculture finance. First, agriculture is regarded as risky business in Tanzania and very limited numbers of financial institutions are providing financial services. The provided services are mainly for working capital purpose whose maturity is less than 1 year with high interest rates which agriculture producers could not obtain from daily operation. Second, agriculture value chain is not well developed. Loans provided to crop purchasers dominate the agriculture loans, which prevent the improvement of quality and productivities of producers who could not access to appropriate input credit and development of emerging agro-processing industries. Third, although there are some potential producers dealing not only with production but also with processing and other value chain activities, their operating scales are still limited and 'mind set' of those enterprises is requested by financial institutions to lend money in order to expand the production. 'Mind set' means that borrowers need to have financial discipline to repay the borrowed money on time, to use the loans exactly for what they requested and not for any other purposes, and have clear visions how to utilize the money for what purposes and how to repay the debts before borrowing money from banks.

3.3 Present situation and constraints associated business finance

According to the enterprise survey targeted at 70 enterprises, 50 to 60 percent of those employing more than 10 people and 60 percent of those whose annual turnover is more than 1 billion Tsh could access to financial services. On the other hand, the accessing rates decreased to less than 10 percent in the case of SMEs employing less than 10 people and whose annual turnover is less than 1 billion Tsh. Enterprises have encountered difficulties associated with procuring raw materials, purchasing and renovation of machinery and equipment.

Banks are rather reluctant to lend medium to long term loans as they raise mainly short term funds deriving from the short term deposits. From SME's point of view, there

are several problems to borrow money from banks such as high interest rates, high required amount of collateral which they cannot provide and long procedures from loan application to the disburse of loans. Even though facing difficulties, it was confirmed that SMEs had great demand for medium to long term loans for purchasing machinery, equipment and production lines.

Tanzania Investment Bank (TIB) has provided medium to long term loans to various economic sectors ranging from 100 million Tsh to 34 billion Tsh. TIB's total on balance asset is 410 billion Tsh in 2013. TIB has supported formalization of such informal enterprises by utilizing Technical Assistance Fund for SME by examining business development plans, market values of the products and market information in line with entrusting relevant organization such as TIRDO to examine the factory layout based on the government regulation.

SIDO is preparing a credit guarantee for SMEs which have participated SIDO's training program and been proved to be creditworthy.

There are several constraints for development of agro-industrial enterprises in Tanzania. First, very limited numbers of financial institutions such as TIB, CRDB and NMB have provided medium and long term loans necessary for procuring production lines, machinery and equipment. Second, while Tanzania's agro-industrial enterprises could be classified into limited numbers of large scale enterprise and countless numbers of small and medium scale ones employing less than 10 people, financial institutions are rather reluctant to provide loans to the latter, which prevents them from growing to larger scale enterprises generating employment opportunities and adding values to agricultural produce. Third, interest rates as high as 20 percent are heavy burden especially for SMEs which could not borrow money from formal banks and could not help borrowing from other money lenders at higher interest rates. On the other hand, concessional loans targeting for such SMEs as SIDO's are limited. Forth, the issue of lack of collaterals needs to be considered from two ways. On one hand, borrowers need to understand that they cannot avoid taking risks associated with providing requested collaterals to banks based on BOT's regulation. On the other hand, the delayed formalization of land title deeds prevents many producers from borrowing from banks.

4 Agro-industry Promotion Measures

4.1 Supportive measures for agro-industry

Investment promotion measures

The Tanzania Investment Centre (TIC) is expected to coordinate, encourage, promote and facilitate investment in Tanzania. Facilitation of investment is among the core operations of TIC. As a 'one-stop-shop', TIC assists investors obtain all business permits, licenses and visas. TIC also promotes investment by arranging various kinds of incentives, including tax exemption. TIC now put much emphasis on the promotion of investment to the SGCOT area (Southern Agricultural Growth Corridor of Tanzania).

Progress of investment promotion measures

The business environment of Tanzania has been examined and ranked internationally in the World Bank's Doing Business (DB) Reports. The country's overall ranking business environment, 'Ease of Doing Business', was not improved in the past few years. Its rank was 128th in 2011, but this dropped recently and become 145th in 2014. Among the main indictors, the decrease in the ranking of 'Getting credit' was the largest. Improving the business environment is among the high prioritized issues for the government and its development partners. In response to the deteriorating rankings in 'Doing Business' survey, the government adopted a roadmap focused on short, medium and long-term reforms.

Another initiative to examine the business environment of the country is the competitiveness study by UNIDO. The UNIDO study uses CIP (comparative industrial performance) index and compares the industrial competitiveness of selected countries including Tanzania. Out of 133 countries in the study, Tanzania ranked the 106th in 2010. Its rank was slightly improved from the 110th in 2009.

Agro-industry promotion measures

As an initiator of WRS, IFAD has proposed to utilize WRS for cash crops and food crops. With WRS, farmers are now benefitting from price increase, good quality and keeping significant volumes of crops. Instead of selling the crops at the lowest prices immediately after the harvest season, farmers now could keep their crops in a good manner and sell them whenever they need money.

One District One Product (ODOP) approach was introduced to the country by SIDO. This approach encourages the district authority to concentrate its development effort to

promote the most promising product in the district. The constraints of promoting this product were analysed throughout its value chain.

Public and private organizations have attempted to support cluster development with support from DPs. First, micro and small enterprises in the same business are encouraged to relocate their workplaces to the industrial estate. Then, the cluster's actors such as enterprises, their associations, support institutions, etc., are given training, workshops or study tours to enhance their institutional capacity. It is noted, however, that relocation of enterprises to an industrial estate is not the necessary or sufficient conditions of establishing the cluster.

4.2 Landscape of local agro-industry

Ministry of Industry and Trade (MIT) conducted the survey of industrial enterprises in 2011. The data of those industrial enterprises employing over 10 were collected. In total, the data of 733 establishments were shown in the survey report. This survey shows us a comprehensive picture of industrial enterprises, including those in agro-industry, regarding the location, the size of employment, the amount of value added, and so on.

4.3 Reviews of cooperation programmes by development partners

IFAD

IFAD has implemented two programmes to enhance the promotion of agro-industry, which are MUVI and MIVARF. Both programmes focus on the development of micro and small business in rural area. Increase in household income in the area is much emphasized. The shared concept of the two programmes is the need of business support services to the rural producers. Importance of improving rural infrastructure is also highlighted in the two programmes. Strengthening rural finance is another essential focus of the MIVARF programme.

UNIDO

UNIDO has been implementing two programmes that are closely related to the promotion of agro-industry, which are called '3ADI' and 'IUMP'. Both programmes target small and medium enterprises (SMEs). Enhancing linkage of SMEs in the value chains is the shared concept in the two programmes. Connection of SMEs with larger enterprises is promoted by upgrading their industrial capacities. Enhancing linkage with the domestic or even export markets is supported.

AfDB

AfDB jointly finances MIVARF with IFAD. This bank also supports Agriculture Sector development Programme (Phase II). Apart from these sets of intervention, the bank does not implement programs that directly focus on promotion of agro-industry. The following two programmes are expected to support the expansion of agro-industry by enhancing rural finance as well as by developing industrial skills: 1) Small Entrepreneurs Loan Facility II; and 2) HEST TVET – Skill Development for Labour Market.

TPSF/ WB

Tanzanian Private Sector Foundation (TPSF), established in 1998, is a APEX organization of private business associations. TPSF implements several programmes to support private enterprises, micro and small business in particular in collaboration with development partners. World Bank's Private Sector Competitiveness Program (2008-13) is an example in which TPSF made significant contribution. TPSF was in charge of the 'Enterprise Development' component of the programme.

5 Industrial Human Resource Development

5.1 Background

Workforce in the manufacturing sector

In 2012, 17,654,675 were employed in Tanzania Mainland. The largest proportion of the employed persons goes to the agriculture sector (66.2%) followed by wholesale and retail trade (9.9%). As for the manufacturing sector, the number of employed persons is 555,000, which accounts for 3.1% of the employed population. Looking at the number by subsector in the manufacturing industry, food industry accounts for 38.2% of total employment, followed by textile (12.5%). Meanwhile, furniture, leather and machinery and equipment do not absorb significant number of employment.

Constraints for human resource development in the manufacturing sector

The manufacturing industry requires a broad range of human resources when broken down to subsectors. Yet the core skills that cut across all the subsectors are considered to be mechanical engineering, electrical engineering and electronics engineering. As the Government of Tanzania (GOT) promotes industrialization of the country in the long run, the needs for the skilled labour in those specialities are expected to grow with the introduction of modern machinery and plant automation.

In the study, the following issues are identified as the major constraints for human resource development in the manufacturing sector.

- ***Provision of highly skilled labour is limited.***
  Especially, lack of technicians in mechanical engineering, electrical engineering and electronics engineering is a serious challenge. First of all, technical colleges that provide those engineering courses for technicians (i.e. ordinary diploma courses) are limited in number. In addition, those institutions gradually place emphasis on providing degree courses, which is designed for providing engineers, and there is a concern that the provision of technicians might be overlooked in the future.
- ***Technical level of vocational certificate and diploma holders are not sufficient.***
  This is largely due to 1) poorly maintained machinery used for practical work of the courses, and 2) lack of instructors' exposure to modern technology. As private enterprises gradually introduce modern machinery in their workshops and plants, students also need to acquire updated skills to be better prepared for the work environment.
- ***Importance of in-service training is not much addressed.***
  From the viewpoint of private enterprises, the skills acquired through vocational and diploma courses are not sufficient as mentioned above. As a result, the employers need to retrain their employees for accommodating their skill needs. Yet the provision of in-service training is not sufficient at the moment. Therefore, provision of in-service training should be further encouraged in addition to improve the skill levels of students in academic courses.

5.2 Current status and challenges for industrial human resource development

Government policies for industrial human resource development

The Tanzania Vision 2025 set the goal of becoming semi-industrialized country and attaining a middle income country status by 2025. The government subsequently formulated the first Five Year Development Plan (FYDP, 2011/12-2015/16) to realize the vision. Referring to the selected model middle income countries, the FYDP set specific objectives for increasing the number of highly skilled workers and called for a massive investment into higher education.

This policy direction is also reflected into the policies in the education sector. In 2013, the MoEVT formulated a programme document for 'Technical and Vocational Education and Training Development Programme' (TVETDP), a five-year programme to increase the number of highly skilled labour. TVEDP also set the target figures of

enrolments to monitor the progress of the programme.

In the same vein, the MIT formulated 'Integrated Industrial Development Strategy 2025' and identified the lack of middle-level skilled labour as a constraint for achieving long-term industrial development. It also suggested an effective use of in-service training for skill development in the manufacturing sector.

Provision of industrial human resource development

(1) TVET System

In Tanzania, there is a Technical and Vocational Education and Training (TVET) system aimed at industrial human resource development. TVET in Tanzania consists of Technical Education and Training (TET) and Vocational Education and Training (VET). VET provides mainly middle-skilled labour or artisans while TET mainly provides technicians.

(2) Intake of TVET

In 2011, a total of 1,313,138 students graduated from primary schools (Standard 7) and lower secondary schools (Form 4). Among them, those who proceed to respective further education are 608,457. For the remaining 704,682 graduates, proceeding to VET institutions and TET institutions are only left for further learning. Meanwhile, intake capacity of the VET intuitions and TET institutions is limited and not enough to absorb those graduates.

(3) Major institutes for industrial human resources

1) VETA training centres

VETA is in nature an accreditation authority for all VET institutions. At the same time, VETA itself operates 27 vocational training centres. They cover 14 sectors including electrical, mechanical, automotive, ICT, and lab technology. The sectors are further divided into specific trades, and VETA students learn a trade for 2-3 years to obtain the level 3 certificate.

2) TET institutions

There are three key TET institutions that specializes in OD courses of mechanical engineering, electrical engineering and electronics engineering; namely, Dar es Salaam Institute of Technology (DIT), Arusha Technical College (ATC) and Mbeya University of

Science and Technology (MUST). They also provide bachelor's degrees in some specialities, but the main focus in terms of enrolment remains the provision of technicians through OD courses.

Challenges for providing industrial human resources

(1) Quantity

1) Supply

As for the provision of artisans, 759 VET institutions are accredited by VETA. The enrolment in 2011 is 121,348 in total. Looking at the composition by subsector, the enrolment for ICT related courses is the highest (26 %) followed by auto motive (19%). Electrical and mechanical subjects combined account for only 7% of total enrolment (8,028 trainees). On the other hand, there is a recent move where VETA training centres are starting to provide OD courses in several subjects.

As for the provision of technicians, there are 349 TET institutions. Yet there are only 5 TET institutions that provide any of mechanical engineering, electrical engineering and electronics engineering courses. Further, the institutions that cover all three specialities are limited to two institutions: ATC and DIT. Besides them, MUST and St. Joseph University (private) have OD courses for all of the three subjects. More than half of students (55% of 99,177 students) are enrolled in social sciences, business and law field. Mechanical engineering, electrical engineering and electronics engineering courses are categorized into the Engineering, Manufacturing and Construction (EMC) field, and account for only 5% in enrolment (4,987 students). This is largely due to the higher investment costs for the EMC courses compared to other social science courses. Another reason is the stricter entry requirements for EMC courses. Thus, the TET institutions that provide EMC courses are limited in number. ATC, DIT and MUST together provide more than 60% of total enrolment in the EMC field. In other words, these three institutions are the major source of OD-level technicians.

TVETDP set detailed targets of additional skilled labour in the medium and long-term. With this projection, the enrolment in OD courses of the EMC field should increase sevenfold in 5 years, whereas VET enrolment 2.8 times in the same period. The implication of this goal setting is significant, especially when considering the limited source of OD course provision in the EMC field. While some TET institutions are shifting their focus from OD courses to degree courses, there is a need for either 1) expanding the existing institutes' capacity of accepting more students or 2) seeking

alternative sources of providing technicians.

2) Demand

VETA conducted a tracer study of VET graduates on their employment status. According to the report, 66% of graduates were employed at the time of study while 34 % of graduates were either unemployed or inactive. Among the employed, 43% were paid workers, which means about 28% of the VET graduates secured paid employment. From the interviews with VET institutions and employers, an increasing demand of VET graduates is observed. Application for VETA training centres is increasing dramatically. Demand for the graduates is also increasing for the trades related to the construction, gas, mining and hotel industries.

There is no statistical data for substantiating the demand of technicians in the labour market. The government has yet to conduct a tracer study on how many graduates of degree and OD courses have been employed in each sector. However, the result of enterprise survey suggests that the medium-sized enterprises especially have difficulty in securing OD holders in comparison with the ideal ratio of artisans, technicians and engineers. Although the enterprises are willing to employ diploma graduates as production manager or supervisor, they could hardly find qualified ones in the labour market. As an alternative, they employ Standard 7, Form 4 or VET graduates and train them to fill those positions.

(2) Quality

According to the interviews with private enterprises, there is a room for improving the quality of VET and OD courses, especially for practical work. For instance, DIT uses the 30-60 years old lathe machines and milling machines, some of which are out of order, and the spare parts are not available in the market for such old models. Another issue is the introduction of new technology. As the middle to large-sized enterprises are starting to introduce modern and automated machinery, the facilities and equipment at VET and TET institutions cannot meet the skill needs of those enterprises.

To address the skill gap, the institutions include a module of industrial attachment (internship) in their curricula. Yet the linkage with private enterprises is rather weak for most of the institutions, and there is a room for further coordination with the industry to reflect the industry’s skill needs into their curricula and actively promoting what they can provide to the industry using their technical expertise.

Limited number of instructors is another issue for poor quality of practical work.

Ideally, the instructor-student ratio is 1:3 for engineering courses. For the visited institutions, however, the ratio ranged from 1:10 to 1:20 due to an increasing number of intakes.

(3) Skill Needs

1) Micro and Small Enterprise

Micro and small enterprises engage in small-scale production mainly for the sales at local market. Their employees consist of Standard 7 or Form 4 graduates while the management could have higher educational background.

Basic technical skills are required for their production. In most cases, the skills are acquired on the job. For the expansion of their business, however, the enterprises require further skill enhancement. Since the financial base is limited, they largely rely on public organizations or development partners for skill enhancement training. For meeting regulatory and quality requirements, the needs are limited to minimal to comply with government regulations (e.g. food safety, occupational safety or quality assurance). Such needs are also met with the training conducted by public organizations. For instance, SIDO organizes a package of training for addressing those skills in collaboration with business associations, regulatory authorities, and development partners.

2) Medium Enterprise

Medium enterprises envisage the sales in the domestic market, and in some cases foreign markets. As such, their operation is market-oriented and in mass production. They employ degree holders for the management and some engineers specialized in related fields. If the engineers are not available in Tanzania, they employ expatriates for the task either on a permanent or contract basis. OD holders and VET graduates are also employed to be supervisors and mid-skilled labour but limited in number.

For the enterprises that introduced modern machinery, there is a need for the technical skills on its operation and maintenance. However, such technicians are not readily available in the labour market. Consequently, they rely on the supplier’s training for operation and maintenance. Quality assurance and compliance with set standards are crucial for those enterprises, for their sales extend countrywide up to foreign markets. Therefore, their factories and products have to meet all the standards and regulations required by the clients. At the moment, they largely rely on regulatory authorities, such as TBS, TFDA and OSHA for quality assurance, and public laboratories, such as TIRDO

for the testing and accreditations of their products.

3) Large Enterprises

Large enterprises also target both domestic and foreign markets, and introduced high-tech machinery for their production. For the leading companies with employment of around 500 or more, automation system is operational in their plants. As such, those enterprises usually make a contract with the supplier for the maintenance and repair of their machinery and plant. Also, their engineers and technicians should be highly specialized group of people in specific fields, who are usually not available in Tanzania. Thus, they largely rely on the expatriates to fill the gap.

The training is normally coordinated within the enterprise, either through its own programme or the contract with private training providers. Affiliate enterprises also support the provision of training. Quality assurance and compliance with safety regulations are the key concerns for those companies to meet the requirements of their domestic and foreign clients. Again, the quality control is dealt within the enterprise or commissioned to private laboratories.

6 Conclusion

6.1 Agroindustry promotion: findings and recommendations

Cross cutting challenges of agro-industry

Agroindustry in Tanzania is one of the most promising sectors reflecting the very competitive agricultural production in the country. However, the enterprises engaged in this industry are facing various constraints.

First, micro and small enterprises face severe constraints in operating their business, such as limited access to appropriate workplace and difficulty in getting packaging materials. Moreover, their effort of producers to increase quality is often undermined, because the targeted consumers are sensitive on price and pay little attention to the quality of products. Besides, as the agro-processing enterprises are often engaged in only the processing part of the value chain, their incentive of processing enterprises to increase the quality of product can be weakened. The existence of uncertified food producers is another concern.

Medium scale enterprises in agro-industry face constraints in operating their business, including the shortage of technicians who are sufficiently equipped with

practical skills, and the limited access to investment capital. Their retained profit is not sufficient for major investment, and the bank interest rates are too high for long term borrowing.

Large scale enterprises also have their own constraints with regard to human resources in particular. They need qualified engineers and technicians in specific fields, such as factory automation with ICT, but they are not easily available in the country.

Proposed supportive measures: Technical

(1) Policy dialogue and monitoring

Exchange of ideas among the government authorities and the business sectors is extremely important. The platform of the dialogue should be carefully structured. The appropriate monitoring and reporting framework should also be needed. Good practice of such dialogue framework in other countries should be looked into in order to design the most suitable framework to the country. Appropriate structure that meets the needs of the country should be developed.

(2) Cluster development

Establishment of industrial estates or incubators to accommodate micro and small enterprises is a good initial step to develop the cluster. More and more workplaces should be established throughout the country. External financial support is required to support this dissemination. Besides, good partnership among members should be enhanced, and careful arrangement to cope with unexpected troubles should be developed.

(3) Food safety

There are many processed foods which are produced by uncertified establishments. Poor quality foods produced by inappropriate workplaces could cause health hazard to consumers. Public authorities should make the utmost effort to control the uncertified producers, and also help them obtain the certificate. The institutional capacity of these authorities should be enhanced to examine a number of small establishments in the country. Their effort to train small business owners to get the certificate should be supported.

Proposed supportive measures: Business Finance

Some private FIs and government FIs such as TIB have provided medium and long term loans to small and medium scale enterprises for procuring machinery, equipment and production lines. However, the field analysis reveals that small and medium scale enterprises have limited access to existing financial services and even those who have potential to grow could not easily access to the existing medium and long term loans, which is one of the serious constraints associated with agro-industry development in Tanzania.

In order to help solve the limited access problem, it would therefore be appropriate for development partners to consider about providing (i) medium and long term loans targeting for small and medium scale enterprises which have potential to grow but could not access to existing financial services due to lack of collateral and low capability to bear the high interests and (ii) partial credit guarantee schemes which would strengthen credit worthiness of enterprises. The loan would be soft loan with concessional lending conditions. Asset financing needs to be further considered in the long run.

(1) Provision of medium-long term loans for agricultural capital investment (facility and equipment)

Among the borrowers of agriculture value chain, loans provided to crop purchase are estimated to be around 50 to 60 percent at present in Tanzania. Loans provided to agro-industrial enterprises, especially small and medium scale ones, are limited while they have potential forward and backward linkages among the industries and could generate new employment opportunities. Therefore, it is rational to provide financial support targeted these small and medium scale agro-industrial enterprises.

On the other hand, the study team is concerned about the limited numbers of formally registered agro-industrial enterprises. Taking the enterprises employing more than 10 persons, the total number is still less than 250 according to UNIDO's report. The impact of the loans will be limited if they are provided to the small number of formally registered agro-industrial enterprises.

Providing financial and technical support could be a way to incorporate such small and medium scale enterprises as beneficiaries of the loan scheme. NMB and TIB have provided loans not only to established formal small and medium scale agro-industrial enterprises, but also to those which are informal but have potential to grow by helping them formalize for the purpose of developing the agriculture value chain. These

attempts are useful for the Tanzanian economy as a whole in the medium to long run as agro-industry could be further developed as a driving force.

It is necessary to consider ways not to enhance moral hazard of the borrowing small scale enterprises should development partners provide concessional loans utilising ODA.

(2) Private sector investment finance

'Private sector investment finance' is one of the cooperation modalities of development partners. It aims to stimulate economic activity and improve the living standards of people in developing countries through equity investments and loans for projects undertaken in developing countries by the private sector. It could be worth considering that investing in equity of and providing loans to financial institutions which have provided loans to agro-industrial SME which are informal but have potential to grow.

(3) Credit guarantee scheme

SIDO is now considering provision of credit guarantee scheme to support financing access of SMEs which have been trained through its training programs and proved to be creditworthy. Taking the lessons obtained from past experiences such as BOT's SME Credit Guarantee Scheme into account, the scheme is being designed in a way that FIs could smoothly withdraw the guaranteed amount from the planned credit guarantee fund once the guaranteed clients fail to repay for a predetermined period.

When formulating credit guarantee schemes, it is important to design a scheme which will not discourage repayment of borrowers by taking the first mortgage and will not reveal the fact that guaranteed money is provided by development partners. In order to remove the difficulties associated with practical implementation of the scheme, it is necessary to test the design of such a scheme with the private FIs before launching in order to evolve the schemes if necessary so that private financial institution could utilize the schemes effectively. The high guarantee fees are considered to discourage the actual utilization of the scheme, therefore, it is necessary to set an affordable guarantee rates that could make the scheme sustainable as well.

6.2 Industrial human resource development: findings and recommendations

In the previous discussion, the following points are identified as the constraints of human resource development in the manufacturing sector.

- Provision of high skilled labour is limited.
- Technical level of vocational certificate and diploma holders are not sufficient.
- Importance of in-service training is not much addressed.

To address these issues, the following measures are recommended.

(1) Increasing the number of engineers and technicians

Tanzania Vision 2025 and the FYDP set the goal of attaining the status of middle income country by 2025. Based on this strategic objective, TVETDP (2013/14-2017/18) set the goal of increasing the enrolment of VET institutions from 154,103 to 661,193 and that of TET institutions from 113,393 to 400,949 in the five years. Total cost is estimated at 4.4 trillion Tsh for the five-year period, of which 1.6 trillion Tsh exceeds the budget estimation. To fill the gap, AfDB will finance 83 billion Tsh (5 % of total deficit), and yet this financial cooperation alone would not be sufficient to achieve the target enrolment.

Therefore, it is proposed that GOT allocate further financial resources for the increase of TET institutions' intake capacity. This allocation is aimed at the provision of facilities and equipment to the TET institutions. Focus should be made on the degree and OD courses of mechanical engineering, electrical engineering and electronics engineering, which is directly contributing to the provision of engineers and technicians in the manufacturing industry.

(2) Retraining Programme at Nakawa Vocational Training Institute in Uganda

The teaching capacity of the instructors at VET and TET institutions is limited largely due to 1) the use of poorly maintained machinery and 2) their slow adaptation to new technology. As for the former, introduction of new machinery should be promoted with the government's support. As for the latter, a retraining programme of instructors on new technologies should be conducted.

One option is to provide such a retraining programme at Nakawa Vocational Training Institute (NVTI) in Uganda. NVTI has become a leading vocational institution in East Africa with continuous efforts for improving its courses since the 1960s. The salient features of NVTI are 1) extensive focus on practical work, 2) teaching on work ethic, 3) strong connection with private enterprises and provision of in-service training for their workers, 4) adaptation to up-dated technology to accommodate industrial needs, and 5) establishment of effective management system.

As such, the instructors of VET and TET could learn a lot from NVTI experience in terms of how to accommodate the needs of students and the industry. Thus, it is proposed to implement a retraining programme for VET and TET instructors and their management personnel.

The programme sends the instructors and the management teams of VETA regional centres and TET institutions to the NTVI's in-service training. While NVTI is a vocational institution in nature, the training methods of practical work can be informative and applicable for the instructors of TET institutions. As for the management, the NVTI runs a diploma course for institutional management, and several components of the course can be included in the programme for the management of VET and TET institutions. Also, the participants could learn the NVTI's approach to develop a strong connection to private enterprises, which many of VET and TET institutions lack in Tanzania. By learning and actually applying NVTI's approach to build strong connection with the private sector, TVET institution could benefit from increasing additional financial source through providing in-service training to private companies, which could enhance financial sustainability of the institutions in the long run.

(3) Support for In-service Training Programmes at Key Institutions

In general, private enterprises consider TVET institutions as the place where students learn basic technical skills and knowledge. Practical skills are mainly acquired through on-the-job training or in-service training. As such, there are specific needs addressed by private enterprises in the interviews and survey. To meet such demands, in-service training programmes could be an option to accommodate the specific needs of private enterprises.

Thus, it is proposed to establish short-term in-service training programmes at selected training institutions, such as ATC, DIT, MUST, TEMDO, and TIRDO. These institutions would be selected based on their specialty and comparative advantage. Since the connection between training institutions and the industry is rather weak, the training programmes should involve the organizations which have good relationship with the industry as an intermediate, such as CTI and TCCIA. These organizations could also take part in the training, adding business component. To combine the technical and managerial skills, the training would be more attractive to private enterprises.

While the initiative should be primarily taken by the direct stakeholders (training institutions, private sectors and economic organizations), there should be the government's intervention to set up an enabling environment.

First, there needs (i) a support for initial investment for necessary equipment, facilities and (ii) training for instructors on the use of new machinery and teaching methods for practical work. Second, there is a need for setting up a financial scheme to support the in-service training programmes. For this issue, the government is advised to consider the use of Skill Development Levy (SDL) as a subsidy for the training.

CHAPTER 1: INTRODUCTION

1.1 Outline of the study

1.1.1 Background

Entering the 2000s, Tanzania[1] has experienced a steady economic development with annual GDP growth rate at around 7%. Yet the poverty rate is still high at 28.2% in 2011/12 although the rate improved from 33.6% in 2007[2], and the efforts for poverty reduction has not seen significant improvement so far.

The poverty in Tanzania largely stems from that of rural areas, and the growth of the agriculture sector, in which three quarters of the working population are engaged, is the key for poverty reduction. Agricultural production in Tanzania is heavily dependent on rain-fed cultivation by smallholders, and stable production and earnings can hardly be achieved. As for traditional cash crops such as coffee and tea, the exports are increasing; however, that does not change the economic status of smallholders, who account for most of Tanzania's 6 million households engaged in agriculture[3]. Compared to Tanzania's real economic growth of 7%, the growth rate of agriculture sector remains low at 4%. Thus, the Government of Tanzania (GOT) has set the policy for modernization and commercialization of agriculture although the progress has not been highly satisfactory. The challenges for agricultural modernization and commercialization include poor storage and processing technology, insufficient quality standards, and underdeveloped distribution system and agricultural finance, as well as weak producers' associations.

Looking at the manufacturing sector, most of the manufacturers are micro and small enterprises. Thus, raising the levels of those enterprises is important to induce further development and attract both foreign and domestic investments in the manufacturing sector. On the other hand, those enterprises have not had enough opportunities to gain financial supports as well as business development services such as advice on technological development and business management. The government has supported the industry through Small Industries Development Organization (SIDO) with such activities as technical and business advice, provision of business premises, and small financing scheme for the small and medium enterprises (SMEs). Besides, the

[1] In this study, the area of study is limited to Tanzania Mainland. Thus, the word 'Tanzania' is used to mean 'Tanzania Mainland' throughout the document unless otherwise specified. Likewise, 'the Government of Tanzania' refers to the Government of Tanzania Mainland.
[2] NBS 'Key Findings: 2011/12 Household Budget Survey Tanzania Mainland' (2013).
[3] NBS 'The 2012 Population and Housing Census of Tanzania'. Database is available from: www.nbs.go.tz

government is improving the business environment through the development of basic infrastructure, industrial clusters, and financial support system. However, the absence of proper human resource development system in the sector, especially medium and high skilled labour, hampers the growth of the industry.

Japan has set the Country Assistance Policy for Tanzania (June 2012). One of its priority areas is economic growth towards poverty reduction, which consists of supports for agricultural and industrial development. In the agriculture sector, Japan has continuously supported the strengthening of Agricultural Sector Development Programme (ASDP) as well as irrigation development. In the technical cooperation project called 'Project for Supporting Rice Industry Development in Tanzania' (since 2012), the idea of value chain is introduced to look at not only production but also subsequent supply chain (storage, processing, distribution, and sales) as scope of the project.

In the industrial development sector, a JICA advisor for industrial development has worked with the Ministry of Industry and Trade (MIT) since 2008 for supporting the promotion of private sector-led economic development and employment creation, and formulation of Integrated Industrial Development Strategy 2025 (IIDS). Also, 'The Project on Strengthening Manufacturing Enterprises through Quality and Productivity Improvement (KAIZEN)' started in 2013 to support the improvement of productivity and product quality for the SMEs.

Against this backdrop, JICA has decided to collect necessary information and acquire analytical viewpoints for formulating future projects focusing on the promotion of agro-industry.

1.1.2 Objectives and scope of the study

(1) Objectives

'Data collection survey on promotion of agro-industry and industrial human resource development in Tanzania' (hereinafter, referred to as 'the study') aims at understanding the current situation of agro-industry promotion and analysing its challenges in order to consider possible future supports in the sector. In addition, the study collects data on the current situation and the needs of industrial human resource development to examine possible interventions. As mentioned below (1.1.5 of this chapter), the area of study is limited to Tanzania Mainland.

(2) Definition of key terminologies and scope of the study

In this study, **'agro-industry'** is defined as post-harvest activities only. It does not look into agricultural production itself as shown in the figure below.

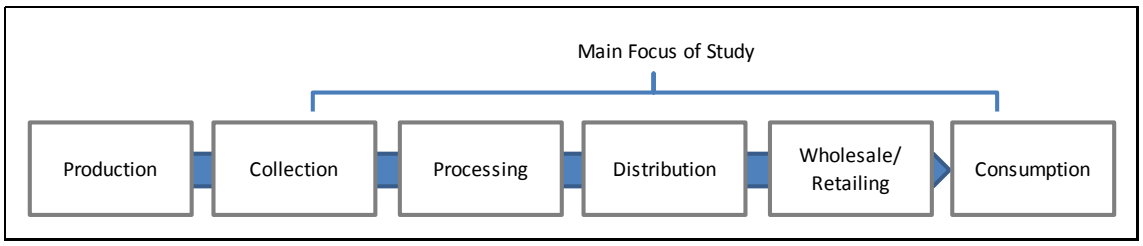


Figure 1-1: Focus of the study

'Formal enterprise' refers to an enterprise that has 1) physical address, 2) business license issued either by a local government authority or Business Registration and Licensing Authority (BRELA), and 3) Taxpayer Identification Number (TIN)[4]. Accordingly, **'Informal enterprise'** refers to an enterprise that does not satisfy those criteria. While the issue of formalization is touched on in Chapter 2 and 3, the study does not particularly focus on this issue for proposing agro-industry promotion measures.

The study defines the micro, small, medium and large enterprises in accordance with the classification articulated in 'Small and Medium Enterprise Development Policy' (MIT, 2003): Micro enterprise with 1-4 employees; Small enterprise with 5-49 employees; Medium enterprise with 50-99 employees; and Large enterprise with 100 or more employees. Following this definition, **'small and medium enterprises (SMEs)'** in this study refer to those enterprises with 5-49 employees. In the analysis of private enterprises, the study team included both large and SME enterprises.

1.1.3 Methodology

(1) Data collection methods

The data collection methods employed in this study include 1) collection of statistical data, 2) literature review of the documents of preceding studies and projects, 3) interviews with stakeholders (government agencies, development partners, private enterprises, financial institutions, training institutes, etc.), 4) field visits, and 5) enterprise survey.

[4] This definition is in accordance with the direction presented by Tanzania Revenue Authority for starting business in Tanzania (http://www.tra.go.tz/index.php/starting-business).

During the field visits, the study team collected data and information from 21 enterprises and 2 associations in agro-industry in the selected regions, including Morogoro, Dodoma, Arusha, Moshi, Mbeya and DSM[5]. At DSM, the study team attempted to get information from the large size enterprises, and the CTI helped the study team to contact these enterprises providing its member list. Outside DSM, the field visits were mostly arranged by the SIDO regional offices. Consequently, the study team had a good access to the small and medium enterprises in these cities.

The following table shows the list of enterprises that provided information to the study team.

Table 1-1: List of enterprises providing information for the study

Name	Location	Persons engaged	Main products
Rice milling			
Wella Highland Mills	Mbeya	N.A.	Rice
Kimo Super Rice Mills	Dodoma	4	Rice
Mbeya rice mill cluster	Mbeya	−	Rice
Edible oil			
Nyemo	Dodoma	10	Sunflower oil
Three Sisters	Dodoma	10	Sunflower oil
Mt. Meru Millers	Moshi	400	Sunflower oil
Mbeya sunflower producers association	Mbeya	−	Sunflower oil
Murzah Oil	DSM	874	Edible oil
Dairy			
Shambani Graduates	Morogoro	27	Milk, yogurt
Tan Diaries	DSM	26	Milk, yogurt, cheeze
Meat			
Tanzania Meat company	Dodoma	120	Beef, mutton
Tandan	DSM	33	Pork, pork sousage
Flour			
Muzizima flour mil	DSM	120	Flour
Coast Millers	DSM	100	Flour
Beverage			
Gardeners	Morogoro	14	Fruit juice
Banana Investment	Arusha	181	Alcohol beverage
Tanzania Distillers	DSM	180	Wine, spirits
Sugar			
TPC	Moshi	1,900	Sugar
Leather			
Kihonda shoe making	Morogoro	4	Leather shoes, bags
Phillys	Dodoma	3	Leather shoes, bags
Himo tanners	Moshi	70	Wet blue, finished leather, leather shoes, bags
Agro processing machinery			
Intermech	Morogoro	15	Edible oil extracting machine
Nandora	Moshi	50	Maize milling machine, carriage

In addition to the field visit, an enterprise survey was conducted to collect additional information of private enterprises in terms of production and marketing, finance, and human resource development (see Appendix 1-2 and 1-3 for the questionnaire used and summary of its results). The survey was conducted with a sample size of 70 in the period from July 7 to August 16, 2014. The details of the respondents are shown below. The respondents are selected mainly from the enterprises engaged in food processing (such as rice milling, sunflower oil processing and dairy processing) and leather processing. In addition, metal processing, furniture making and other manufacturing

[5] As the focus of the study is post-harvest activities, which mainly take place in urban areas, the study covered the private enterprises situated in the listed cities.

enterprises are also included to understand their financial and human resource needs.

Table 1-2: Respondents of Enterprise Survey

Total	70
City (number)	Dar es Salaam (18), Morogoro (11), Dodoma (8), Arusha (8), Moshi (8), Mbeya (17)
Size of Enterprise * (number)	Large (11), Medium (9), Micro and Small (50)
Type of Business (number)	Food Processing (42), Leather Processing (12), Metal Processing (5), Furniture Making (6), Other Manufacturing (5)

* Classification for size of enterprise is based on 'Small and Medium Enterprise Development Policy' (MIT, 2003): Micro and small: 1-49 employees; Medium: 50-99 employees; and Large: 100+ employees

(2) Study Procedure

The study was conducted with the following procedure. First, the study team identified high potential agricultural commodities and conducted their value chain analysis to clarify the areas of intervention (Chapter 2). Suggested approaches to promote each subsector are presented after value chain analysis in Chapter 2. Second, the team collected the data on present situation and constraints of agriculture and business finance as well as agro-industry promotion (Chapter 3 and 4). Third, the team collected the data on present situation and constraints of industrial human resource development with focus on the manufacturing sector to understand the skill development needs (Chapter 5). Finally, the team consolidated the findings and recommendations in terms of agro-industry promotion and industrial human resource development (Chapter 6).

1.1.4 Period of Study

July 2014 to October 2014.

1.1.5 Target Area of the Study

Tanzania Mainland.

1.1.6 Related Ministries

- Ministry of Agriculture, Food Security and Cooperatives (MAFC)
- Ministry of Industry and Trade (MIT)
- Ministry of Livestock and Fisheries Development (MLFD)
- Ministry of Education and Vocational Training (MoEVT)

CHAPTER 2: AGRICULTURAL PROCESSING AND MARKETING

2.1 Data Collection of the Production, Exports and Imports

2.1.1 Production trends of major agricultural products

The national land of Tanzania in total is 94.5 million hectors and about half of this area is considered as arable. The actual area under cultivation is 9.5 million hectors, which is only 10% of the total land area. The irrigated area is about 450,000 hectors in 2013, which accounts for only 4.7% of the total cultivated area.[6]

Food self-sufficiency in Tanzania has almost been achieved. However, production is vulnerable to the weather, largely due to its rain-fed agriculture system. Food deficiency is caused in the rural areas, because of the difference in their production yields and poorly developed infrastructure for agricultural marketing. The northern areas of Tanzania plunged into food shortages in 2010/11 due to the short rainfall during the rainy season.[7] The production trends of major agricultural products in Tanzania show significant increases for every crop except cassava, which decreased to 88% from the amount in 2008/09 to that in 2012/13, as shown in Table 2-1 below. Both maize and rice, major staple foods, increased 1.6-fold and sunflower seed and sesame increased significantly.

Table 2-1: Production Data of major crop in Tanzania

Unit: '000Tons

Crops	2008/09	2009/10	2010/11	2011/12	2012/13	Rate of increase	Main producing region
Maize	3,326	4,733	3,541	5,104	5,356	1.61	Mbeya, Ruvuma, Kigoma, Njombe, Iringa
Rice (paddy)	1,335	2,650	2,248	1,801	2,167	1.62	Morogoro, Shinyanga, Mbeya, Ruvuma, Tabora
Sorghum	709	799	808	839	832	1.17	Dodoma, Singida, Mara, Mbeya, Lindi
Wheat	82	62	113	109	104	1.27	Manyara, Kilimanjaro, Njombe, Mbeya, Arusha
Beans	774	868	676	1,199	1,114	1.44	Mbeya, Rukwa, Kigoma, Tanga, Iringa
Cassava	5,916	4,548	4,647	5,462	4,755	0.88	Pwani, Kagera, Mtwara, Kigoma, Tanga
Sunflower seed	311	313	781	1,117	2,625	8.44	Njombe, Dodoma, Rukwa, Sinfida, Iringa
Sweet potato	1,417	2,424	3,573	3,018	3,470	2.45	Mbeya, Kagera, Simiyu, Geita, Shinyanga
Irish potato	861	1,473	1,556	1,235	1,760	2.04	Njombe, Mbeya, Iringa, Kilimanjaro, Tanga
Sesame	243	348	357	456	1,050	4.32	Lindi, Morogoro, Pwani, Dodoma, Ruvuma

Data by MAFC

Note: Rate of increase shows the increment from 2008/09 to 2012/13

[6] MAFC (2013) and FAO Tanzania Country STAT. Available from: http://countrystat.org/home.aspx?c=TZA
[7] World Bank (2012).

As for agricultural processed products, maize and sorghum flour and milled rice and sunflower oil hold important positions. For the consumption of sweet potato, Irish potato and cassava, direct consumptions by boiling and baking instead of processing are main methods. In the case of cassava, making cassava flour after drying for increasing weight of maize 'Ugali' is common. Cassava starch is also produced for industrial use and export.

2.1.2 Export situation of major agricultural and process agricultural products

Traditional export crops such as cashew nuts, tobacco, dried peas, coffee and cotton occupy top positions in the export items of agricultural products every year. Sesame showed rapid increase of export by more than two-fold, from 31K tons (thousand tons) in 2008 to 76K tons in 2011, due to global demands for sesame seed in recent years. The export of processed agricultural products from Tanzania has by-products such as bran of wheat and maize, cake of cotton and soybean seed, and cotton lint. Table 2-2 shows main export agricultural commodities from Tanzania[8].

Table 2-2: Export data by commodity and quantity (tons) and value (US$1,000)

2007	2008	2009	2010	2011
Wheat Bran	Dry Peas	Cashew nuts	Cashew nuts	Wheat Bran
95,744tons	72,290tons	95,577tons	102,707tons	100,646tons
5,469K$	36,024K$	68,380K$	98,603K$	7,699K$
Wheat Flour	Wheat Bran	Cotton lint	Wheat Bran	Cashew nuts
89,691tons	61,662tons	78,029tons	98,529tons	99,425tons
41,088K$	5,821K$	89,038K$	4,246K$	105,699K$
Wheat	Wheat Flour	Sesame seed	Wheat Flour	Sesame seed
89,679tons	58,493tons	71,803tons	84,904tons	76,017tons
30,956K$	36,672K$	64,530K$	43,588K$	73,077K$
Maize	Cotton lint	Wheat Bran	Dry Peas	Tobacco
87,076tons	54,116tons	71,636tons	83,112tons	74,022tons
11,954K$	80,893K$	4,485K$	45,473K$	106,585K$
Raw Sugar	Cashew nuts	Cottonseed cake	Tobacco	Dry Peas
61,757tons	52,743tons	60,765tons	69,095tons	68,379tons
20,408K$	42,871K$	6,984K$	129,187K$	34,338K$
Coffee, green	Tobacco	Coffee, green	Sesame seed	Wheat Flour
51,909tons	45,910tons	56,022tons	65,708tons	65,906tons
113,064K$	177,752K$	111,233K$	50,103K$	40,071K$
Tobacco	Coffee, green	Dry Peas	Cotton lint	Gluten
40,743tons	45,356tons	55,881tons	55,305tons	61,906tons
94,822K$	100,001K$	33,667K$	72,428K$	2,324K$

Note: Tobacco is unmanufactured, Cashew nuts are with shell. K$ means 1,000US$.
Source: FAO Country STAT

On the other hand, the export data from MAFC shows major agricultural and processed products as per Table 2-3 below. Wheat bran, a by-product of flour mills, is

[8] According to Monitoring and Evaluation Section, MAFC, annual fluctuation of production is due mainly to unstable weather conditions.

not included (different from FAO data).

Table2-3: Export data of agricultural and processed agricultural products

Unit: K tons

Crops	2008/09	2009/10	2010/11	2011/12	2012/13
Maize	12.9	0.5	1.2	157.5	33.8
Rice (milled)	0.4	8.0	70.6	13.6	30.6
Sorghum	3.7	0.6	1.4	11.4	--
Wheat	--	0.1	--	0.1	0.2
Beans	3.1	--	--	9.0	9.7
Irish potato	7.5	0.1	8.0	8.5	0.3
Wheat flour	57.1	85.6	81.8	62.2	64.2
Maize flour	5.7	7.6	28.3	4.3	2.1
Potato flour	0.3	--	0.1	0.3	0.1
Potato starch	0.0	0.0	0.0	--	--
Corn starch	--	--	0.0	1.7	10.6

Source: MAFC

2.1.3 Import situation of major agricultural and processed agricultural products

Though there are some variations of import amounts by year, it can be estimated that 1 million tons of wheat, 200K tons of palm oil and 100K tons of sugar are continuously imported annually in Tanzania. Other imported products are barley and malt for beer production. Rice is also imported occasionally, but not in every year.

Table2-4: Import data by commodity and quantity (tons) and value (US$1,000)

2007	2008	2009	2010	2011
Wheat	Wheat	Wheat	Wheat	Wheat
813,513tons	452,124tons	826,300tons	1,039,812tons	1,071,813tons
233,496K$	181,972K$	209,314K$	291,943K$	404,381K$
Palm oil	Palm oil	Palm oil	Palm oil	Palm oil
323,226tons	183,016tons	169,473tons	212,351tons	227,171tons
227,240K$	195,457K$	106,148K$	173,263K$	274,556K$
Sugar, refined	Sugar, refined	Sugar, refined	Sugar, refined	Sugar, refined
112,255tons	66,361tons	99,903tons	132,032tons	161,573tons
40,570K$	28,461K$	46,584K$	74,405K$	108,293K$
Sugar, raw	Malt	Wheat flour	Wheat flour	Wheat Flour
71,157tons	41,145tons	47,912tons	65,928tons	37,254tons
21,833K$	37,726K$	17,224K$	31,132K$	21,743K$
Fatty acids	Fatty acids	Malt	Malt	Malt
40,190tons	36,199tons	29,614tons	36,348tons	31,773tons
24,739K$	25,552K$	26,665K$	27,073K$	23,665K$
Malt	Molasses	Fatty acids	Soybean oil	Beverage
33,995tons	23,994tons	17,658tons	18,928tons	17,920tons
19,071K$	4,526K$	8,882K$	19,384K$	17,141K$
Soybean oil	Maize	Wheat Bran	Maize	Barley
17,302tons	20,468tons	17,135tons	18,588tons	15,137tons
15,943K$	8,694K$	950K$	15,676K$	34,576K$

Note: K$ means 1,000US$. Source: FAO Country STAT.

2.1.4 Import situation of major agricultural and processed agricultural products in neighbouring countries.

The import situations of major agricultural and processed agricultural products in neighbouring countries are very much similar to those of Tanzania: namely wheat, vegetable oils such as palm oil and sugar occupy a high position in every year. Kenya and Mozambique import some amount of rice every year. Thus, it is apparent that the strategy to challenge the development of agricultural and processed agricultural products for Tanzania is to increase sugar and sunflower oil production as import substitutes, and rice for export promotion to the neighbouring countries.

Table2-5: Import data by commodity and quantity in the neighbouring countries

Kenya	Uganda	Rwanda	Malawi	Zambia	Mozambique
Wheat	Wheat	Maize	Wheat	Palm oil	Wheat
4,302Kton	1,603Kton	225Kton	792Kton	201Kton	1,944Kton
Maize	Palm oil	Wheat	Maize	Wheat	Maize
2,355Kton	775Kton	160Kton	117Kton	65Kton	425Kton
Palm oil	Sugar refined	Sugar, raw	Tobacco	Soybean oil	Palm oil
2,274Kton	475Kton	125Kton	114Kton	58Kton	363Kton
Sugar refined	Sorghum	Palm oil	Soybean oil	Food Prep.	Sugar refined
779Kton	152Kton	110Kton	80Kton	38Kton	228Kton

Note: The 2nd lines show 5 years accumulation of imports from 2007 to 2011. K ton means thousands tons.
Source: FAO country STAT

2.2 Agricultural Processing and Marketing (Value Chain Analysis of sample products)

This study aimed at understanding the current situation of agro-industry promotion and analysing its challenges in order to consider possible future supports in the sector. In this regard, data collection and analysis on agricultural products such as cereal grains, oil seeds, traditional export crops and livestock products were focused. Among them, the study team identified rice, sunflower oil and livestock products (hides & skins and milk) as high potential ones for further analysis from the viewpoint of value addition, import substitution or export to the neighbouring countries[9].

2.2.1 Rice

The per-capita consumption of milled rice in Tanzania exceeds 39.4kg per year, which is very high among African countries, but the rice mill industry is not well developed as yet. Distinguishing features of the rice value chain situation are as

[9] Other products identified in the discussion include sugar and red meat.

follows:

(1) Distribution cost of both paddy and milled rice is very high due to middlemen being actively involved. As the industry develops and commercial millers increase, this transaction cost could be reduced.
(2) Rice farmers normally sell their paddy individually and have little bargaining power with middlemen. The collective marketing of paddy utilizing WRS, etc., as per the government and NGOs' encouragement, is not well accepted by farmers yet.
(3) Most small scale rice mills are milling service providers, not commercial millers, who purchase paddy and sell milled rice.
(4) The majority of small rice mill machines are Chinese-made, one-pass type equipped with paddy husking and milling section in one body, and cost about 5 million Tsh per unit. The milling capacity is 1,000kg/ hour on paddy input. There are no locally produced rice mill machines available except for the ones converted from coffee mill machines (called 'Engerburg type rice mill').
(5) Small scale rice mills are now adding screen type rice grading machines for broken rice separation. But the combination of screen type separator and drum type length separator, which is a common rice grading system of large scale rice mills in Asia and the Unites States/EU, have not yet been introduced.
(6) The government had owned large scale rice mills, then transferred to the private sector in around year 2000. Those mills had full scale modern facilities imported from Germany and Japan, such as in Kapunga Rice Estate and Wella Highland Mills in Mbeya region, Rahim Rice Flour Mill Ltd in Morogoro region and Kilimanjaro Paddy Hulling in Kilimanjaro region. They were equipped with Receiving Hopper, Paddy Cleaner, De-stoner, Paddy Husker, Paddy Separator, 2 to 3 units of Rice Whitening and Polishing machines for series operation, Rice Grading System of Sieves and Length Separator and Auto Packaging machines. They also had sun-drying yards for wet paddy and storage. Except for Kapunga Rice estate, they nowadays operate mills as milling service providers because they are weak in the marketing ability of their own milled rice.
(7) Most rice consumers pay little attention to the quality of rice. In other words, they are more concerned about price rather than quality although there are some quality-conscious consumers especially in urban areas. Rice is displayed at retail shops in 100kg rice bags and is sold by measuring. Consumers check the price before purchase.
(8) In some rural cities, retailers have started broken rice separation manually for making 2 to 5kg transparent plastic bags, using a manual heat sealer for super

quality rice.

(9) In supermarkets in Dar es Salaam, 'super rice' from Mbeya packed in transparent small bags are sold at relatively expensive prices. But 'super rice' still contains some broken rice and the bags and their printing are low quality; they are not as good as imported ones.

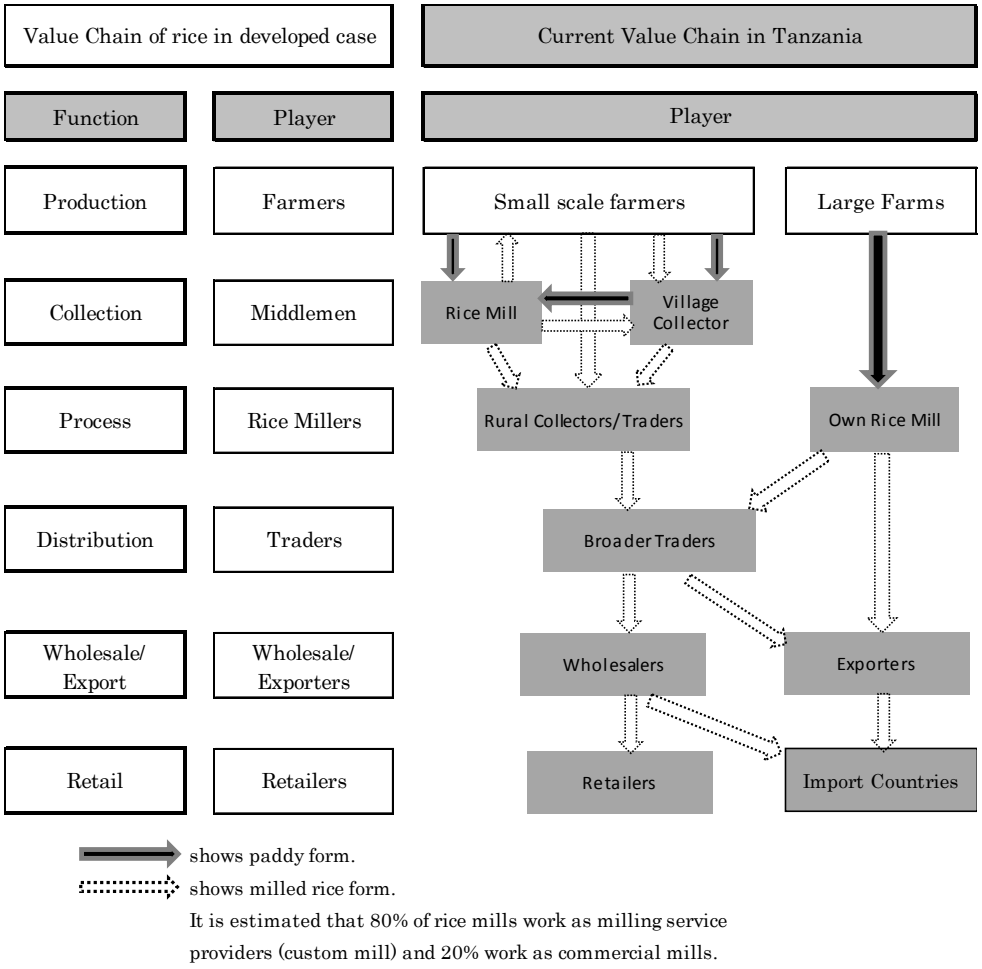


Figure 2-1: Rice Value Chain

Note: 'Developed case' above means the cases of such countries as Thailand and Egypt.
Source: The Study Team (based on interviews)

The above figure explains the current features of paddy/rice value chain in Tanzania. After the industry becomes developed such as in Thailand and Egypt, each player leads their own function. But in Tanzania, collectors and traders are very powerful compared to rice millers; most small scale rice mills work as merely milling service providers earning a small fee. Farmers prefer to have milling services by taking their paddy to rice mills, then selling milled rice to village collectors or rural collectors/ traders standing by rice mills. One of the reasons behind their preferences could be explained as follows:

Price information as of the end of July, 2014 at Morogoro city:

- Paddy price, ex-farm: 700Tsh/kg
- Milling service fee: 22Tsh/kg milled rice (35Tsh/kg paddy equivalent)
- Milled rice prices to collectors: 1,200-1,300Tsh/kg

100kg of paddy becomes 60 to 65kg of milled rice after milling (milling recovery) depending on the quality of paddy, as well as on the performance of milling machines. 62% is taken for this calculation.

- 100kg of paddy price of farmers: 70,000Tsh
- Price of this paddy after milled: (100 x 0.62) x 1,200Tsh/kg = 74,400Tsh
- Milling fee: 22Tsh/kg x (100 x 0.62) = 1,364Tsh
- Transportation: 1,000Tsh for 100kg bag
- Framers additional net income: 74,400 – (70,000 + 1,364 + 1,000) = 2,036Tsh

An additional 2,036Tsh per 100kg paddy bag might be attractive to farmers though it needs to be further confirmed.

In order to develop the rice industry, modernization and empowerment of existing small scale rice mills is one of the essential measures[10]. By group activities for producing high and uniform quality of milled rice, they can establish their own brand. Common facilities for grading milled rice will assist such movements. Commercial operation, i.e. buying paddy and selling milled rice, can be accelerated instead of the current milling service providers' position. In the next stage, rice millers should form a rice millers' cooperative and construct a large scale and modern rice mill for the development. For this development of the direction of the rice mill industry, necessary interventions should be extended.

For empowerment of existing large scale commercial mills, improvement of their rice quality in uniformity and establishment of their own brands for market development in large consumption areas such as Dar es Salaam should be strengthened by a private initiative. For example, Tandika Grain Agents Co. Plc, registered in January 2014, located in the outskirts of Dar es Salaam, has 85 individual grain traders as members. In addition, 50 non-members are operating in the same areas, and are being convinced to become members now. Close cooperation and coordination among those wholesalers and large scale rice millers as buyers and sellers will strengthen this industry[11].

[10] Other measures could include promotion of WRS and storage system.
[11] Business association can play a catalytic role to enhance such cooperation and coordination.

The potential for rice export to neighbouring countries for Tanzania is high. During export business negotiation with a long distance buyer, a purchase contract needs to be exchanged. For such an exchange, the specification of rice needs to be agreed upon. Every rice exporting countries in Asia and the United States have their own, but similar, specifications for their rice quality[12]. According to the specifications defined in the paper, the exporter and the importer come to conclude the deal. Such an arrangement is necessary for Tanzanian rice export promotion. The quality specifications must be established and disseminated to all parties concerned. For this specification design, MAFC, TBS (Tanzania Bureau of Standards), TFDA (Tanzania Food and Drug Authority) rice exporters and rice millers[13] need to hold meetings with the initiative of MIT.

Suggested approaches to promote the sub sector

Based on analysis of the rice milling industry, the study team presents some suggestions for the development of this sub sector.

(a) Modernization of small scale rice mills (promotion of efficiency by establishment of rice millers' cooperatives)

First, sample clusters are focused in Mbeya region (two rice mill clusters as a sample in Mbeya city and in Mbalari district) for the development of their rice markets by introducing rice grading machines and equipment to produce high quality rice[14]. Then, it is expected to accelerate commercialization of rice mill operation from current milling service providers by establishing brand names as high quality rice suppliers. Finally, rice millers are encouraged to establish a rice millers' cooperative, then to construct large scale and modern rice mills for the modernization of the industry. (see Box 2-1 for the rationale of this suggestion).

[12] In the case of Thailand, Ministry of Commerce, Ministry of Agriculture and Cooperatives and its research institute, universities and rice export association organized by an export promotion committee established at the President's Office were involved in setting the specifications of Rice Standards for export. The specifications include length, width, percentage of broken rice, moisture, etc. In the case of Tanzania, Rice Standards for export has not been set by the authorities; however, local markets sell different grades of rice with certain criteria, such as premium (unbroken, stone-free), standards (half broken) and regular (three quarters broken). (Source: URT (2009) 'National Rice Development Strategy Final Report' p11.)

[13] As of now, there is no rice millers' association to represent the private sector.

[14] In the case of Thailand, the authorities set the quality of white rice with the following criteria: 1) grain classification (long/short); 2) size of head rice (unbroken grains of milled rice with the hull, bran, and germ removed); 3) size of brokens; 4) grain composition (whole kernels, head rice, brokens & small brokens); 5) rice and matter that may be present, not exceeding (%); and 6) milling degree. (Source: Ministry of Commerce, the Government of Thailand (1997) 'Notification of Ministry of Commerce, Subject: Rice Standards'.)

Box 2-1: Rationale for promoting commercialization of rice mill operation

In Tanzania, about 80 % of rice mills are custom mills, which provide milling service to traders and farmers only, and are not involved in buying paddy and selling milled rice. On the other hand, most rice mills in Asian countries are commercial mills, which buy paddy from traders/farmers and sell milled rice to the markets through whole sellers, except for small rice mills in rural area who provide milling service to rice farmers for their self-consumption. If the paddy quality is inferior, those commercial mills suffer significant losses by poor milled rice recovery. Therefore, the rice millers are very serious in procuring paddy from farmers/paddy traders. They check the paddy quality (its moisture, contents, etc.). Most rice mills use modern testing equipment nowadays such as a Moister Meter, a Test Husker and a Test Mill when they negotiate the buying prices of paddy with sellers. As a result, the better quality paddy can get better price. Inferior paddy can get lower selling price which directly affects farmers' earnings. Such reasonable practices of commercial rice millers can make rice farmers to pay more attention to their paddy quality naturally.

As the rice mill industry in Tanzania is relatively new, rice millers pay little attention to the quality of paddy. They are not much conscious about the coefficient of the paddy quality and milled rice recovery. This phenomenon can be clearly observed from the very poor ratio of utilization of certified seed, which is planted only 1 % of entire crop area, according to the World Bank's estimation[15].

(b) Empowerment of existing large scale commercial mills

To empower existing medium and large scale rice mills, several interventions will be required. They can establish their own brands and expand their outlets by improving their rice quality in uniformity by equipping rice grading machines and auto-packaging machines for small plastic bags, etc.

(c) Development of rice export markets (Formulation of Tanzania Rice Standard and promotion of installation of necessary machines and equipment at major rice mills)

To develop Tanzanian rice export markets in neighbouring countries, Tanzanian Rice Standards must be formulated, such as 'Thai long grain 100% Grade B, Class 1' rice[16]. For business negotiations for rice export, Rice Standards as specification of rice quality is necessary to accelerate the deals. After thorough examination of Tanzanian rice characteristics in length, width and aroma, Tanzanian Rice Standards will be finalized and determined. In addition, in order to fulfil the specifications required, financial support such as soft loans should be extended to rehabilitate the existing rice mills.

[15] The World Bank (2012) 'Agribusiness Indicators: Tanzania' p4.

[16] '100% Grade B, Class 1' means that 40 % or more of the rice grains are 7.0 mm or longer, and percentage of short grains (6.2 mm or less) is 5% or less. There are other specifications, including grain composition, milling degree, etc., that define the standards of white rice. (Source: the Government of Thailand (1997).)

(d) Two approaches for the utilization of processing machines

In general, there are two directions for the development of food processing industry. One is to first adopt the machines and equipment which are inexpensive but not reliable in terms of performance and durability, such as Chinese-made or locally manufactured machines in the case of Tanzania. With this approach, the mills can gain profits through value addition (e.g. from paddy to milled rice) and operate within local market at the initial stage. In the next stage, they start targeting larger urban markets where consumers prefer better qualities. In order to penetrate such larger markets, those mills are required to invest the profit gained through the use of inexpensive machines in advanced machines and equipment which can produce quality products, such as super rice with minimum content of broken rice. If such machines and equipment are not available in the local market, they have to purchase imported ones from the EU, the United States or Japan.

The other direction is to apply high-performing machines which have been proven to function well in developing countries (such as imports from the EU, the United States, etc.), targeting urban markets from the beginning. The cases of Wella Highland Mills in Mbeya is a good example for this approach. This approach, however, requires large initial investment as well as high marketing abilities; otherwise, this business model will soon face difficulties in operation.

In the case of Tanzania, the role of inexpensive Chinese-made machines cannot be underestimated. Although their durability is not high, Chinese-made machines have contributed significantly to the development of rice milling, allowing new investors to start their business with minimum initial investments.

For further development of these rudimentary industries, two different approaches can be considered as appropriate:

1) To apply and operate new and large facilities with high performance through setting up millers' cooperative.
2) To promote new investments by large-scale business investors with enough capital for applying large facilities with high performance.

For the first approach, the government is required to provide technical and financial supports to the small-scale entrepreneurs.

(e) Strengthening the function of grain market

At Kibaigwa International Grain Market, a municipal market in Dodoma region, about 100,000 tons of grain (mainly maize) is dealt annually as a collection and

distribution marketplace. Sokola Igurisi Ltd. in Mbeya region functions as a paddy collection centre since 2012. However, this market does not function well as a paddy market, but rather as a temporally storing facility. Traders/farmers store paddy in this marketplace, paying storage fee and asking small rice mills surrounding this marketplace to provide milling services when the market price of milled rice has increased.

Since around 80% of rice mills work as milling service providers[17] in Tanzania, this paddy market is difficult to function as a paddy market similar to the maize market at Kibaigwa International Grain Market. As a direction of the development of rice market, therefore, there are two different scenarios if more rice millers become commercial millers in the future.

1) Paddy market

When commercial rice millers become active and they procure large volume of paddy, they need paddy markets in each production region to minimize the procurement cost and the time required. An example of this type of market is the 'Open Paddy Market' in Thailand[18].

2) Wholesale markets of milled rice

A milled rice market is to be established near large consumption areas such as Dar es Salaam. This market collects milled rice of different varieties and quality from rice millers of various production areas, then sells the milled to retailers and/or large consumers (such as restaurants and schools) as a wholesaler. Tandika Grain Agents Co., Plc. in Dar es Salaam has this function although it is only a nominal group of individual private wholesalers at present. The government's supports to Tandika Grain Agents Co., such as those for technical and managerial advice and institutional arrangements, may be required for better operation and sanitary conditions.

(f) Enforcement of weight and measure system

When business transaction becomes busy, someone starts trying to cheat sellers/buyers in measuring. The cheaters adjust weighing scale to the heavier

[17] 'Milling service providers' only provide milling service to the farmers or traders. In other words, they do not purchase paddy, mill and sell milled rice to the market. Thus, they only earn the milling service fee.
[18] 'Open Paddy Market' in Thailand functions similar to Kibaigwa International Grain Market. It is a collection point as well as wholesale market. It also has a function of warehouse receipt system, and its facilities have been developed with the government's subsidies. Normally, farmers bring in paddy and sell it at the market whereas the market dries and keeps it in the warehouse for selling later to major distributors or rice millers. In some cases, local banks are involved in the operation of the markets.

side when selling, and to the lighter side when buying. Although every country has a set of metrological standards, the enforcement of these standards is a hard work, especially in developing countries. In principle, all weighers/scales used for business transaction must be inspected periodically for its accuracy by the authorities.

Common practice for measuring grain in Tanzania is volume basis by applying traditional containers (i.e. bags) instead of modern weighers/scales. In the near future, packed grain is expected to prevail the markets in Tanzania, and the weight accuracy would be an issue. In order to make the weight and measure system function properly, the enforcement of such system will become an important role of the government.

2.2.2 Sunflower oil

Sunflower seed production for oil extraction is expanding at an explosive pace. Statistical data provided by MAFC shows the production of sunflower seed was 0.31 million tons in Tanzania in 2008/09 and increased to 2.63 million tons in 2012/13, an 8.4-fold increase (FAO country STAT shows similar numbers)[19]. This movement seems to be accelerated by the introduction of relatively inexpensive oil expellers and filtering machines from China, in addition to extension work provided by government offices, NGOs and the private sector for the cultivation and quality seed introduction. Vegetable oil consumption in Tanzania is estimated at 300,000 litres in 2011 in total[20]. 40% of this amount, i.e. 120,000 litres of sunflower oil, seems to have been supplied.

Distinguishing features of the sunflower oil value chain are as follows:

(1) Middlemen for seed collection and oil distribution have not been so active yet, unlike in the case of paddy/rice, but traders and processors encourage farmers for more production by supplying sunflower seed in advance, or giving commitments for purchase after harvest to the farmers.

(2) Large scale oil mills are few, but small scale oil extractors with filtering machines are shooting up.

(3) Large scale oil mills adopt refining process, but small ones do not. Two large scale oil mills are famous in Tanzania, namely Mout Meru Miller in Arusha and Murzah Oil Mill in Dar es Salaam. These oil mills produce high quality oil with modern

[19] See Table2-1 of this report.
[20] SNV, 'Edible Oil Subsector in Tanzania', July 2012

technologies and machinery, including solvent oil extraction and refining. On the other hand, small scale oil mills produce crude oil. Their work environment lacks appropriate hygiene management, and most of them do not satisfy the hygiene and quality standards set by TFDA and TBS.

(4) Most small scale oil mills have 2 units of oil expellers and 1 unit of filtering machines. Oil milling capacity is around 3.5 tons of sunflower seed per 12 hours operation. The machine costs around 5 million Tsh. Locally produced machines are available but oil mills give low evaluation to them in terms of performance and price.

(5) Some small scale oil mills have installed process oil tank for de-acidification in Dodoma and Mbeya, but are not commonly used yet.

(6) Small scale oil mills sell oil cake as a feed material at low prices after oil extraction, because no solvent extraction devices are available. Therefore, most oil mills have to stop daily operation during the off-seasons for sunflower seed.

(7) Crude sunflower oil is acceptable for human consumption if it is consumed immediately after the extraction, however it can be oxidised and may cause health hazard when time passes. That is the reason why internationally refining process is required for sunflower oil. The current TBS sunflower oil standard permits production and sale of crude sunflower oil as a tentative measure to protect the newly born infant industry, however, the industry should equip refining facilities to market the products in distant market. The establishment of an oil millers' cooperative to construct a large scale and modern oil refining plant is recommended.

The recovery rate of oil extraction can be increased by roasting seed prior to oil expelling. However, no small scale oil mill does such a practice due to lack of knowledge; instead, they normally put seed on a plastic sheet for sun drying only. On the other hand, rice millers regularly have husk disposal problems. Rice husk can be a good fuel; if a simple husk furnace with seed roasting facility is introduced to small scale oil mills, the oil recovery ratio will be increased and oil mills can make additional profits.

In order to develop the sunflower oil industry, a similar approach proposed for the case of rice mills would be required. Through group activities for producing high and uniform quality sunflower oil, small scale oil mills can establish their own brands. Introduction of common facilities for de-acidification and eventually refining machines would assist such a movement. Commercial operation, i.e. buying seed and selling quality oil, could be accelerated, replacing current oil extraction service providers with

commercial oil mills. In the next stage, oil mills should form an oil millers' cooperative and construct a large scale and modern oil mills for their development. To promote this direction for the development of vegetable oil mill industry, technical and financial interventions need to be extended.

Suggested approaches to promote the sub sector

Based on the analysis of the sunflower oil industry, the study team presents the following suggestions for the development of this sub sector.

(a) Modernization of small scale oil mills (promotion of efficiency by establishment of oil millers' cooperatives)

First, sample clusters are selected in Morogoro region for the development of their sunflower oil markets by introducing the facilities to produce quality sunflower oil which will meet the requirements of TFDA and TBS. Then, it is necessary to accelerate commercialization of oil mill operations from current milling service providers by establishing brand names as the high quality[21] oil suppliers. Finally, oil millers are encouraged to establish an oil millers' cooperative and manage large scale and modern oil mills including refining facilities for the modernization of the industry

(b) Introduction of new technology to roast seeds, using rice husk furnaces prior to oil milling for better oil extraction.

The oil recovery ratio can be improved by roasting raw vegetable seeds before expelling. For instance, the oil recovery of coleseed improves 10 to 20% by roasting prior to oil extraction in Japan although no data is available for sunflower seed. At present, no small oil mills have such knowledge. On the other hand, rice millers have husk disposal problems every day (e.g. the case of Mbeya rice cluster). Rice husk can be a good fuel. If a simple husk furnace with seed roasting facilities is introduced to a small scale oil mill, the oil recovery ratio will be increased. To support cluster activities among rice mills and oil mills, it is recommended to introduce small rice husk furnaces, which is popular in Vietnam and Myanmar, to help oil mills improve their performance. Technical assistance to TDC (Technology Development Centre) of SIDO or TEMDO (Tanzania Engineering and Manufacturing Design Organization) for disseminating such technology would be an appropriate approach.

[21] A set of standards to examine the quality of sunflower oil could include: 1) density; 2) contained amounts of fatty acid, iodine and peroxide; 3) color; and 4) impurity. (Source: Interview with a TIRDO official (August 5, 2014).)

2.2.3 Livestock products

(1) Hides and skins

Data of Livestock Production and Marketing Department, MLFD shows the number of cattle is 21.3 million, goats are 15.6 million and there were 6.4 million sheep in 2011/2012 in Tanzania[22]. From the rate of slaughter, 3.4 million hides and 6.4 million skins should be produced every year. But the actual tanning ratio of raw hides and skins is only about 40% in Tanzania.

Currently 6 tanneries are working, but only 2 factories of them produced finished leather in 2013. The other 4 tanneries produced only wet blue for export. The export levy was abated to 0% for wet blue and 60% for dried raw hides and skins in July 2014 from the previous 90%. Those tanneries producing finished leather products and those tanners producing wet blue have different views on the appropriate level of the export levy. One owner of a tannery complained that the recent fall of the export levy for wet blue would have a negative impact on the development of the industry. Another owner, however, considered that this reduction could positively affect the growth of the industry. It is necessary to promote the dialogue among local tanneries as well as between the tanneries and the government, so that the producers and the government can get a clear and shared picture on the way how the tanning industry should be developed.

Due to the cutback of the export levy, moreover, MLFD is afraid of being short of supply for finished leather to the domestic market. However, the local demand for genuine leather is not certain in consideration of the competition with synthetic leather. This demand has not been clearly examined.

Table 2-6 shows that production performance of existing tanneries is 23.3% for wet blue hides and only 19.7% for wet blue skins.

The majority of their operations is tanning service for hide exporters, rather than commercial operation of buying raw materials and selling processed products.

[22] MLFD

Table 2-6: Installed capacity and actual production of existing Tanneries for year 2012

unit: '000

Company Name	Type	Wet Blue pieces			Crust pieces			Finished pieces		
		Installed	Actual	%	Installed	Actual	%	Installed	Actual	%
Moshi Leather Industries Ltd (Kilimanjaro)	Hides	180.0	13.3	7.4	75.0	0.0	0.0	75.0	11.9	15.9
	Skins	1,200.0	261.6	21.8	300.0	0.0	0.0	300.0	5.5	1.8
	Total	1,380.0	274.8	19.9	375.0	0.0	0.0	375.0	17.4	4.6
Himo Tanners and Planters Ltd. (Kilimanjaro)	Hides	9.0	1.9	2.1	60.0	0.0	0.0	60.0	24.3	40.5
	Skins	900.0	216.0	24.0	600.0	0.0	0.0	600.0	1.7	0.3
	Total	990.0	217.9	22.0	660.0	0.0	0.0	660.0	26.0	3.9
SAK International (Arusha)	Hides	450.0	110.3	24.5	-	-	-	-	-	-
	Skins	900.0	24.4	2.7	-	-	-	-	-	-
	Total	1,350.0	134.7	10.0	-	-	-	-	-	-
ACE Leather Tanzania Ltd (Morogoro)	Hides	720.0	267.0	37.1	150.0	0.0	0.0	150.0	0.0	0.0
	Skins	2,100.0	546.0	26.0	900.0	0.0	0.0	900.0	0.0	0.0
	Total	2,820.0	813.0	28.8	1,050.0	0.0	0.0	1,050.0	0.0	0.0
Lake Trading Co., Ltd.	Hides	90.0	13.6	15.1	30.0	0.0	0.0	2.0	0.0	0.0
	Skins	420.0	175.2	41.7	120.0	0.0	0.0	5.0	0.0	0.0
	Total	510.0	188.8	37.0	150.0	0.0	0.0	7.0	0.0	0.0
Afro Leather Ltd.	Hides	300.0	20.8	6.9	-	-	-	-	-	-
	Skins	700.0	-	0.0	-	-	-	-	-	-
	Total	1,000.0	20.8	2.1	-	-	-	-	-	-
Total	Hides	1,830.0	426.9	23.3	315.0	0.0	0.0	287.0	36.3	12.6
	Skins	6,220.0	1,223.2	19.7	1,920.0	0.0	0.0	1,805.0	7.2	0.4

Source: MLFD, March 2013 report

Importers are eager to buy wet blue hides and skins from African countries. It is said that a major reason behind this demand is the tighter environmental restrictions endorsed year by year in those importing countries. Accordingly, importers realize the economic merits of importation of wet blue products from African countries. MLFD claims that the leather industry in Tanzania is shrinking due to lack of supply for good raw materials to the local leather industry. However, the local demands for genuine leather in consideration of the competition with artificial leather have not been clearly evaluated. For value addition in this sector, processing of crust leather instead of finished leather for export seems to be advisable; however, in the case of crust leather, the production needs to be tied up with the final processors of finished leather in the importing countries before export.

Ethiopia has the largest livestock population in African countries. The Ethiopian government levies export tax of 150% on the selling price of wet blue hides and skins in order to increase domestic finished leather production since January 2010[23]. For the products other than wet blue hides and skins, the government has waived duty and other taxes purposely to encourage the exports. Instead, the government imposed export tax on the wet blue as a method to curb its exportation and to increase domestic leather products such as shoes, purses, ready-made garment, etc. Also, in Ethiopia, the Ethiopian Leather and Leather Products Technology Institute (LLPTI) was established in 1998. LLPTI is now the main service provider for tanneries and the leather processing

[23] By Ethiopian Revenues and Customs Authority (ERCA)

industry. It provides consultancy and training in areas relevant to the industry, including factory management, marketing and branding, effluent treatment and laboratory testing of quality parameters[24]. Such governmental initiatives for the industrial development can be a model for Tanzania.

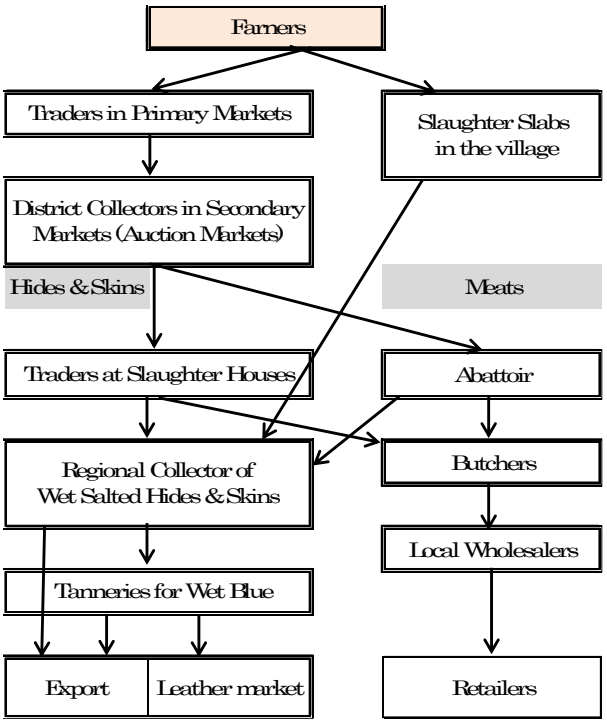


Figure 2-2: Value Chain of Hides & Skins and Red Meat in Tanzania

(2) Milk

There were 62 milk processing companies listed in all regions of Tanzania in 2011/12, according to the data of Livestock Production and Marketing Department, MLFD and their capacity utilization is calculated to be as low as 30% on average. Most fresh milk is basically obtained from grazing cows, not from ranches. Since grazing zones move around in the rainy season and dry season, it is difficult to keep stable amount of collection throughout the year. It is therefore required to expand the number of fresh milk collecting points or centres which are equipped with quality check kits and cooling tanks.

The distribution of fresh milk in simple plastic bags at ambient temperature is more common than those in sealed pouches which are pasteurized and kept in refrigerators.

[24] Altenburg, T. 'Industry Policy in Ethiopia' (2010), Discussing Paper 2/2010. German Development Institute.

The financial interventions to those small scale milk processing factories for their investment in pasteurizing and packaging equipment could improve their operation throughout the year.

The per capita milk consumption in Tanzania is estimated at 43 litres per year. This amount is only 20% of the amount recommended by FAO. Therefore, there is a room for increasing milk consumption in Tanzania.

Suggested approaches to promote the sub sector

Based on the analysis of the livestock industry, the study team presents the following suggestions for the development of this sub sector.

(a) Development of milk collecting centres

It is proposed to support expansion of fresh milk collection points, which is to be operated by private companies or farmers' groups. The points should have simple milk collection centres equipped with quality check kits and cooling tanks for stable fresh milk collection throughout the year.

(b) Human resource development in leather technology

As in the case of LLPTI in Ethiopia, there should be an institute that provides various services to the leather industry for producing value-added to the products. The institute is supposed to provide consultancy and training services on tanning and finishing process, factory management, marketing and branding, effluent and waste water treatment and testing of quality parameters. The most promising candidate of such institute in Tanzania is Dar es Salaam Institute of Technology (DIT) Mwanza. However, DIT Mwanza is currently offering only short courses although it envisions to offer consultancy work and long courses (ordinary diploma programme) in the near future (see Section 5.3.1 for details). As the experts at the time of state-owned factories in operation are retiring, the experts in the leather technology are gradually decreasing[25]. In this situation, strengthening such institutions like DIT Mwanza is indispensable to build the basis of human resources in leather technology sub-sector.

[25] Interview with MLFD officials (July 3, 2014).

2.3 Agricultural Inputs

2.3.1 Agricultural machinery (Tractor, Power Tiller, Sprayer, Water pump, etc.)

Agricultural mechanization plays an important role in agriculture commercialization. The government promotes mechanization through Agricultural Sector Development Programme (ASDP) as well. The mechanization Department of MAFC estimated that there were 8,466 tractors in use in 2010. This number of units is calculated as 7 units per 100 square km based on the cultivated 9.5 million hectors in Tanzania, while Kenya and South Africa have 27 units and 43 per 100 square km, respectively.

About 10 major dealers import tractors from many countries in the world. The range of tractor sizes is 50 to 75 HP. Most buyers of tractors are large farms who possesses more than 100 hectors, but middle size farms with around 50 hectors have also started buying such large tractors with financial support from SACCOS, etc. recently. Middle size farms use tractors on their farms and also extend ploughing services to neighbouring small farms for a fee. The marketing style of large tractors is mostly direct sale to the end users by the dealers. Small machines such as power tillers, chemical sprayers, etc. are handled by wholesalers cum retailers who buy machines from the agents then sell them to end users directly. Middlemen who can extend the distribution and after-sales services for these products to rural areas for this transaction are few.

2.3.2 Agriculture and food processing machines

In general, large scale agricultural and food processing factories such as wheat flour mills, sugar mills, tanneries, milk processing factories, coffee curing factories, etc. apply large imported machines and equipment from the EU, India and South America, etc.. They can also cope with some mechanical troubles within their factories with their employees; they keep spare parts in stock periodically. On the other hand, small scale agricultural and food processing factories such as maize mills, rice mills, vegetable oil mills, honey extractors, employ machines and equipment locally made or imported from China at relatively inexpensive cost. A lot of troubles occur with those machines, and some processors are not satisfied with the performance, durability or availability of necessary spare parts.

There are many kinds of locally produced machines in markets, such as grain cleaners, maize hullers (they use some imported cast iron parts for assembly), maize mills, sorghum hullers, manual coffee pulpers, fruit pulpers, honey extractors, groundnuts decorticators, sunflower oil extractors, oil filtering machines, forage cutters, feed mixers

and so on. All locally fabricated machines are made by metal sheets and shaft processing. The workmanship and accuracy have to be improved for the betterment of those machines. Manufacturers are required to make further efforts for day-to-day improvement. In addition, adoption of proper cast iron parts will become necessary to promote local production of more complex, sophisticated and robust machines and equipment at reasonable prices, adoption of proper cast iron parts will become necessary.

Suggested approaches to promote the sub sector

Based on the analysis of the agriculture and food processing machinery industry, the study team presents a suggestion for the development of this sub sector as follows.

(a) Development of local manufacturers of agricultural and food processing machines

It is suggested to establish a small-scale foundry at TEMDO, TIRDO or other appropriate institutes with analytical laboratory. This foundry works as a high quality cast iron parts supplier to small scale manufacturers. In the case of requesting technical cooperation, technical experts could be dispatched to those institutes.

2.3.3 Agricultural inputs (seed, fertilizer and agrichemical)

Since the liberalization of the seed sector in 2003, there has been an increase in availability of improved seed for farmers in Tanzania. During the 2010/11 season, 80% of the total commercial seed was supplied by the private sector and the balance was taken by the public enterprises[26]. In 2007/08, 16,000 tons of seed were sold, and the number has increased to 29,000 tons in 2011/12. Despite the increase in available commercial seed, only 27% of cropped area for maize is estimated to have used improved seed. In rice cultivation, this proportion is much lower, only 1% of cropped area for rice is estimated to be planted with improved seed. The reasons for the low seed adoption ratio by farmers are: a large percentage of farmers retain seed from their prior year crop for planting and are less likely to buy new seed every year; farmers still lack awareness about the use of improved seed for higher yields; the seed to grain price ratio for maize hybrid seed is 10:1, which is very high[27].

Tanzania imported about 170,000 tons of chemical fertilizer in 2007 and it increased to 320,000 tons in 2011. There was a sharp increase in total fertilizer use. In spite of

[26] The World Bank, 'Agribusiness Indicator: Tanzania, 2012'
[27] Ditto

this increase, the average fertilizer application rate of 19.3 kg/hector is still low. In comparison, Kenya and South Africa's fertilizer application rates are 100kg/hector and 120kg/hector respectively.[28] Practical information among farmers about the proper uses of fertilizer is limited, and many farmers need to travel long distances to buy fertilizer, because dealers mainly have shops in district towns, not in villages[29]. Most chemical fertilizer is imported, but there are several local producers working in Tanzania.

The use of agrichemicals increases year by year along with increasing vegetable production, especially in areas near the main cities. All agrichemicals are imported; for there are no agrichemical producers in Tanzania yet. Input dealers, having shops in district towns, normally distribute seeds, fertilizers and agrochemicals by cash sales to farmers. Farmers in rural villages are in a difficult position to have access to these agricultural inputs.

[28] Ditto
[29] High price of fertilizer and limited access to NAIVS could also be anther reasons. The challenges of NAIVS are detailed in Chapter 3.

CHAPTER 3: AGRICULTURE AND BUSINESS FINANCE

3.1 Financial Landscape of Tanzania

3.1.1 Oligopolistic nature of financial institutions in Tanzania

Although there are nearly 50 commercial banks in Tanzania, the banking sector is dominated by few banks. Three big banks in terms of total assets and loan portfolio, namely; CRDB Bank (CRDB), National Microfinance Bank (NMB) and National Bank of Commerce (NBC), account for 44 percent of total assets owned by 47 banks and 45 percent of the average loan portfolio as of 2012 as is shown in Table 3-1. Taking top ten plus government owned Tanzania Investment Bank (TIB) into account; the ratio will go up to 75 percent and 72 percent respectively. The remaining 37 banks are still operating in a limited scale in terms of total assets, total deposits, loan portfolio and branch numbers, therefore, they have not yet reached to a level to become price maker in setting interest rates on loans.

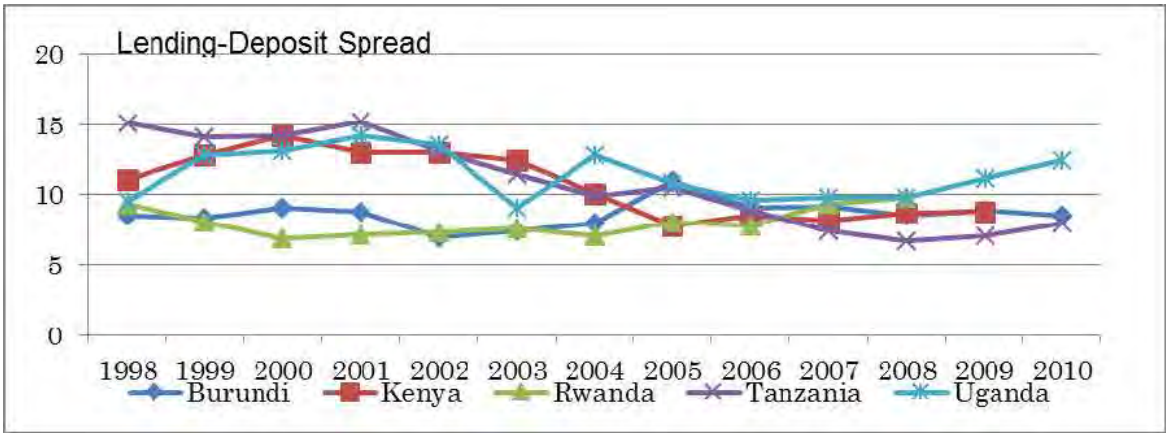
Table 3-1: Tanzania's top 10 banks and Tanzania Investment Bank

	Total Assets (2012 4Q)	%	Average loan portfolio (2012 4Q)	%	Loans, advances and OD(2012 4Q)	%	Consumers' deposits (2012 4Q)	%	No. of employees (2012 4Q)	Gross loans to deposits (2012 ave)	Interest income to total income (2012 ave)
Barclays	579,592	3.5%	300,348	3.7%	303,036	3.6%	444,562	3.5%	519	68.3	62.0
Citibank	754,428	4.5%	161,621	2.0%	182,457	2.2%	556,359	4.3%	56	31.5	50.8
CRDB	3,074,840	18.4%	1,731,211	21.1%	1,806,865	21.5%	2,582,328	20.2%	1,898	66.0	72.3
EXIM	934,930	5.6%	425,244	5.2%	413,818	4.9%	686,711	5.4%	622	69.0	81.0
NBC	1,508,129	9.0%	664,692	8.1%	653,013	7.8%	1,266,383	9.9%	1,340	56.5	68.3
NMB	2,796,346	16.8%	1,299,621	15.8%	1,354,770	16.1%	2,288,263	17.9%	2,783	60.8	75.3
Stan Chart	1,362,237	8.2%	507,650	6.2%	438,583	5.2%	886,162	6.9%	335	63.0	63.3
Stanbic	900,608	5.4%	482,232	5.9%	491,904	5.9%	700,927	5.5%	588	74.3	69.3
Access	80,304	0.5%	48,563	0.6%	52,359	0.6%	35,735	0.3%	439	170.5	93.8
Akiba	121,811	0.7%	71,779	0.9%	73,157	0.9%	102,879	0.8%	468	75.8	79.5
TIB	335,535	2.0%	239,438	2.9%	242,938	2.9%	144,446	1.1%	192	149.8	88.0
11 banks	12,448,760	74.6%	5,932,399	72.3%	6,012,900	71.5%	9,694,755	75.7%	9,240	80.5	73.0
Total 47 banks	16,692,273	100.0%	8,206,859	100.0%	8,406,142	100.0%	12,801,718	100.0%	13,278	66.8	72.5

Source: Ernst & Young, '2012 Tanzania Banking Sector review: Quarterly data pack supplement', April 2013

High interest rate is one of the most frequently heard constraints for enterprises to borrow money from banks and the oligopolistic nature of banking sector explains one of the reasons. Bank of Tanzania explains the determinants of interest spreads as the macroeconomic environment, non-performing loans (NPLs) ratios, the level of competition in the banking sector, the absence of credit reference bureau and the state of

the legal system, based on the bank spreads analysis in EAC countries.[30] The report summarizes that 'Tanzania had both comparably lower overhead costs than Uganda and lower levels of NPLs than Kenya. Yet, it charged comparable spreads after its persistent drop in spreads. This decrease was mainly due to sustained foreign bank entry. Arguably, the decrease could have been a lot more drastic, given the country's NPL ratios and overhead costs, if competition had been higher enabled by a credit reference bureau'.[31] Figure 3-1 shows the lending-deposit spreads of Tanzania compared with neighbouring countries. The spreads have been constantly reduced, however, still remained to be as high as around 8 percent as of 2010.



Source: John Wakeman-Linn et.al, 'Bank Spreads in the EAC 1998 – 2010', International Monetary Fund Resident Representative Office in Tanzania and Bank of Tanzania

Figure 3-1: Lending-Deposit Spread, EAC 1998-2010

As Figure 3-1 shows, spreads have been reduced though are still high. According to the Economic Bulletin 1st quarter of 2014, commercial banks' overall average 12 month deposit rate is 11.21 percent while average overall lending interest is 16.47 percent as of March 2014. The Bulletin states that spread between 12 month deposit rate and one year lending rate as of March 2014 is 3.53 percent.

3.1.2 Agriculture and business finance landscape

According to the Economic Bulletin (March 2014), out of total commercial banks' total loan outstanding amounts of 10.6 trillion Tsh, loans provided to agriculture, hunting and forestry and manufacturing sectors are 1.1 trillion Tsh (10.2 percent) and 1.2 trillion (10.9 percent) respectively. Consumer and trade loans dominate significant shares, such

[30] John Wakeman-Linn et.al, 'Bank Spreads in the EAC 1998 – 2010', International Monetary Fund Resident Representative Office in Tanzania and Bank of Tanzania.
[31] Ibid.p.23.

as 1.8 trillion Tsh (16.9 percent) and 2.1 trillion Tsh (19.9 percent) respectively.

CRDB, NMB and TIB are the major agriculture loan providers[32]. CRDB and NMB have provided various products targeting for cash crops such as sugar, coffee, sunflower, tobacco, cotton, etc. tailored to agriculture through 'out-growers' scheme and 'warehouse receipt system'. CRDB has provided microloans to small scale farmers and traders through its associated SACCOS and the subsidiary CRDB Microfinance Bank. NMB has reached over 500,000 individual small scale farmers with the Kilimo Account Programme and collaborated with the government to provide credit to agro-input dealers in rural areas within the framework of the 'National Agricultural Input Voucher Scheme' (NAIVS). TIB is a wholly owned government development bank and has provided loans to agricultural producers through the off balance asset of 'Agriculture Window' since 2010. According to Bank of Tanzania, in line with these three banks, Diamond Trust Bank and Standard & Chartered Bank account for about 20 percent of 'agriculture, hunting and forestry' loan outstanding amounts of the Economic Bulletin. These two banks mainly provide short term working capital to commodity traders such as coffee and cashew nuts and do not implement project finance in agriculture as the major three banks do. Table 3-2 shows the breakdown of loans and advances of the three banks.

Table 3-2: Breakdown of loans and advances of CRDB, NMB and TIB

CRDB	(Bn Tsh)	NMB	(Bn Tsh)	TIB	(Bn Tsh)
Govt. Securities	569	Govt. Securities	821	Government/cor. Securities	71
Financial Inst.	317	Financial Institutions	203	Financial Intermediaries	8
Agriculture	379	Agriculture	35	Agriculture/Agroprocessing	120
Manufacturing	223	Manufacturing	57	Manufacturing	36
Trading	260	Trading/commercial	263	Trade	30
Transport	206	Transport/Communications	25	Transport/communication	2
Individual	281	Individual	252	Individuals & SMEs	6
Hospitality	108	Wholesale/retail	8	Building Construction	5
Others	442	Others (consumer loans, etc.)	944	Real estate	30
				Tourism/forestry	45
				Mining /Quarrying	2
				Education/Health	2
				Hotels/Restaurant	3
				Oil and Gas	24
				Electricity	3
Total	2,785	Total	2,617	Total	387

Source: Annual reports of the three banks (2013)

[32] The World Bank, 'Agribusiness Indicators: Tanzania', Agriculture and Environmental Services, November 2012.

Figure 3-2 shows the outstanding amount of loans and advances of the three main banks and those of major government and development partners' financial support targeting agriculture and agro-industry. Definitions of the respective loans and advances vary according to banks which are shown in Table 3-3.

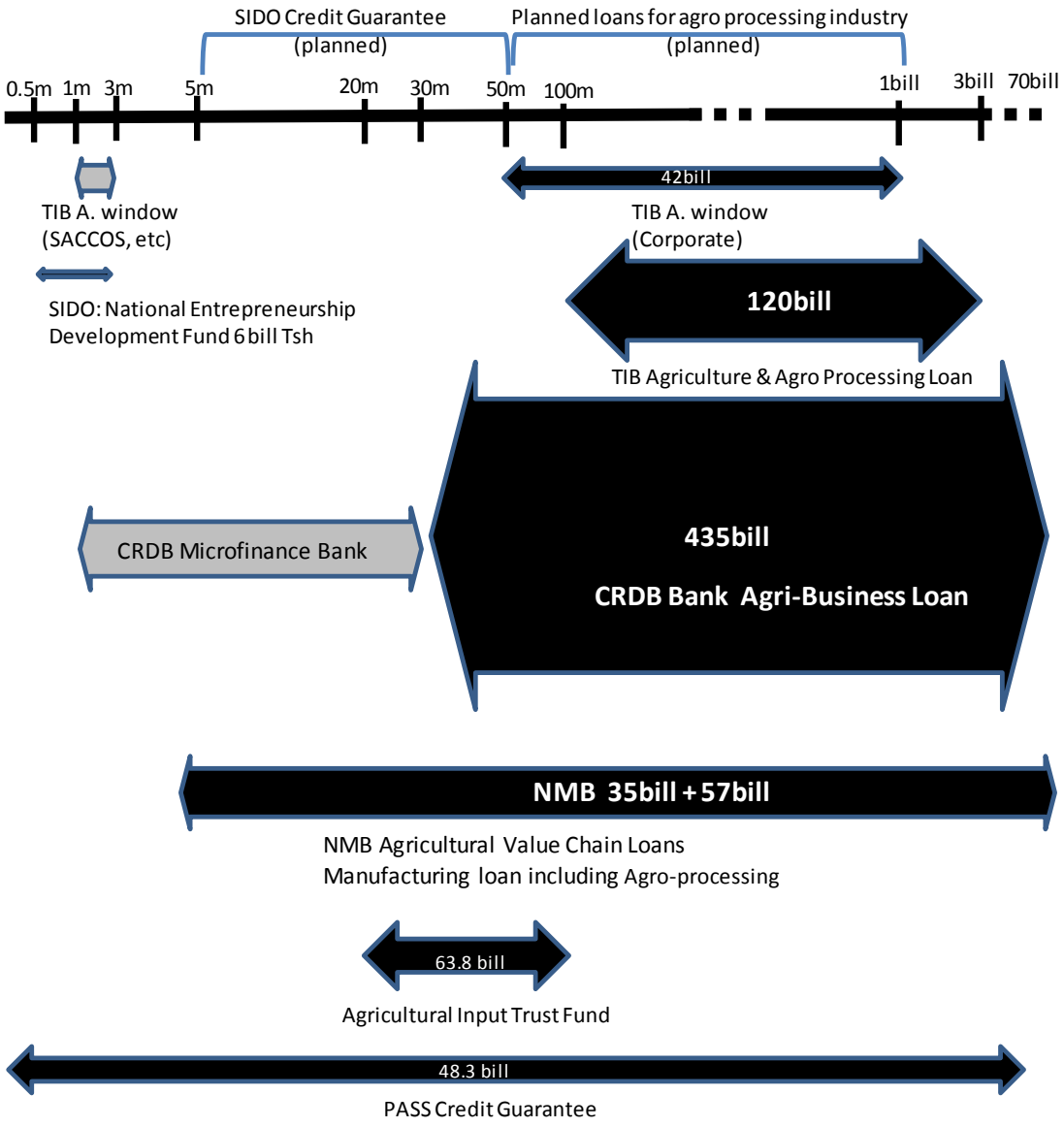


Figure 3-2: Financial products to agriculture and agro-industry sectors[33]

[33] The size of the arrow suggests the coverage and the volume of the lending program. Horizontal length of the arrow indicates the coverage of the lending product. TIB Agricultural window, for instance, offers loan ranging from 50 million to 1 billion Tsh. Vertical length of the arrow shows the approximate size of the program. The size of the CRDB Agri-business loan is the largest with the total fund of 435 billion Tsh., so its arrow is the largest of all.

Table 3-3: Definitions of loans and advances

Name	Responsible sections	Loan outstanding amounts (Tsh million)	Lending conditions
CRDB	(i)CRDB Microfinance Bank (ii) CRDB Bank	**Agri-business loans 435 billion Tsh** For agricultural inputs purchasing, crop farming, livestock and fishing, forestry, crop purchasing and agro-processing. (i) CRDB Microfinance Bank: Loans up to 30 million Tsh (ii) CRDB Bank: Loans more than 30 million Tsh.	**Max. loan amount**: 70 billion Tsh **Maturity period:** Determined by the cash flow analysis **Collateral:** Fixed assets including 'Equitable mortgage' (Certificate of a Customary Right of Occupancy)
NMB	(i)Agri-business Department (ii)SME Finance Department (iii) Corporate Finance Department	· **Agricultural value chain loans 35 billion Tsh:** For the whole agriculture value chain from production to marketing as far as the clients are engaged in agriculture production. · **Manufacturing loans of 57 billion Tsh**: For agro-processing if enterprises are only engaged in agro-processing and not engaged in agriculture production. - SME Finance Department: Manufacturing loans up to 1 billion Tsh - Corporate Finance Department: Manufacturing loans more than 1 billion Tsh.	**Max. loan amount:** - Microfinance: 1million Tsh to 15 million Tsh - SME finance: 15million Tsh to- 1.5 billion Tsh - Corporate finance: more than 1.5 billion Tsh **Maturity period:** Determined by the cash flow analysis **Collateral:** Fixed assets
TIB	**(i)Agricultural Window (off balance)** **(ii)SME Financing & Leasing**	**(i)Agriculture Window loans of 42 billion Tsh (off balance):** For agriculture production **(ii)Loans of 120 billion Tsh (on balance):** For agriculture and agro-processing	**Loan ranges** (i)50 million Tsh to 1 billion Tsh (ii)200 million to 3 billion Tsh **Maturity period:** Determined by the cash flow analysis **Annual interest rates:** (i)5 % for individual, 8 % for group members through MFIs and Rural Community Banks. (ii) 17 % **Collateral:** Fixed assets, third party guarantee

Source: Field interviews

Table 3-4 shows the breakdown of agriculture and agro-processing loans. Although detailed breakdown data could not be shown in the cases of CRDB, NMB and TIB, common feature could be observed from the interviews with these banks and PASS. Figures of PASS were derived from guaranteed loan amounts implemented by collaborating 6 commercial banks. According to the interviews, about 50 to 60 percent of agriculture and agro-processing loans is estimated to be provided to crop purchasers whereas loans provided to agro-processing enterprises are limited.

Table 3-4: Characteristics of agriculture and Agro-processing loans

	Crop, livestock, fishing and forestry	Input suppliers	Agricultural machinery	Crop purchase	Agro-processing	Others
CRDB	100 %					
NMB	100 %					
TIB	100 %					
PASS	19%	1%	7%	62%	4%	7%

Source: The Study Team

3.1.3 Financial demands

Financial demands of enterprises are summarized based on the enterprise survey covering 70 sample enterprises (see Section 1.1.3 for details) and 14 interviewed enterprises in the agro-industry during the field study.

Utilization of Financial Institutions (multiple answers)

- Out of 70 surveyed enterprises, 31 enterprises have ever borrowed money and 36 enterprises have never borrowed money.
- 51 enterprises answered 'Yes' to a question of 'do you consider that access to finance as a major constraint for your business?'
- Enterprises are utilizing several banks not only for borrowing, but also for deposits (54/70), withdraws (55/70), remittance (17/70), insurance (11/70) apart from loans (32/70).
- Utilized banks (multiple answers) are: CRDB (31/70), NMB (24/70), NBC (23/70), EXIM (5/70), Standard Chartered Bank (4/70). Stanbic (3/70), Barclays (3/70), Commercial Bank of Africa , Diamond Trust, KCB, BOB, DTB, Citi, Azania, Bank M, TIB, SIDO (1/70).

Table 3-5 looks at the access to loans by size of enterprises in terms of employees' number. Medium to large scale enterprises employing more than 50 have better access

but small scale enterprises employing less than 9 have difficulties to access to loans.

Table 3-5: Access to loans by size of enterprises' employees numbers

No. of employees	No. of enterprises	No. of borrowers	(%)
Up to 4	11	1	0.9%
5 to 9	15	1	6.6%
10 to 49	24	14	58.3%
More than 50	20	12	60.0%

Source: Enterprise Survey

Table 3-6 looks at the access to loans by levels of annual turnover. Annual turnover ranging from 1 billion Tsh to 10 billion Tsh is regarded as 'SME' according to criteria set by NBC which has been engaged in corporate finance even before the privatization. Two thirds of SME and the above levels of enterprises could access to loans whereas majority of micro enterprises whose annual turnover is less than 1 billion Tsh have limited access to loans.

Table 3-6: Access to loans by annual turnover

Annual Turnover	No. of enterprises	Ever borrowed	(%)
More than 1 Bn Tsh	6	4	66.6%
1 Bn Tsh to 10 Bn Tsh	12	8	66.6%
Less than 1 Bn Tsh	48	7	14.6%
No answers	4	1	25.0%

Source: Enterprise Survey

Table 3-7 looks at reasons of the enterprises whose annual turnover is less than 1 billion Tsh) that cannot borrow money.

Table 3-7: Reasons of not borrowing by small scale enterprises

High interest rates and others	**16**
Lack of collateral	**14**
Borrow from relatives & friend	**5**
Long time for credit screening	**5**
Fear of failed repayment	**4**
Have Adequate money	**2**

Source: Enterprise Survey

Problems associated with loan application (multiple answers)

According to the enterprise survey, 40 out of 70 enterprises select 'high interest rates' as problem they faced when they applied for loans, followed by inadequate collateral provision, long procedures to obtain loans and inadequate approved loan amounts. 'High interest rate' issue needs be considered from two aspects. First, nominal interest rate is already as high as more than 20 percent which producers could not

easily achieve from the production. Second, the interest rates applied for low credible enterprises tend to become far higher than the nominal interest rates taking into account of higher insurance fees, security deposits and taxes. Due to the additional payments, the interest rates would be from 26.9 percent to 29.4 percent in the case of NMB's SME loans to 109.1 percent to 115.5 percent in the case of FINCA's business loans which is one of the largest MFIs in Tanzania[34].

Those who selected 'cannot formulate business plan indicating purposes of the applied loans' are only 2 enterprises, which confirms what interviewed bankers mentioned that borrowing enterprises did not understand the meaning of formulating the business development plan which clearly shows the purposes of borrowing money and how to repay the debts. Many enterprises formulated the business development plan just to get loans.

Table3-8: Problems associated with loan application

High interest rates	40
Cannot provide requested collateral	24
Long procedures from loan application to the disburse of loans	21
Cannot borrow sufficient money	19
FI did not accept the purposes of borrowing	6
Cannot maintain the requested level of deposits	4
Cannot formulate business plan indicating purposes of the applied loans	2
FIs' misuse of money made us difficult to borrow adequate money on time	0
Others	4

Source: Enterprise Survey

Occasion enterprises face difficulties to raise funds (multiple choices)

'Purchase of raw materials' is the most serious problems for surveyed enterprises reflecting the undeveloped value chain system in Tanzania. 'Purchase of machinery and equipment' is another important issue the surveyed enterprises face. As we describe below, financial institutions basically provide short term loans due to the fund raising nature relying on short term deposits, limited amount of long term loans are provided by banks presently. From financial institutions' point of view, it is rather riskier to lend money to enterprises for 10 to 15 year in a country like Tanzania, and banks tend to lend shorter loans or to invest in secured assets such as treasury bills.

34

http://data.mftransparency.org/data/countries/tz/data/?dataset=public&calculationType=apr.savings&loanSize_low=&loanSize_high=&numClients_low=50&numClients_high=&loanLength_low=&loanLength_high=&purpose=&institutionType=&rateType=&interest

Table 3-9: Difficult situations associated with raising funds

Purchase of raw materials	57
Purchase machinery and equipment	42
Construction and rehabilitation of facility	22
Storing costs	14
Payment of transportation costs	12
Payment of utility such as electricity, water, gas and telecommunication	9
Payment of taxes	9
Payment of salary	6
Payment of insurance	1
Others	4

Source: Enterprise Survey

Demand for medium and long term loans

Table 3-10 shows lending conditions of medium to long term loans interviewed relatively large scale enterprises and a SACCOS borrowed. No.8 borrowed only short term loans for working capital (purchasing raw materials) and utilized own money for investment purposes as the offered interest rates of long term loans of banks were too high to repay. It demands soft loan as much as US$ 1.75 million for purchasing production line and considers that ideal lending conditions are 5 percent of annual interest rate and 5 years maturities with 18 month grace period.

Table 3-10: Examples of lending conditions

No	Loan amount (Tsh)	Purpose	Maturity	Grace period	Interest rate p.a.	Collateral
1	289 million	Production line	60 months	12 months	8 % including credit guarantee of 4 percent	50 % of loan guaranteed by PASS
2	US$ 0.58 million	Production line	60 month	12 months	17 %	Equitable mortgage, third party guarantee
3	800 million Tsh	Tillers	36 months	6 months	First 3years: 21% Present:16%	Land and houses
4	400 million	Tractors Tillers	36 months	6 months	6% + 2% guarantee fees(PASS)	Land and houses
5	40 million Tsh (1997)	Production machinery	Overdraft 12 months * 3 years	none	16 % (1997)	NA
6	Not disclosed	(1) Working capital (2) Investment capital	(2) 60 month	(2) 3 months	Tsh=14% US$=7%	Factory
7	600 to 1200 million Tsh	Lorries	Overdraft	Several instalments to suppliers in 24 months	18 to 20 %	Company assets
8	1.5 billion Tsh	Purchasing raw material (agricultural products)	6 months	None	17%	Factory
9	300 million Tsh	Production lines	60 months	Not disclosed	Not disclosed (market rate)	Land

Source: The Study Team

Table 3-11 shows the demand for the planned MIT's loans targeted for agro-industries (50 million Tsh to 1 billion Tsh) obtained from the field interview. There exist demands for medium to long term loans for investment in equipment and facilities which have not adequately been provided by existing financial institutions due to low credibility of enterprises and tight lending conditions offered by FIs. Many interviewed enterprises showed an interest in utilizing the soft loan facility, but required loans exceeding the planned ceiling amount of 1 billion Tsh.

Table 3-11: Demand for medium to long term loans

Types of business	No. of employees	Borrowings from banks			Demand for Planned AIPL						
		Yes/No	Loan amount	Purpose	Want to borrow?	Needed loan amounts	Purposes	Maturity	Grace period	Interest rate p.a.	Collateral
Meat processing	120	No. Foreign Companies' investment 7Bn Tsh.			No answer						
Leather	70	No. Foreign Companies' investment 7Bn Tsh.			Yes	8 billion Tsh		4 to 5 years		5%	
Machinery	50	No (Supplier's credit only)			NA						
Edible oil	400	No			Yes		rehabilitation of facilities				
Alcohol	181	Yes	300mil. Tsh		Yes						
Alcohol	180	No			Yes	US$ 1.75 million	Winery production	5 years	18 months	5%	owned land
Edible oil	872	Yes (more than 10 years ago)			No answer						
Milk products	29	Yes (more than 10 years ago)	13 billion Tsh (OD)	Purchase of seconded hand European machinery	Yes	2.8 billion Tsh	rehabilitation of facilities and machinery				
Furniture	150	Yes (more than 10 years ago)	US$ 0.5 mill.	Warehouse construction	Yes	1 bill. Tsh	Rehabilitation of facilities Purchasing of Powder coating machine	5 years	1 year	4%	Purchased machinery owned land
Miller	100	Yes			Yes	US$ 1.5 mil.	Wheat storage	5 years	1 year	Lower than market rate	owned land
Miller	120	Yes	200 mil. Tsh Supplier's credit	Milling machinery	NO						

Source: Field study

In addition, CRDB Agro-business section[35] points out that at least US$ 50 to 100 million credit lines would be needed if development partners are to provide financial support to agro-business where high demand for loans such as US$ 25 million per client exists. NBC's SME section states as well that the corporate section provides loans to agro-industry exceeding 1 billion Tsh which is beyond the loan sizes of SME section and there is stable demand for such size of loans.[36].

SME's limited access to medium and long term loans

World Bank (2013) shows that Tanzanian commercial banks lend only 14 percent of the total bank loans to SMEs as is shown in Table 3-12. The limited share implies that limited number of SMEs could access to commercial banks.

[35] Interview was conducted on 15th August 2014.
[36] Interview was conducted on 11the August 2014.

Table 3-12: Bank's involvement with SMEs

	Kenya	Nigeria	Rwanda	South Africa	Tanzania
SME's share of total bank lending	17.4%	5.0%	17.0%	8.0%	14.0%
Contribution of SMEs to banks' net income	20.5%	11.0%	20.0%	15.0%	16.0%
Percentage of revenues derived from					
Credit	68.0%	22.4%	71.0%	27.0%	73.0%
Deposit and Account management	12.7%	53.2%	11.4%	50.0%	12.0%
Other transactions and fee-based services	19.3%	24.4%	17.6%	23.0%	15.0%

Source: Gunhild Berg and Michael Fuchs, 'Bank financing of SMEs in five Sub-Saharan African countries: the role of competition, innovation and the government', the World Bank Africa Region, Finance and Private Sector Development Unit, August 2013, p.6.

Table 3-13 and 3-14 show maturities of loans and advances of some commercial banks the study team could obtain data. It is worth noting that while large scale commercial banks such as CRDB and NMB provide both short term and long term loans, smaller scale banks such as ACCESS Bank and AKIBA Commercial Bank mainly provide short term loans whose maturities are less than 1 year. Being a development financial institution, TIB mainly provides medium and long term loans.

Table 3-13: Maturity of loans and advances to customers (1) (Unit: million Tsh)

	<=1 year	<=3 years	<=5 years	Over 5 years
CRDB	Within 1 year 695,197	Btwn 1 and 3 years 396,695	Over 3 years 936,498	
NMB	Within 1 year 593,408	Btwn 1 year and 5 years 883,883		Over 5 years 137,001

Source: Annual reports (2013) of CRDB and NMB

Table 3-14: Maturity of loans and advances to customers (2) (Unit: million Tsh)

	<=1 months	3 months	6 months	9 months	12 months	Over 1 year	Over 5 years	Repayable on demand
TIB		Btwn 3 and 1 month 6,551	Btwn 3 and 12 month 5,237			Over 1 year 186,938		116,607
ACCESS Bank	6,066	10,640	13,443	Over 6 month 22,608				
AKIBA Bank	1,496	5,466	Btwn 3 and 12 month 45,140			Btwn 1 and 5 year 21,098		

Source: Annual reports (2012) of ACCESS Bank and AKIBA Commercial Bank and Annual report (2013) of TIB.

It is therefore revealed that unless enterprises could access to the limited number of banks such as CRDB, NMB and TIB which provide medium and long term loans, it is

rather difficult for enterprises to utilize medium and long term loans.

3.2 Present situation and constraints associated with Agriculture Finance

3.2.1 Government Financial Support

(1) Agriculture Window

Agriculture Window is off balance loans of TIB entrusted by the Ministry of Finance targeting for agriculture producers. Since the inception in 2010, TIB received 494 applications and 192 loans were disbursed. Total loan facility is 42 billion Tsh out of which 2.1 billion Tsh has been utilized for technical support for formalization of informal borrowers such as registration of the business and assets including land and building, formulation of business development plan, helping borrowing enterprises to obtain TBS and TFDA certificates and facilitation of obtaining utility rights. 36 billion Tsh has been provided at revolving basis and the latest loan outstanding amount is 60 billion Tsh in 2014. One fifth of the loans goes to input credit such as seed, pesticides and fertilizer whereas four fifth went to land reclamation, purchasing of tractors and power tiller and irrigation facility. Agro-processing is not targeted by Agriculture Window which supports agriculture producers. TIB provides loans to agro-processing sectors on balance basis. Lending condition of Agricultural Window is as follows.

Table 3-15: Lending condition of Agriculture Window

	Individual	End users of MFIs, community banks and SACCOS
Borrowers	Large scale corporate farms holing 100 to 200 acres of land	Small scale farmers holding 3 to 4 acres of land
Loan size	50 million Tsh～1 billion Tsh	1 to 3 million Tsh
Interest rate	5 percent p.a.	8 percent p.a.
Maturity	Two to five years	Two to five years
Grace period	6 months to 24 months	6 months to 24 months
Collateral	Land, houses, building	None

Source: TIB

TIB has 4 branches in Mwanza, Arusha, Mbeya and Dar es Salaam apart from the headquarters office. The branch network is not enough to cover the whole country. Therefore, TIB has collaborated with community banks, microfinance institutions (MFIs) and SACCOS through which loans have been on-lent to small scale farmers. TIB lends loan at 4 percent and these financial intermediaries on-lend to clients at 8 percent. Out of total loan outstanding amounts of 42 billion Tsh, 13 billion was repaid on time and 6 billion Tsh shows delayed repayment. 5 billion Tsh out of the 6 billion Tsh were lent

through 75 collaborating SACCOS. Out of the 75 collaborating SACCOS, only about 15 to 20 percent of them have repaid on time. On-lending transactions through community banks and MFIs show better results compared with those through SACCOS.

Regarding the agro-machinery finance, TIB used to pay to suppliers in advance, which created problems such as delayed supplies of agro-machinery as late as 1 year and delivery of less qualified machinery. Therefore, TIB changed the repayment mode from advance payment to pay on delivery after checking the quality and borrowers' satisfaction. There are 10 reliable agro-machinery suppliers in Dar es Salaam TIB work with. There are so many suppliers of seed, pesticides and fertilizers throughout the country and TIB cannot distinguish good ones from bad ones. Therefore, TIB lends only one fifth of the loans to such input suppliers and let other commercial banks to lend. There are several challenges TIB has been tackling with. First, farmers groups do not have clear business plan and financial discipline that they should repay the borrowed money. Second, there are some clients who do not think they have to repay the loan as the loans are provided by the government owned bank which means 'grant' for them. Third, some clients cease to repay the loans after the introduced machinery and equipment are broken, without preparing money for repairing and replacement of spare parts. Fourth, natural disaster and fluctuated market prices of crops prevent producers from timely repayment.

An attempt was made to solve the inadequate provision for maintenance and repairing. A SACCOS provided 5 percent of the total costs of 60 million Tsh (3 million Tsh) to purchase a tractor as maintenance costs and utilized the money for maintenance provided by Damaco which was arranged by TIB after supplier's guarantee period was over. Normally, suppliers do not provide maintenance services to non-clients, but the maintenance services provided by Damaco cover various products provided by different suppliers. Damaco reported TIB after the maintenance was completed. This attempt was arranged only for the SACCOS and terminated now upon contract termination.

(2) Tanzania Agricultural Development Bank

The Tanzania Agricultural Development Bank (TADB) is to be operated by the end of 2014. A former TIB employee was recruited as CEO of the newly established bank. Management of respective sections is now being recruited. 11 staff members of TIB who are now working on Agriculture Window will help new staff members to work with the transaction in the start-up stage of the bank, but will not be transferred to the new bank. The bank will recruit new staff members from the market. TADB will be in

charge of agriculture production, and secondary agriculture such as processing, transportation and warehouse remains to be TIB's activities.

(3) National Agricultural Input Voucher Scheme (NAIVS)

In order to increase the productivity of rice and maize by utilizing fertilizer and improved seed, the government started providing direct subsidies to farmers in the form of vouchers in 2007/08 and the program is to wind up in 2013/2014. The total annual costs are estimated to be US$ 100 million for the three years from 2009/10 to 2011/12 and 53 percent was covered by the World Bank credit and the balance was financed by the government[37]. The target of the program is 2.5 million small scale farmers in 65 high agricultural potential districts. Table 3-16 shows the disbursed amount of subsidies and the beneficiaries' number.

Table 3-16: Disbursed subsidies of NAIVS

	2009	2010	2011	2012	2013
Total amount of subsidies (million Tsh)	92,040	105,060	94,252	58,963	52,386
Informed demand for fertilizer by MAFC to importers (tons)	485,000	566,466	578,466	669,598	885,019
No. of benefitted farmers (million)	0.75	1.5	2	1.8	0.94
No. of covered districts	65	109	109	109	121
No. of fertilizer wholesalers working in NAIVS	9	10	13	35	39
No. of retailers working in NAIVS	2,335	2,335	2,335	2,335	2,335
Names of engaged financial institutions	NMB	NMB	NMB	NMB	NMB

Source: MAFC

Selected small scale farmers holding less than 1 ha were provided with vouchers for covering half of the costs of inputs sufficient for application of one acre of maize or rice. The vouchers enable farmers to purchase input with 50 percent subsidies. Farmers bring the vouchers to authorized local input dealers and the input dealers take the redeemed vouchers for reimbursement to a branch of NMB. Many problems are pointed out by MAFC. First, intentional selection of farmers at Village Voucher Committee is observed regardless of the set of criteria such as land holding size of less than 1 ha and co-financing ability. Second, the budget for subsidies sometimes remained at district

[37] IFPRI, 'The Supply of Inorganic Fertilizers to Smallholder Farmers in Tanzania: Evidence for Fertilizer Policy Development', IFPRI Discussion Paper 01230, December 2012.

level due to political intervention. Third, for many farmers the amount of subsidies is not enough and they cannot make up the cash balance for the input purchase. Therefore, they sell vouchers at discount price to those who can pay the top-ups/unsubsidized amount (both farmers and input dealers). As a result, farmers could not increase productivities by utilizing fertilizers and improved seed as was originally planned.

(4) Agriculture Input Trust Fund (AGITF)

AGITF is a fund providing loans to small scale farmers holding 2.5 acres to 5 acres of land who cannot access to commercial banks. Although MAFC provides annual budget of 2.8 billion to AGITF, it is an independent organization. AGITF has utilized the money as revolving fund and total accumulated loan outstanding amount is 63.8 billion Tsh in 2013/14. During the 12 years of operation from 2002/03 to 2013/14, AGITF disbursed 3,177 loans and non-performing loans account is 28 percent. It provides loans for agriculture input to small scale farmers through community banks and SACCOS. There are 28 staff members working in branches of Mbeya, Lindi, Kilimanjaro, Kagera, Tanga and Iringa. AGITF provides loans to a SACCOS ranging from 20 to 50 million Tsh to 100 million Tsh. In the case of tractor, loan period is 5 years with interest rate of 8 percent. Loan period of 2 years are allowed for purchasing seed, fertilizer and pesticide with interest rate of 6 percent if borrowing through SACCOS. AGITF requires collateral based on Bank of Tanzania's regulation.

Total budget for 2014 is 7.8 billion consisting of repaid 5 billion Tsh and the new budget of 2.8 billion Tsh. The rate of delayed repayment is about 40 percent and AGITF reschedules for respective transactions. AGITF is now putting 50 cases in the court whose loan outstanding amount is 5 billion Tsh. It takes about 2 years to solve the cases. Table 3-17 shows the breakdown of the accumulated 63.8 billion Tsh loan outstanding amounts as of 2013/2014.

Table 3-17: Breakdown of ATIF's loans

	Number of loans	Loan amounts (million Tsh)
New tractor	944	33,566
Rehabilitation of tractor	274	1,062
Agricultural inputs	1,688	26,771
Power tillers	256	1,760
Irrigation	8	370
Processing machine	4	97
Combine harvest	3	192

Source: AGITF

3.2.2 Private sectors

(1) CRDB Bank

Being the largest agriculture loan provider, CRDB provides 379 billion Tsh agriculture loans in 2013, which accounts for about 40 percent of total agriculture loans in the country. CRDB finances the whole value chain from production to marketing under the name of Agri-business loans. Total agri-business loans including pre-harvest agriculture production loans of 379 billion Tsh and post-harvest activities are 435 billion Tsh in 2013. Small scale farmers are dealt with by the subsidiary company CRDB Microfinance Bank.

CRDB will never finance 100 percent of the total costs. Depending upon borrowers' credibility based on the cash flow analysis and viability of loan utilization, it requires borrowers to bear 30 to 40 % of the total costs either in the forms of deposits or money in kind such as land and buildings, sometimes chartered mortgage (mobile assets collateral) as equity portion of the project. CRDB evaluates the values of proposed equity portions and decides the loan amount. CRDB takes 'equitable mortgage' which is Certificate of a Customary Right of Occupancy[38] as a symbolic purpose as most of such lands are located in rural areas and do not have high values compared with those located in urban areas. Maturity period is to be determined according to the cash flow analysis. Maximum period ranges from 3 to 15 years. The maximum loan amount per clients is 70 billion Tsh, beyond which CRDB provides a syndicated loans with other banks.

(2) NMB Bank: diversion of agro-industry

NMB has provided agri-business loans since 2007. The agri-business loans include not only producers but also other stakeholders in the value chain as far as they are engaged in production as well. NMB has tried to diversify the lending to agriculture production so as to avoid high risks associated with agriculture production *per se*. NMB considers the most difficult part of agro-industrial enterprise lies in small and medium scale enterprises which are emerging every day. It is hard to fill the financial gap of those emerging agro-industrial SMEs.

NMB designs the financing scheme consisting of equity, long term and short term loans based on borrower's credibility. If the credibility of a borrower is low, then NMB requires the borrower to provide high equity portion in the form of land, building and

[38] Whether the 'Certificate of a Customary Right of Occupancy' could be accepted as collateral vary among banks. For instance, NBC does not take the certificate as collateral.

deposits and reduces long term loans.

(3) NBC

NBC has not directly lent to agriculture production due to the high risk and difficulties associated with monitoring farmers. In 2014, in response to a request from South Africa Council of Confederation of Agriculture (SACAW), NBC lends 3.8 billion Tsh to Agricultural Council of Tanzania (ACT) which is a government organization having various stakeholders working in the agriculture value chain as the members. ACT will on-lend money from NBC to member entities. NBC does not monitor the end users, but receives repayment from ACT which is responsible for monitoring the borrowers. Loans will be utilized for seed production, warehouse, and transport and irrigation facilities.

(4) SACCOS

The table in Appendix 3-1 shows the latest figures of registered SACCOS. SACCOS have played an important role in mobilizing savings and deposits, lending and recovering loans, especially in rural areas where formal banks do not have branch offices. They are working with various development partners and commercial banks such as DANIDA and CRDB, and government organizations such as TIB and Agricultural Input Trust Fund in order to extend financial services to rural remote areas. While there are well operating SACCOS, the lack of management capacities and leadership is frequently pointed out as a serious weakness by financial institutions, MAFC and development partners. Since MAFC does not keep financial statements of SACCOS by a computer network, it is not possible to show the evidence of lack of management. CRDB which has supported the linkage between CRDB and SACCOS stated that there were many SACCOS which lack adequate management and leadership, especially those engaged in agriculture production.

(5) Lonagro (A sole supplier of John Deer agriculture machinery)

In order to sell agriculture machinery to small and medium scale farmers, Lonagro sells machinery in two instalments. A buyer pays 50 percent of the cost in the beginning and the rest of 50 percent will be paid a year later after the buyer finishes harvesting and obtaining profits to repay to Lonagro. Lonagro currently applies this scheme without interest rate to 3 farmers in a year and many people want to utilize the scheme. Basically Lonagro sells machinery to a person who works hard and is known in the

community as reliable person so as to avert the risk of non-repayment or selling the machinery even before repaying the rest 50 percent of the cost.

Lonagro has discussed with some commercial banks about the asset financing. The banks agree to lend money to commercial farms, but are reluctant to lend to small scale farmers who are Lonagro's new markets. Now Lonagro is negotiating with the banks by proposing *buy back guarantee* by Lonagro should buyers disappear without repaying the remaining debts.

3.2.3 Constraints associated with Agriculture finance

First of all, agriculture is regarded as risky business in Tanzania and very limited numbers of FIs are providing financial services. In addition, the provided services are mainly for working capital purpose whose maturity is less than 1 year with high interest rates which agriculture producers could not obtain from daily operation. The limited access to medium and long term loans prevents agriculture producers from necessary capital investment such as for developing farm land and purchasing agricultural machinery and equipment for further growth. Second, agriculture value chain is not well developed. FIs prefer to provide short term loans to crop purchasers rather than medium and long term loans to producers from the risk aversion point of view, which hinder producers' access to agricultural inputs and development of emerging agro-processing industries, resulted in preventing the improvement of quality and productivities of agricultural produce. Under such a situation, the government has provided various input subsidies to agriculture producers. However, TIB and MAFC point out the shortage of reliable input dealers, in rural areas in particular, make it difficult for them to provide subsidized loans to producers.

Regarding agricultural machinery and equipment which needs longer loan maturity period compared with other inputs such as seed, fertilizer and pesticide, appropriate and timely operation and maintenance services provided by dealers is a key to success for keeping their machinery and equipment in a good condition so that borrowers could keep generating income by utilizing the introduced machinery and equipment. It is noted as well that most of the users of machinery and equipment usually do not prepare necessary budget for maintenance.

Third, although there are some potential producers dealing not only with production but also with processing and other value chain activities, their operating scales are still limited. In order for them to expand the production by borrowing money from FIs, they need to have financial discipline such as repaying the borrowed money on time, utilizing

the loans exactly for what they requested and not for any other purposes, and having clear visions on how to utilize the money for what purposes and how to repay the debts before borrowing money from banks.

Issues of high interest rates and lack of collateral are discussed in '3.3.3 Constraints associated with business finance targeting agro-industrial enterprises' below as there are common features in business finance as well.

3.3 Present situation and constraints associated with business finance targeting agro-processing industries

3.3.1 Government Financial support

(1) Tanzania Investment Bank (future TIB Development Bank)

As Table 3-2 shows, being a development finance institution, TIB has provided long term loans to various economic sectors with special emphasis on agriculture and agro-industry in the whole value chain ranging from 100 million Tsh to 34 billion Tsh. TIB's total on balance asset of 410 billion Tsh in 2013 would reach to 1 trillion Tsh in 2014 when adding the off balance assets of 383 billion Tsh of Agricultural Window. Maturity of loan is 5 years. Grace period is between 6 to 24 months depending upon the nature of equipment and machinery. Interest rate per annum is 17 percent. Collateral which is equivalent to 125 percent of loan amount is required.

Development finance requires various documents which applicant enterprises sometimes cannot provide in one time. Necessary documents are business development plan including the purposes of business and detailed cash flow analysis and Internal Rate of Return (IRR), detailed explanation about factory facility, evaluation report of owned assets made within 6 months and a company registration certificate. Most applicants could not submit the necessary documents in one time and it takes several months to submit the required documents and another several months will be needed for credit screening by TIB.

TIB has implemented financial leasing transactions for about 4 to 5 years mainly for purchasing expensive agricultural machinery such as combine harvesters. It is not difficult to resell the collected leased products at the second hand markets if borrowers failed to repay.

TIB is now under reorganization and will be licensed by Bank of Tanzania (BOT) as two entities: namely, TIB Development Bank dealing with long term loans as a development finance bank and TIB Commercial Bank dealing with short term loans. It

is expected that TIB clients could access both long and short term loans at one time which enables TIB Development Bank to monitor clients' daily business transactions which was not possible now.

(2) SIDO's loan facility

SIDO has provided various financial services including hire purchase of agriculture machinery, women and youth funds, etc. Some financial schemes were terminated and there are two small scale loans at present: namely; National Entrepreneurship Development Fund and Regional Revolving Fund.

National Entrepreneurship Development Fund started in 1994 after the liberalization of the economy. The government has kept providing budgets for the fund of 1 to 2 billion Tsh a year. SIDO has utilized the fund at revolving basis and the loan outstanding amount is 6 billion Tsh at present. Based on the past failure experiences of hire purchase transactions and so on, SIDO started to take collaterals including the third party guarantee which resulted in the improvement of repayment rate from 60.7 percent in 1995/95 to 91.02 percent in 2013/14 (as of March). Loan amount ranges from 0.5million to 2.5million Tsh. Annual interest rate is 20 percent including SIDO's fees of 2 percent. Maturity of normally one year and maximum 3 years could be admitted. Compared with other financial institutions SIDO's 20 percent interest rate is even regarded as low by the small scale borrowers. From 1994 to march 2014, SIDO has received 66,253 applications out of which 66 percent is from urban areas. SIDO has 21 regional branches and one credit officer works per branch. These 21 credit officers and 4 credit officers at headquarters office are not enough to monitor 66,253 loan clients. SIDO introduced a book keeping software by IFAD's assistance and could grasp the daily repayment situation of all the clients of 21 regional offices.

Regional Revolving Fund has been provided to individuals and groups targeting for manufacturing including agro-processing industries. Loan amount ranges from 0.5 million Tsh to 6 million Tsh. Interest rate is 22 percent per annum. Maturity period is 1 year.

(3) Planned Credit Guarantee scheme by SIDO

Receiving a fund allocation from Agricultural Counterpart Fund of the Ministry of Agriculture, Food Security and Cooperatives, SIDO is going to start a pilot program of credit guarantee scheme for SMEs. SIDO has 42,000 SMEs which successfully repaid NEDF Loan till today and 5,000 SMEs which newly participated in training program of SIDO. The

planned credit guarantee scheme would provide financial access to SMEs which are proved to be credible and trustworthy. It is anticipated that the pilot program would achieve the success and would be expanded nationwide. During the preparation period, SIDO would take into account of the lessons learned from the past experiences of credit guarantee schemes such as Bank of Tanzania's (See Box 3-1) as well.

Box 3-1: BOT's SME Credit Guarantee Scheme

Bank of Tanzania (BOT) started providing SME Credit Guarantee Scheme in 2005. However, the scheme was not effectively utilized by SMEs and BOT suspended the implementation in 2008. The World Bank summarizes the reasons of unutilized scheme as 'it was bureaucratic, duplicating loan assessment processes unnecessarily, and requiring financial institutions to prefect their collateral before applying for a guarantee'. In other words, the scheme was not utilized effectively by the associated banks because: (i) they had to wait for BOT's final decision even though they made the final decisions by themselves and (ii) they could not withdraw the guaranteed amount on demand by the time they finished negotiation with BOT. As a result, the associated banks became reluctant to utilize the scheme and the guarantee funds were kept unutilized at the BOT.

3.3.2 Private sectors transactions

(1) CRDB

CRDB has provided SME loans ranging mainly from 30million Tsh to 750 million Tsh. Presently, SME loan outstanding amount is about 215 billion Tsh, while the outstanding amount fluctuates seasonally reflecting crop traders' huge financial demand for purchasing specific cash crops such as cashew nuts and coffee. There are about 5 to 10 projects in respective 26 regions ranging from 50million Tsh to 500 million Tsh. CRDB provides technical support to SME such as book keeping, market analysis by utilizing Tool Kit Training before disbursing loans CRDB does not lend money to newly established entrepreneurs as they are risky. CRDB provides loans to large scale 120 agro-business industries.

CRDB has 130 branches in Tanzania and 4 in Burundi. Non-performing Loans (NPL) reached to 18 percent in 2008 when global financial crisis occurred. CRDB rescheduled some loans and NPL decreased to 10 percent in 2013.

(2) NMB

NMB provides loans to agro-industry by SME finance department or by Corporate finance department depending on the loan size. Loan sizes provided by different departments are as follows.

a Microfinance: 1million Tsh - 15 million Tsh
b SME finance: 15million Tsh - 1.5 billion Tsh
(a + b =25 percent of NMB's total outstanding loans)
c Corporate finance: more than 1.5 billion Tsh
(25 percent)
d Consumer loans such as housing and education mainly borrowed by civil officers
(50 percent)

Non-performing loans ratio is 3 percent. NMB takes equitable mortgage as collateral for a symbolic purpose to enforce borrowers to repay. Microfinance department takes mobile assets such as cars.

80 percent of SME finance is working capital. Interest rate is 19 percent per annum. Limited number of long term loans (maximum maturity is 3 years) are provided with 19 percent annual interest rate.

Credit lines allocated for agri-business was 72 billion Tsh in 2012 and sometimes reached to 200 billion Tsh depending on seasonal financial demand by cashew nuts and coffee processing enterprises.

Total credit lines allocated to Agri-Business, SME Finance, Corporate was about 300 billion Tsh in 2013.

(3) NBC

NBC defines SME as (i)annual turnover is between 1 billion Tsh and 10 billion Tsh and (ii) loan size is between 1 million Tsh to 1 billion Tsh. NBC has not financed agriculture sector but finance traders and millers who are dealing with agricultural crops. Corporate section which lends more than 1 billion Tsh finance agro-industry at NBC. Maturity is basically one year and 3 years at maximum. The maximum overdraft is 500 million Tsh in the case of SME finance. Annual interest rate is 20 percent plus α. Grace period is between 6 to 12 months. Monthly payment is commonly observed. NBC takes building and deposits as collateral. Few people have official title deeds therefore NBC does not require land title deeds as collateral. Mobile assets are not acceptable as collateral. Submitted collateral is re-evaluated every two years by NBC. Loan officer visit clients every 3 months to monitor. There are 25 loan officers engaged in SME finance throughout the country and 3 advisors and 9 credit officers work at the headquarters office.

Main clients of SME finance are construction, trade, hotels, tourism, education,

transport and mining. Default rates of construction companies are high due to the delayed payment by the government which is their main customer

(4) AKIBA Commercial Bank

AKIBA Commercial bank considers it risky to lend long term loans in a country like Tanzania where unpredictable thing will happen in 5 or 10 years. Therefore, AKIBA bank provides mainly short term loans. About 60 to 70 percent of total loan outstanding amounts are short term loans whose maturity is between 6 to 9 months. Borrowers renew the loan agreement once they repay the current loans. Only 5 to 10 percent of the total loan outstanding amounts are long term loans.

Major clients are trade and services. Small scale enterprises employing less than 10 persons are AKIBA's main clients. The following are AKIBA's financial products.

- Micro clients: group lending method is utilized. 0.2million Tsh to 3million Tsh per client. Maturity is 3 to 12 months. Annual interest rate is 27 percent. Monthly repayment.
- SME finance: 0.5million to 50million Tsh. Maturity is 3-24 months. Monthly repayment. 100 percent to 150 percent of loans should be covered by collaterals. Land, housing, cars and television would be regarded as collateral. Annual interest rate is 20-22 percent. Sales agreement can be taken as collateral.
- Corporate finance: Loan size is more than 50 million Tsh. Annual interest rate is 20 percent. Monthly repayment. 100 percent to 150 percent of loans should be covered by collaterals.

3.3.3 Constraints associated with business finance targeting agro-industrial enterprises

There are several constraints for development of agro-industrial enterprises in Tanzania. First, since very limited numbers of financial institutions such as TIB, CRDB and NMB have provided medium and long term loans, many enterprises could hardly access to the medium and long term loans which are crucial for procuring production lines, machinery and equipment. For commercial banks which utilize short term deposits as main source of loans it is rather difficult to lend medium to long term loans. Loan outstanding amount of TIB, which is the government development financial institution, provided to agriculture and agro-processing is 120 billion Tsh, which is considered to have limited impacts on the economy comparing with 1.2 trillion Tsh of commercial banks' loan outstanding amounts to manufacturing sector and 1.1 trillion Tsh

of those to agriculture, hunting and forestry

Second, financial institutions are rather reluctant to provide loans to small and medium scale enterprises, which prevents them from growing to larger scale enterprises generating employment opportunities and adding values to agricultural produce. Tanzania's agro-industrial enterprises could be classified into limited number of large scale enterprises and countless numbers of small and medium scale ones employing less than 10 people. Small and medium scale enterprises could not easily access to loans due to lack of collateral, high interest rates or even fear of failed repayment. Providing loans to such enterprises is considered to be risky business and additional support apart from financial services has been provided. Before disbursing loans, TIB, NMB and CRDB provide technical support for formalization of assets and business entities and for helping formulation of business development plan based upon which banks could make decisions and simultaneously, borrowers could understand the meaning of borrowing money.

Some large scale agro-industrial enterprises need medium to long term loans for importing production line, machinery and equipment from abroad. Their financial needs are beyond the MIT's planned loans whose maximum loan size is 1 billion Tsh. Concessional interest rates are not necessary required by such large scale enterprises.

Third, high interest rates and lack of collaterals are pointed out as constraints for accessing to FIs by interviewed enterprises. The issue of high interest rate is more critical for small and medium scale enterprises which could not borrow from formal banks. The phenomena confirms what the executive director of AGITF stated that the SMEs which could not access to formal commercial banks could not help borrowing from non-bank financial institutions which lent money at as high as 100 percent interest rates. Under such a situation, the government supported concessional loans targeted for small scale enterprises such as SIDO's attracted many enterprises even though SIDO lend money at 20 percent interest rate per annum. Problem is that such loan facility is very limited in volumes while demand for such loans is high.

The issue of lack of collaterals needs to be considered from two ways. On one hand, borrowers need to understand that they cannot avoid taking risks associated with providing requested collaterals to banks based on BOT's regulation. Enterprises which have borrowed money from non-bank financial institutions such as MFIs without any collateral tend to be reluctant to provide any collateral in order to borrow higher amounts of loans when they access to formal financial institutions (FIs). However, the amount of loans that FIs could lend without collateral is limited. Therefore, those who need higher amount of loans need to understand that they cannot avoid providing their assets to

borrow higher amounts. On the other hand, the delayed formalization of land title deeds prevents many enterprises from borrowing from banks. It is necessary to speed up the formalization of land title deeds within the framework of the Property and Business Formalisation Programme. It is also proposed to develop another financial schemes not solely relying on immobile collaterals such as land and houses. Asset financing or financial leasing transactions thus now attract financial institutions and agro-industrial enterprises which would like to invest in production lines, as the scheme enables enterprises to provide the financed equipment, machinery and production lines *per se* as collaterals.

Taking the above mentioned constraints into account, it would be appropriate for development partners to consider about providing (i) medium and long term loans targeting especially for small and medium scale enterprise which have potential to grow but could not access to existing financial services due to lack of collateral and low capability to bear the high interests, and (ii) partial credit guarantee schemes which would strengthen credit worthiness of enterprises. The loan would be soft loan with concessional lending conditions. Asset financing needs to be further considered in the long run.

CHAPTER 4: AGRO-INDUSTRY PROMOTION MEASURES

4.1 Supportive measures for agro-industry

4.1.1 Investment promotion measures

The Tanzania Investment Centre (TIC) was established in 1997 to coordinate, encourage, promote and facilitate investment in Tanzania and to advise the government on investment policy and related matters. The agency deals with all enterprises whose minimum capital investment is not less than US $ 300,000 if foreign owned or US $ 100,000 if locally owned.

Facilitation of investment is among the core operations of TIC. As a 'one-stop-shop', TIC assists investors obtain all business permits, licenses and visas. For instance, a BRELA officer is stationed at TIC to provide business registration service to the investors. To meet the demands of foreign investors, officers from the immigration office and the labour department are also stationed at TIC to process foreign investor's application of visas and work permit.

Moreover, TIC promotes investment by arranging various kinds of incentives, including tax exemption. Those 'strategic investors' particularly can enjoy larger incentives. Strategic investors are defined as the investors that make a large amount of investment, generate huge employment opportunities, bring new and innovative technology to the country, generate much foreign exchanges, and so on.

TIC now puts much emphasis on the promotion of investment to the SAGCOT area (Southern Agricultural Growth Corridor of Tanzania). SAGCOT is a public private partnership to achieve the objectives of Kilimo Kwanza. This corridor links the port of Dar es Salaam to Malawi, Zambia and the DRC. It benefits from good 'backbone' infrastructure – including road, rail and power. The area can become a globally important producer of crops and livestock. SAGCOT looks for $2.1 billion of private investment over a twenty year period, alongside public sector grants and loans of $1.3 billion. The result will be a tripling of the area's agricultural output. Approximately 350,000 hectares will be brought into profitable production. Sugar, rice and livestock are three target products in the first phase. Project profiles were developed and distributed to potential investors.

4.1.2 Progress of investment promotion measures

The government is committed to develop the country‘s private sector, but the effort to improve business environment remained halfway. The business environment of Tanzania has been examined and ranked internationally in the World Bank’s Doing Business (DB) Reports. The country’s overall ranking business environment, ‘Ease of Doing Business’, was not improved in the past few years. Its rank was 128th in 2011, but dropped recently and become 145th in 2014. Among the main indictors, the decrease in the ranking of ‘Getting credit’ was the largest. This rank dropped from the 89th in 2011 to the 130th in 2014. Although the credit information system improved in the country, the high lending rates should make it difficult to get loan from the commercial banks.

Table 4-1: Changes in rank of Tanzania’s business environment

	2014 rank	2011 rank	Change in rank
Ease of doing business (overall)	**145**	**128**	**−17**
Starting a business	119	122	3
Dealing with construction permits	177	179	2
Registering property	146	151	5
Getting credit	130	89	−41
Protecting investors	98	93	−5
Paying taxes	141	120	−21
Trading across borders	139	109	−30
Enforcing contracts	42	32	−10
Resolving insolvency	134	113	−21

Source:Doing Business 2014, 2011, World Bank

Doing Business ranks of Tanzania in 2014 are compared with those in the neighbouring countries, Kenya and Uganda in particular (see Table 4-2). Concerning the overall ranking of ‘Ease of doing business’, Kenya and Uganda are ranked the 129th and the 132th respectively. This shows that both countries could offer slightly better business environment than Tanzania. According to the report, for instance, getting a construction permit takes 206 days with 19 steps of procedures in Tanzania, while this takes 125 days with 9 steps in Kenya.

Improving the business environment is among the high priorities for GOT and its development partners. In response to the deteriorating rankings in ‘Doing Business’ survey, GOT adopted a roadmap[39] focused on short, medium and long-term reforms. Its implementation, however, seems slow, suggesting continued unfavourable legal and

[39] ‘Government Roadmap on the Improvement of the Investment Climate in Tanzania’ Prime Minister's Office, September 2010

regulatory frameworks as well as limited reform capacity in the public sector[40].

Table 4-2: Comparison of the Tanzanian DB ranks in 2014 with those of neighbours

	Kenya	Uganda	Tanzania
Ease of doing business (overall)	**129**	**132**	**145**
Starting a business	134	151	119
Dealing with construction permits	47	143	177
Getting electriticy	166	178	102
Registering property	163	126	146
Getting credit	13	42	130
Protecting investors	98	115	98
Paying taxes	166	98	141
Trading across borders	156	164	139
Enforcing contracts	151	117	42
Resolving insolvency	123	79	134

Source:Doing Business 2014, World Bank

Another initiative to examine the business environment of the country is the competitiveness study by UNIDO[41]. The UNIDO study uses CIP (comparative industrial performance) index and compares the industrial competitiveness of selected countries including Tanzania. It captures the ability of the countries to produce and export manufactures competitively, moving up the technology ladder and increasing value addition by shifting towards technology-intensive sectors. The CIP index is composed of eight indicators in six dimensions of industrial performance and capacity, including 'manufacturing value added (MVA) per capita', 'manufactured exports per capita', 'the share of medium and high-tech technology activities in MVA', 'the share of manufactured exports in total exports' and others.

Out of 133 countries in the study, Tanzania ranked the 106th in 2010. Its rank was slightly improved from the 110th in 2009. This indicates that a catch-up process has been initiated in the last years in the country. The ranks of 2009 in the neighbouring countries are, however, still higher than that of Tanzania. The ranks of Kenya and Uganda are the 100th and the 98th in 2009 respectively. Tanzania's lower rank suggests that there is still a room of improvement for the country to catch up the neighbours.

[40] Due to 'Doing Business (2014)', 'Dealing with Construction Permits' for instance still needs 19 steps taking 206 days. 'Registering Property' is another complex procedure, which takes 68 days in total.
[41] 'The Industrial Competitiveness of Nations, Competitive Industrial Performance Report 2012/2013', UNIDO (2012). This is the latest UNIDO study on this issue.
http://www.unido.org/fileadmin/user_media/Services/PSD/Competitive_Industrial_Performance_Report_UNIDO_2012_2013.PDF

Table 4-3: Tanzanian competitiveness indictors in comparison with those of neighbours

	Tanzania	Kenya	Uganda
CIP ranking 2010	106	102	120
CIP index 2010	0.0085	0.01	0.004
1) Manufacturing Value Added per capita	45.6784	46.7688	25.2921
2) Manufactured Exports per capita	43.72	62.12	11.78
3) Share of Medium- and High-tech Manufacturing Value Added share in total manufacturing value added (%)	**1.18**	4.08	11.07
4) Manufacturing Value Added share in total GDP (%)	10.02	10.01	6.82
5) Medium- and High-tech manufactured Exports share in total manufactured exports (%)	**13.58**	24.93	15.16
6) Manufactured Exports share in total exports (%)	48.54	48.85	34.83
7) Impact of a country on World Manufacturing Value Added	0.028	0.026	0.012
8) Impact of a country on World Manufactures Trade	0.018	0.023	0.004

Source: Competitive Industrial Performance Report 2012/2013, UNIDO

Among the eight CIP indicators, the performance of Tanzania was particularly poor with regard to the share of Medium- and High-tech Manufacturing in the total value added as well as in the export (Table 4-3). This suggests that the technological level of the country's manufacturing production remains low. It seems necessary for the country to promote the upgrading of overall technological level of the manufacturing production.

Other Key challenges include the country's undeveloped infrastructure, particularly in energy and transport, low human capital development, an unsatisfactory regulatory and legal environment, and poor quality human resource base. The financial sector also remains underdeveloped, resulting in limited access to financial services[42].

4.1.3 Agro-industry promotion measures

(1) Warehouse Receipt System (WRS[43])

As an initiator of WRS, IFAD has proposed to utilize WRS for cash crops such as coffee, cashew nuts and cotton which have already established markets. According to IFAD[44], these crops are for export markets and auction and grading systems are well developed that are prerequisite for WRS to be functioned effectively. In fact, CRDB lends working capital of 145 billion Tsh. to coffee traders who stored the commodity in WRS by taking the stored coffee per se as collateral.

On the other hand, WRS are utilized not only for export cash crops, but also for food crops such as maize and rice which do not have established markets nor sophisticated grading systems. Various purchasers come to the warehouse and collect various

[42] Tanzania Industrial Competitiveness Report 2012, UNIDO (2012)

[43] 'The WRS enables farmers to store their produce in designated warehouses during harvest when prices are relatively low and sell them later when prices are favorable. Through this system farmers are issued with Warehouse Receipts, and can borrow part of the value of the deposited produce in form of loan advance in which the deposited produce is used as loan security' (Source: Lucas Mataba, 'A Case Study Report on Warehouse Receipt System Under AMSDP, Tanzania', Agricultural Marketing Systems Development Programme (AMSDP), January 2010, p.1.

[44] Interview with IFAD on 7th August 2014.

qualities of crops. CRDB has provided 35 billion Tsh. to Agricultural Market Cooperative Societies (AMCOM) which are engaged on WRS. Major stored crops that CRDB finances are cashew nuts, coffee, sunflower seeds, sesame and rice. The WRS works except for sunflower seeds which were affected by the government policy change that increased imports of cheaper edible oils from abroad. Some SACCOS utilize WRS for their member farms as well.

NMB, the other major user of WRS, has provided technical support related to business plan formulation, organization of farmers and marketing to farmers through NMB Foundation for Agricultural Development. According to NMB, farmers are now benefitting from price increase, good quality and keeping significant volumes of crops such as coffee, cashew nuts, maize, beans and rice. Instead of selling the crops at the lowest prices immediately after the harvest, farmers now can keep their crops in a good manner and sell them whenever they need money.

(2) One District One Product (ODOP)

One District One Product (ODOP) approach was introduced to the country by SIDO after examining the similar approach in other countries including Japan. This approach encourages the district authority[45] to concentrate its development effort to promote the most promising product in the district. The target of ODOP does not have to be a product. Service industry, such as tourism, can be selected to the target of ODOP.

The ODOP programme is initiated with the following procedure. Firstly, the most promising product is identified by the stakeholders[46] for each district. The selection of this product is often easy, as many of the local enterprises are engaged in similar business reflecting socioeconomic condition of the district concerned. Then, the constraints of promoting this product were analysed throughout its value chain. SIDO mobilizes all available resources to alleviate these constraints. Main supportive measures of SIDO include the following.

Business Development Service (BDS): SIDO's BDS Officer, stationed at the SIDO regional office, provides consulting service to those who intend to start a new business. Training courses are also implemented for start-up entrepreneurs, so that they can develop their business plan.

[45] The role of the district and municipality offices seems minimum in implementing ODOP. Deployment of agricultural extension officers is one of the important roles of local government offices in promoting ODOP. The shortage of budget, however, prohibits the offices from taking critical roles.
[46] The stakeholders include the representatives from the district offices, the regional SIDO office as well as private sector in the district.

Technical support: SIDO's Technical Officer is expected to provide technical advisory service to small enterprises. The advisory service includes designing of factory layout, selection of appropriate machinery, introduction of food processing knowhow, etc.

Financial service: the SIDO's Financial Officer is responsible for managing its financial support programmes. National Entrepreneurship Development Fund, for instance, provides loan to local small business owners through SIDO. SIDO's financial service is described in detail in 3.3.1 of this report.

Marketing: the SIDO head office organizes regional exhibition six times a year. Small producers are encouraged to participate in the exhibition to present their products. The ODOP products are particularly highlighted in the exhibition. Besides, the SIDO regional office promotes the ODOP products of each district by printing posters or by displaying them in showcase.

Group purchase of packaging materials: It is always difficult for the small producers to procure packaging materials, particularly those who processing outside DSM. As their production volume is small, the cost of getting a certain quantity of packaging materials is very high. The SIDO offices try to cope with the difficulty by procuring a bulk of packaging materials from DSM and sell them to local small producers at the same price as that in DSM. This group purchase by SIDO enables the local small enterprises to sell their products at competitive prices.

(3) Cluster development

Public and private organizations have attempted to support cluster development with support from DPs. Among them, SIDO is one of the most active promoters of cluster development with rich practical experience. SIDO's major activities to promote the cluster development are the following.

First, micro and small enterprises in the same business are encouraged to relocate their workplaces to the industrial estate developed by SIDO. In Mbeya, for instance, SIDO manages four types of industrial estates. One of them is a 'paddy cluster' which is particularly prepared for rice milling establishments. Forty eight rice millers have been relocated to the estate since its launch in 2009. In Morogoro, moreover, SIDO is going to establish a new 'training-cum-production centre' for food processing industry, which is expected to promote food processing cluster in the area. Another industrial estate is planned in Dodoma to accommodate sunflower oil crushers.

Second, the cluster's actors such as enterprises, their associations, support

institutions, etc., are given training, workshops or study tours to enhance their institutional capacity[47]. It is expected that the cluster's actors shall develop and implement joint projects to improve the cluster performance. Establishment of common refining, filling and packaging facilities can be an example of such joint projects. Besides, the enterprises are encouraged to participate in the upgrade of activities, such as technical training and coaching to improve their overall competitiveness[48].

It is noted, however, that relocation of enterprises to an industrial estate is not the necessary or sufficient conditions of establishing the cluster. Vigorous cluster can be developed without gathering processers into one place. Moreover, just relocating enterprises in an industrial estate does not generate benefits of clustering unless they develop and implement a common strategy[49].

Box 4-1: GOT's agro-industry promotion policies

With three quarters of the working population engaged in the agriculture sector, the government has placed emphasis on the agricultural sector as a key for economic growth of the country and formulated a series of policies and programmes to promote its development. Among others, ***ASDP*** *(Agricultural Sector Development Programme, since 2006), a primary tool of operationalizing Agricultural Sector Development Strategy (ASDS), has been functional in promoting agricultural productivity and private sector-led transformation from subsistence to commercial farming. In recent years, ASDP has been increasingly focusing on the development of entire value chain of agricultural commodities, i.e. not only production but also processing, marketing, distribution and consumption.*

Other initiatives include: ***1) Kilimo Kwanza*** *(since 2009), which envisions modernization of agriculture through transforming smallholders to commercial farmers and industrialization of the sector through private investments;* ***2) TAFSIP*** *(Tanzania Food Security Investment Plan, since 2011), a ten-year investment plan to achieve a goal of 6 percent annual growth in the agricultural sector under the framework of Comprehensive Africa Agriculture Development Programme (CAADP); and* ***3) SAGCOT*** *(Southern Agriculture Growth Corridor of Tanzania, since 2011), which is designed to attract private investments and strengthen a linkage among different stakeholders for the agricultural development in the selected areas of Tanzania.*

[47] This capacity development is often financially supported by the DPs. KOICA, for instance, supported the food processing cluster members in Morogoro, while World Bank also assisted food processing entrepreneurs at SUA.

[48] Impact of the government intervention to the industry should be carefully examined in advance so that the industry does not face any distortion in the market.

[49] Use of unified brand can be the good initial step to pursue the common strategy of the cluster members. See 6.1.2.

4.2 Landscape of local agro-industry

Ministry of Industry and Trade (MIT) conducted the survey of industrial enterprises in 2011 in collaboration with NBS and UNIDO. The data of manufacturing establishments in 2009 were collected in the survey, and its findings were published in 2012[50]. This the most updated industrial survey in Tanzania at this moment. The data of those industrial enterprises employing over 10 were collected[51]. In total, the data of 733 establishments were shown in the survey report. This survey shows us a comprehensive picture of industrial enterprises, including those in agro-industry, regarding the location, the size of employment, the amount of value added, and so on. The main findings are shown below.

(1) Share of agro-industry in the manufacturing

The total number of manufacturing enterprises in the survey is 686 out of 733 establishments. Non-manufacturing enterprises include those engaged in provision of electricity, gas, water, etc. Out of 686 manufacturing enterprises, 241 enterprises are considered as agro-industry producing foods and beverages (ISIC code 11 and 12)[52]. The share of agro-industry enterprises in the total manufacturing enterprises is 35% (see Table 4-4 and Figure 4-1).

Table 4-4: Share of agro-industry in the total manufacturing (2009)

(1) Number of establishments by employment size (establishments)

ISIC code		10～19	20～49	50～99	100～499	500+	Total	
10	Manufacturing of food products	84	47	38	24	13	206	30%
11	Manufacturing of beverages	2	16	4	8	5	35	5%
	Manufacturing	252	180	102	112	40	686	100%

(2) Number of persons engaged by employment size (persons)

ISIC code		10～19	20～49	50～99	100～499	500+	Total	
10	Manufacturing of food products	1,023	1,488	2,810	4,798	26,926	37,045	38%
11	Manufacturing of beverages	23	518	264	1,477	3,168	5,450	6%
	Manufacturing	3,149	5,740	7,331	23,836	57,025	97,081	100%

(3) Value added by employment size (mil.Tsh.)

ISIC code		10～19	20～49	50～99	100～499	500+	Total	
10	Manufacturing of food products	11,432	76,525	91,509	148,665	165,578	493,709	24%
11	Manufacturing of beverages	974	14,233	7,035	148,735	328,377	499,354	24%
	Manufacturing	52,613	150,223	225,544	818,344	799,949	2,046,672	100%

Source: Table 4, 12, 49, MIT (2012)

[50] Annual Surveys of Industrial Production, 2009, Statistical Report, Ministry of Industry and Trade (2012)

[51] It is not clearly explained in the report why the establishments with less than 10 employees are excluded in the study. This exclusion might be caused by the difficulty to get data and information from smaller establishments, because many establishments 'do not have books of account' and 'could not provide detailed information for certain items' (p10-11).

[52] The food and beverage enterprises consist of the following sub sectors. Figures in parentheses show the number of enterprises in the sub sectors. 'Processing and preserving of meat (1)', 'Processing and preserving of fish, crustaceans and molluscs (13)', 'Processing and preserving of fruit and vegetables (3)', 'Manufacture of vegetable and animal oils and fats (34)', 'Manufacture of grain mill products, starches and starch products (58)', 'Manufacture of other food products (91)' 'Manufacture of prepared animal feeds (6)', 'Manufacture of beverages (35)'

Regarding the employment, the manufacturing enterprises employed 97,081 persons in total. The numbers of persons engaged in foods and beverages sectors are 37,045 and 5,450, respectively. In total 42,459 persons are employed in the agro-industry, which was 44% of the total manufacturing employment.

The agro-industry made a large contribution in the manufacturing value addition as well. The total amount of value added in the total manufacturing sector is 2,046,672 million Tsh, in which 48% is contributed by foods and beverages enterprises combined.

Although the beverage subsector has relatively small number of enterprises and employees, its share in the value added is comparable to those of food subsector. This suggests that the beverage enterprises in the country are rather capital intensive[53].

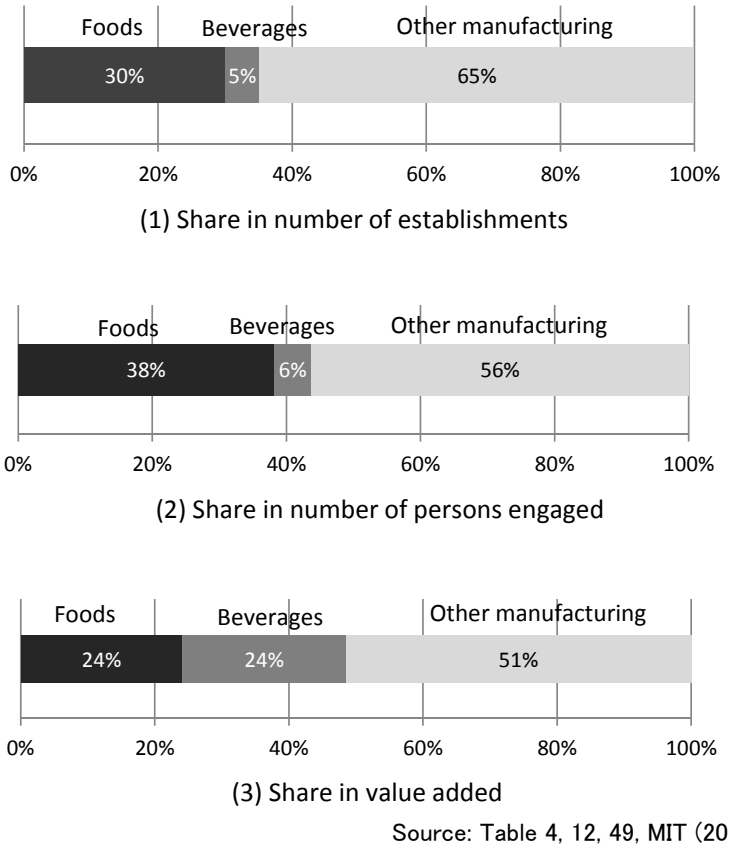


Figure 4-1: Share of agro-industry in the total manufacturing (2009)

The agro-industry is composed of the 8 subsectors, which are 'Meat (ISCI: 101)', 'Fish, crustaceans and molluscs (102)', 'Fruits and vegetables (103)', 'Vegetable and

[53] According to the CEO of a large scale brewery company in DSM, for instance, has only 700 factory workers but generates a large amount of profit, reaching US$ 300- 350 million per year. (Interview on 26 August 2014). The beverage industry is generally very capital intensive because bottling facilities are highly automated.

animal oils and fats (104)', 'Grain mill products and starches (106)' 'Other food products (107)', 'Prepared animal feeds (108)' and 'Beverages (110)'. The share of these subsectors in the total employment and in the total value added is shown in the following table. Except for 'Other food products (107)', 'Beverages (110)' subsector had the largest share in the employment and in the value added. More than half of the value added in the agro-industry was generated by this subsector.

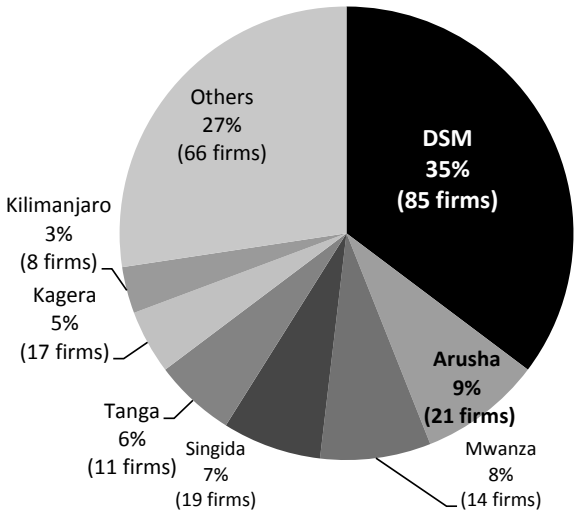
Table 4-5: Composition of subsectors in agro-industry (2009)

	Share in employment	Share in value added
Meat (101)	0.1%	0%
Fish, crustaceans and molluscs (102)	4.3%	3%
Fruits and vegetables (103)	0.3%	0%
Vegetable and animal oils and fats (104)	3.8%	7%
Grain mill products and starchs (106)	7.5%	1%
Other food products (107)	70.8%	36%
Prepared animal feeds (108)	0.3%	0%
Beverages(110)	12.8%	53%
Foods and beverages (10+11)	100.0%	100%
Foods and beverages (10+11), Value	42,495 persons	879 bill. Tsh

Source: Table 19, 34, MIT (2012)

(2) Regional distribution of agro-industry enterprises

Many of the agro-industry enterprises are located in DSM. Out of total 241 agro-industry enterprises, 85 establishments were placed in this city, which comprises 35% of all (see Figure 4-2). Other cities that have a number of agro-industry enterprises include Arusha (9%), Singida (8%) and Mwanza (6%).

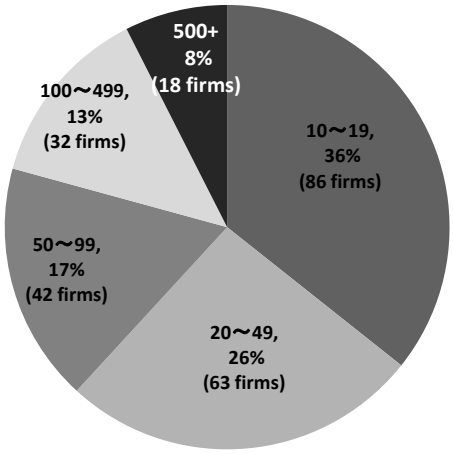


Source: Table 1, MIT (2012)

Figure 4-2: Number of agro-industry establishments by region (2009)

(3) Distribution of agro-industry enterprise by size of employment

Agroindustry enterprises are grouped by the number of employees (see Figure 4-3). The number of enterprises employing 10 to 19 persons is the biggest in number. Eighty six enterprises, or 36% of all, are classified in this category. The share of enterprises employing 20 to 49 is the second biggest, which is 26% in the total. The number of large enterprises employing over 100 is not significant. The number of those employing 100 to 499 and those over 500 are only 32 (13%) and 18 (8%) respectively.



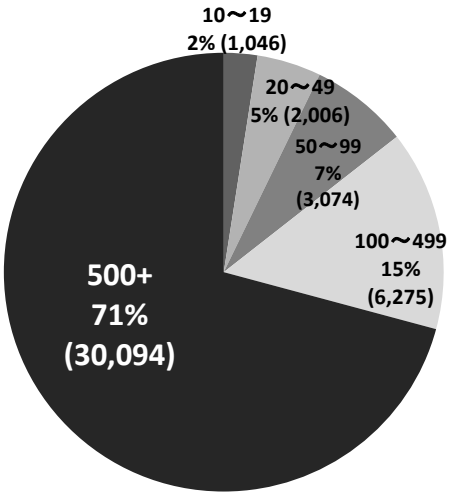
Source: Table4, MIT (2012)

Figure 4-3: Number of agro-industry establishments by size of employment (2009)

(4) Distribution of agro-industry employees by size of enterprises

The total number of persons engaged in the agro-industry is 42,495. These persons are grouped by the employment size of enterprises. Those working at very large enterprises employing over 500 amount to 30,094, which is 71% of the total agro-industry employment. The enterprises with 100 to 499 persons employ 6,275, which amounts to 15% of the total. It is shown that as much as 86% of persons in agro-industry are employed at large scale enterprises with over 100 staff members. The share of those employees working at small and medium enterprises[54] was only 14% combined.

[54] The 'Small and Medium Enterprise Development Policy (MIT: 2003)' presents the definition of micro, small, medium and large enterprises referring to their employment size. Those employing 1 to 4 are considered as Micro, while those employing 5 to 49 and 50 to 99 are Small and Medium, respectively. Those employing more than 100 are considered as Large. This survey does not look at the small and micro enterprises employing less than 9 workers, due to the unavailability of detailed information (p11, MIT (2012)). This exclusion does not necessarily imply these enterprises are informal and unregistered.



Note: Figure in parentheses show the number of employees
Source: Table12, MIT (2012)

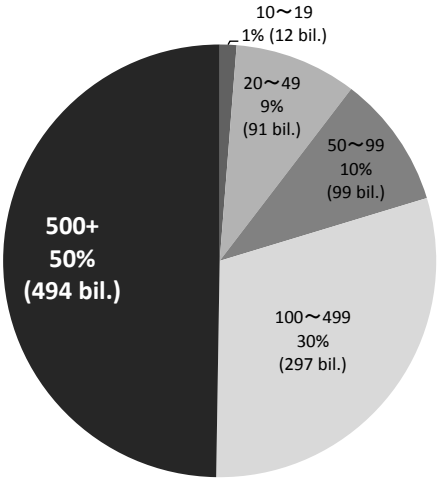
Figure 4-4: Number of persons engaged in agro-industry by size of employment (2009)

(5) Distribution of agro-industry value addition by size of enterprises

The considerable share of large size enterprises is also prominent in the distribution of value addition. The total amount of value addition in the agro-industry is 993,062 million Tsh. in which 50% is generated by large enterprises employing over 500[55]. The remaining large enterprises employing 100 to 499 persons contribute another 30% of the total agro-industry value addition. As much as 80% of the value addition in the agro-industry is generated by large scale enterprises[56]. This means the share of small and medium enterprises in the value addition is only 20% combined.

[55] By definition, the large size enterprises employ a number of employees, which suggests that these large enterprises use labour intensive technology. This might be one of the reasons why the labour productivity of the larger enterprises is lower than that of the others.

[56] Very large enterprises employing over 500 have lower labour productivity compared with the large enterprises and others. This might be due to the fact that such large scale plants as sugar milling factories employ a huge number of seasonal workers. This temporary employment could affect their level of productivity.



Note: Figure in parentheses show the amount of value added in bllion Tsh.
Source: Table49, MIT (2012)

Figure 4-5: Total value added in agro-industry by size of enterprises (2009)

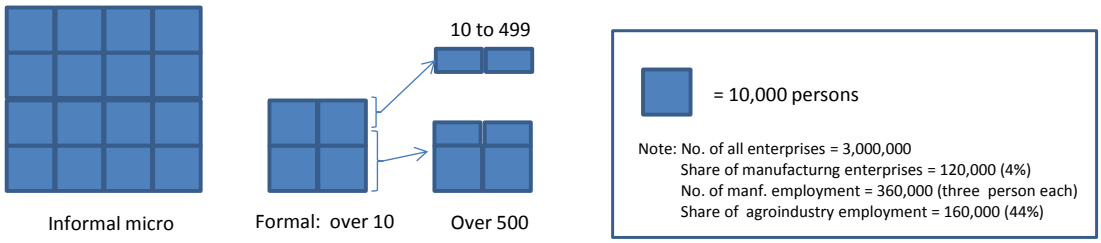
Box 4-2: Estimation of the overall agro-industry employment in the country

The country has a huge amount of business activities in the informal sector. Millions of unregistered micro enterprises are engaged in various economic activities, including processing of foods and beverages. The size of informal employment in agro-industry is estimated, and compared with that of formal establishment reported in the MIT survey.

First, based on the informal sector survey[57] made by FSDT in 2014, the total number of establishments in the informal sector (including sole proprietorship) is estimated to be 3 million. It is also assumed that 4% of these establishments are engaged in manufacturing business, which amounts to 120,000. Most of these establishments are considered to be small in size, so the average number of persons working at these establishments is supposed to be three. Then, the total number of persons working at the manufacturing establishments shall be 360,000. The MIT (2012) survey shows that the share of agro-industry in the manufacturing employment is 44%. Assuming that this share can also be applied in the informal sector, the total number of agro-industry employment in informal sector could be around 160,000. As previously shown, the agro-industry enterprises with over 10 workers employ about 40,000 persons in total. Those enterprises over 500 workers employ roughly 30,000. Using these data, the shares of agro-industry employment in the informal small business and those in larger enterprises can be illustrated in Figure 4-6.

The comparison in this rough estimate tells us that four out of five persons engaged in agro-industry are working at informal micro business. In the formal sector, the share of persons working at very large enterprises with over 500 is significant. The agro-industry in this country could mainly consist of a bulky informal micro business and very large scale formal business. The share of medium sized enterprises seems minor.

[57] http://www.fsdt.or.tz/data/msme-baseline-survey/

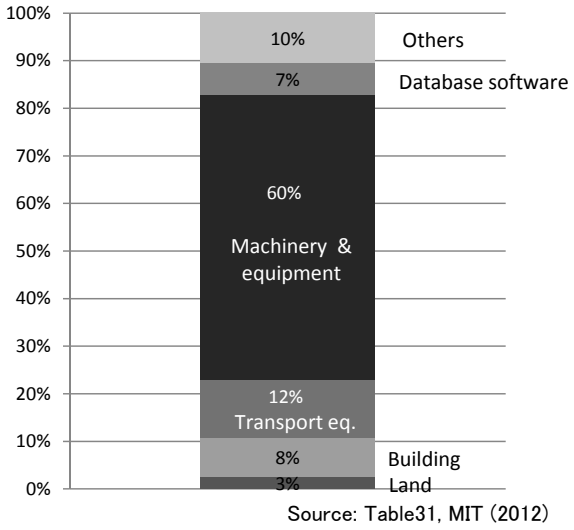


Source: Table12, MIT (2012), FSDT (2012)

Figure 4-6: Estimated overall agro-industry employment by size of enterprises

(6) Composition of the investment in agro-industry

The survey shows how the investment[58] in agro-industry is composed (Figure 4-7). The total amount of net investment is 208 billion Tsh in 2009. The share of investment on 'machinery & equipment' is considerable, comprising 60% of all. Then, the share of 'transport equipment' including vehicles is the second largest, which is 12% of all.



Source: Table31, MIT (2012)

Figure 4-7: Net investment in agro-industry by type of investment (2009)

The survey also presents the composition of the investment for all industrial subsectors in 2009 (Table 4-6). In many of the subsectors, including Food and Beverage subsector, the share of investment in 'Machinery and equipment' was the largest. In the case of 'Printing' and 'Rubber and Plastic' subsectors, this share reaches over 80%. On

[58] This item is comprised of the value of all materials and supplies, fuels, finished and semi-finished products and goods for resale, held by, or under the control of, the establishment (p5, MIT (2012))

the other hand, 'Wood' subsector spent only 19% of investment on machinery and equipment. This subsector, instead, allocated 79% of its investment to 'Transport equipment' in that year. 'Pharmaceutical' subsector also spent less on 'machinery and equipment', and allocated 40% of its investment to 'Database and software'.

Table 4-6: Net investment in manufacturing sectors by type of investment (2009)

	Food Beverage	Tobacco	Textile	Leather	Wood	Paper	Printing	Chemical	Pharmaceutical	Rubber Plastic
ISIC code	10~11	12	13	15	16	17	18	20	21	22
Land investment	3%	–	0%	0%	0%	1%	2%	0%	22%	–
Buildings and structures	8%	5%	12%	0%	0%	4%	1%	11%	4%	14%
Transport equipment	12%	9%	11%	65%	79%	7%	5%	15%	11%	3%
Machinery and equipment	60%	75%	76%	35%	19%	81%	87%	67%	22%	80%
Database software	7%	3%	0%	1%	1%	5%	2%	1%	40%	1%
Other	10%	7%	0%	0%	1%	1%	4%	6%	0%	2%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

	Non metal	Basic metal	Fabricated metal	Electrical eq.	Machinery	Motor vehicles	Other transport	Furniture	Other manuf.
ISIC code	23	24	25	27	28	29	30	31	32
Land investment	0%	3%	0%	0%	23%	0%	1%	1%	4%
Buildings and structures	11%	45%	28%	17%	0%	0%	11%	11%	20%
Transport equipment	0%	10%	19%	6%	0%	59%	31%	31%	4%
Machinery and equipment	51%	37%	53%	67%	77%	29%	30%	30%	70%
Database software	0%	1%	0%	0%	0%	9%	2%	2%	0%
Other	37%	4%	1%	10%	0%	3%	26%	26%	2%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: Table31, MIT (2012)

(7) Structure of staff by expertise in agro-industry

The enterprises in agro-industry employ 42,459 persons in 2009. The structure of these employees by expertise or skill level is shown in the survey[59]. With regard to the agro-industry as a whole (foods and beverages), 'unskilled staff' consists of 40% of all employees, while the share of 'skilled staff' is 37%. The remaining staff members are 'managerial and professional staff (15%)', 'Others (7%)' and 'Working proprietors (1%)'.

This structure of staff skill or expertise is somewhat different among sub-sectors in the industry. The share of 'managerial or professional' and 'skilled' staff is relatively large in the beverages sub sector (110). Of all staff members, 28 percent of them are at managerial or professional position, and 36% of it is skilled workers in the beverage enterprises. The share of skilled staff is also high in fish subsector (103). Moreover, 43% of employees are the skilled, while the unskilled consist only 29% in fish processing enterprises. Thus, the skill levels of the beverage and fish processing enterprises are higher than the others. This might be caused by the fact that major beverage enterprises

[59] The study shows the definition of managerial and professional staff and operative staff. The former includes managerial, technical, clerical and other office workers, while the latter includes 'foremen, machine operators, fitters, casual and manual workers'. Operative staff is then divided into 'operative-skilled' and 'operative-unskilled'. Definition of skilled and unskilled workers is not presented in the study report.

are foreign owned, and that the fish processing enterprises are often export oriented.

On the other hand, the share of unskilled staff is relatively large in such sub sectors as meat (101), grain mill (106) and animal feed (108). More than half of the employees in these subsectors grouped as 'unskilled'. As pointed out in Chapter 2, the grain millers are in charge of only a part of the value chain by just providing the milling service to farmers and middlemen. This practice is also found in the meat processing industry. As these processing enterprises are not necessarily responsible for the quality of final products, they might have a limited interest in the skill level of their operators.

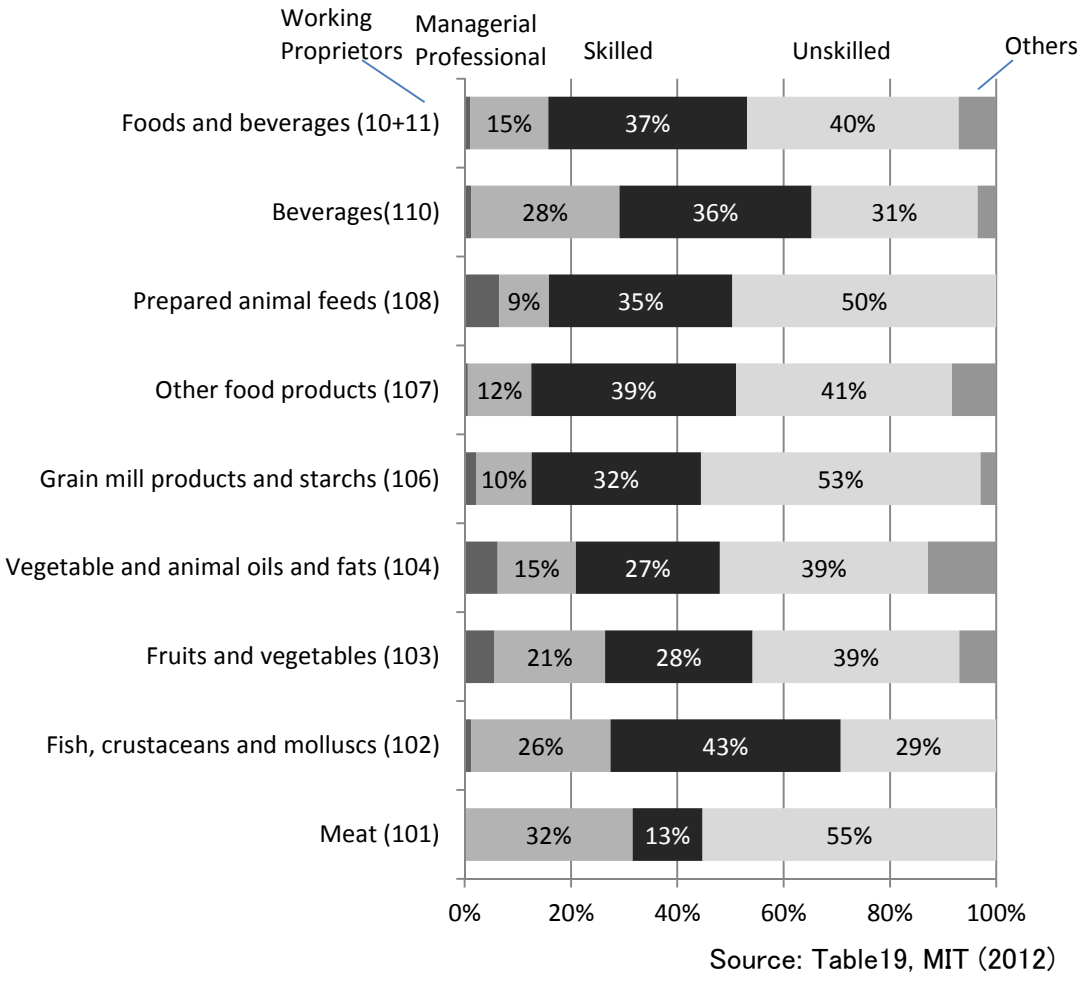


Figure 4-8: Number of persons engaged in agro-industry by skill type (2009)

Box 4-3: Structural transformation of the agro-industry

The examination of the landscape of local agro-industry tells us that the structure of the industry is very unbalanced. Its structure looks like an upside-down cocktail glass (Figure 4-9) in terms of number of employees. It is observed that the industry is composed of 'World class large enterprises', 'Feeble medium enterprises' and 'a large number of small and micro enterprises'. A small number of large enterprises employ majority of workers and generate around half of the value added of the industry. A group of world class enterprises, often foreign invested, are included in these large enterprises. Besides, the industry is composed of a large number of small and micro enterprises with less than 10 workers, which were not covered in the MIT survey. Unregistered informal business is also found in the industry, whose share in the employment seems substantial. The presence of middle sized enterprises, on the other hand, looks very small.

It is often pointed out that small and medium enterprises (SMEs) are a key force for growth[60]. A vibrant SMEs sector can play a key role in creating jobs and high economic growth. In order to achieve the goal of becoming semi-industrialized country and attaining a middle income country status by 2025, the country needs to promote the development of SMEs, middle enterprises in particular.

Hence, the middle enterprises should be enhanced with financial supports such as provision of soft loan for capital investment. Technical level of these enterprises should also be upgraded by providing qualified technicians to the labour market. Technical support such as the clustering support can help small producers get together and expand their size of business. Formalization of informal business should be supported as well. Chapter 6 of this report shows selected proposals of such financial and technical support measures to enhance the development of middle size enterprises.

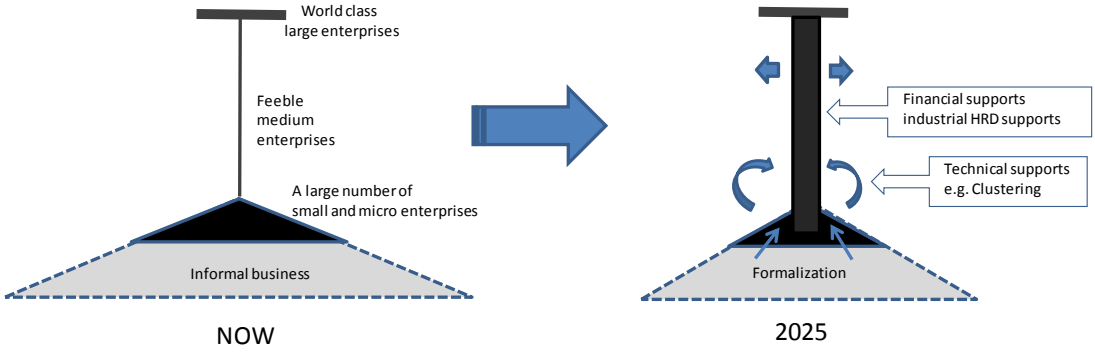


Figure 4-9: Upside-down cocktail glass structure of the agro-industry

[60] 'Telling Our Story: Small and Medium Enterprises', IFC, 2011 Vol. 5 / Issue 1.

4.3 Reviews of cooperation programmes by development partners

4.3.1 IFAD

IFAD has implemented two programmes to enhance the promotion of agro-industry, which are MUVI and MIVARF. Both programmes focus on the development of micro and small business in rural area. Increase in household income in the area is much emphasized. The shared concept of the two programmes is the need of business support services to the rural producers. Importance of improving rural infrastructure is also highlighted in the two programmes. Strengthening rural finance is another essential focus of the MIVARF programme.

(1) MUVI (Rural Micro, Small and Medium Enterprise Support Programme)

Programme for the Rural Micro, Small and Medium Enterprises support, known in Swahili as Muunganisho wa Ujasiriamali Vijijini (MUVI) is a 7 years programme commenced in 2007. The programme helps improve rural employment opportunities in 6 of the 21 regions in mainland Tanzania: Iringa, Manyara, Mwanza, Pwani, Ruvuma and Tanga. These regions have been selected because they show a potential for entrepreneurial activity, with a higher than average percentage of the rural population already engaged in some form of self-employed activity.

The programme is intended to improve the efficiency of specific value chains to deliver sustainable margins to producers and thus increase their incomes and reduce poverty. The target groups are; i) smallholder farmers and fishers who could profitably link up with processors and sell their produce to them, ii) women, youth and disadvantaged groups, including people living in remote areas, people living with HIV/AIDS and the elderly, and iii) rural poor entrepreneurs who have the means and the motivation to enter the market. The selected crops for the value chain support and their respective target areas are; a) sunflower in Iringa, Manyara, Mwanza, Ruvuma and Tanga, b) cassava in Mwanza, Pwani and Ruvuma, c) livestock in Manyara, and d) fruits and vegetables in Pwani, Tanga and Iringa.

The programme has the following three components:

1) Communication in Rural Business: this component aim at facilitating improvement of entrepreneurs awareness of market opportunities through several types of media particularly radio and guide them to access and exploit such opportunities.

2) Rural Business Support Services: through this component, capacities of the existing

rural based entrepreneurs shall be enhanced by availability and increased access to certain business support services. The programme shall support delivery of improved value chain coordination and cohesion, thus promoting growth to rural micro, small and medium enterprises and their value chain partners.

3) Institutional Strengthening: The aim of this component is to strengthen the technical and administrative capacity of public and private sector institutions, which are going to be active in the implementation of program activities.

(2) MIVARF (Marketing Infrastructure, Value Addition and Rural Finance Support Programme)

The principal objective of the MIVARF programme is to reduce rural poverty and accelerate economic growth on a sustainable basis through enhanced rural incomes and food security. It is expected to enhance rural incomes and food security through improved market access (feeder roads, market centres and storage, community management of infrastructure), increased share of value addition for small- and medium-scale producers and processors through training and matching grants for equipment. The programme includes the following three components:

1) Marketing Infrastructure and Systems Development: This component supports 70 district markets/storage facilities and market-to-production area connecting feeder roads. Market facilities include market centres, which have equipped with Improved building and service infrastructure for 32 district markets (25 with cold-storage facilities), 2 ice-plants, 4 border markets; and 32 warehouse facilities (6 new and 26 rehabilitation). This component also supports the improvement of feeder roads. District roads of 1,550 km were renovated to all-weather condition complete with bridges, culverts, and side drains. Moreover, 16 Post Harvest (PH) training centres were rehabilitated. These centres are expected to undertake various studies, provide training to medium-scale producers and processors and link them up to service providers. In addition, capacity building of producer and marketing group was supported for preparation of marketing and value addition intervention proposals, facilitating market linkages and support to market information systems.

2) Rural Finance: This component provides specific support to different financial institutions (including informal financial institutions, SACCOS, MFIs and community banks) with the aim of increasing rural outreach. Support will also be provided to apex institutions to strengthen their capacity to oversee activities as well as performance monitoring of the financial institutions. The component also helps to enhance the

risk appetite of commercial banks for rural and agricultural lending, leverage substantial commercial funds, build the capacity of the target group, support eligible institutions to test new approaches, methods and services in rural areas for the benefit of the target group, improve the legal and policy framework for rural micro finance, and facilitate knowledge management.

3) Programme Coordination: This component is to ensure efficient and effective program management including compliance of MIVARF activities with technical, financial and regulatory standards.

The programme activities shall be implemented in 32 districts in sixteen regions (14 in Mainland and 2 in Zanzibar) based on their economic potential with respect to the production of key crops and livestock. In the mainland, the selected regions include: Morogoro, Shinyanga, Mwanza, Mbeya, Iringa, Ruvuma, Rukwa, Arusha, Kilimanjaro, Tanga, Manyara, Dodoma, Singida, and Coast.

4.3.2 UNIDO

UNIDO has been implementing two programmes that are closely related to the promotion of agro-industry, which are called '3ADI' and 'IUMP'. Both programmes target small and medium enterprises (SMEs). Enhancing linkage of SMEs in the value chains is the shared concept in the two programmes. Connection of SMEs with larger enterprises is promoted by upgrading their industrial capacities. Enhancing linkage with the domestic or even export markets is supported.

(1) 3ADIs (African Agribusiness and Agro-industry Development Initiatives)[61]

Based on an integrated value chain development approach, the 3ADI programme seeks to support pilots in cashew, meat and leather processing, linking them also with other actors along the value chain. Two sets of products, cashew nuts and red meat/leather, were selected as the focus of the 3ADIs. Regarding cashew nuts value chain, the programme has supported eight communities and linked them to two larger end-processors. The programme also established improved slaughtering facilities along the Southern Corridor (Iringa and Mbeya).

The programme made the following interventions to develop the value chains. First, it set up pilot processing business such as cashew processing units and slaughter facilities.

[61] The planned budget for the 3ADI project was USD 3,300,000 for four years from July 2011 through June 2015 (information from the UNIDO Tanzania office on in September 2014).

Modern abattoirs and slaughtering slabs were built with equipment and machinery. Cluster development is promoted among local producers in using these common facilities. Second, the development of processing plant was assisted by permanent coaching. Locally produced processing machines were supported to get improved, for instance. Third, a series of technical training were conducted focusing on quality and safety. For instance, livestock producers were supported setting up business and sell animals of improved quality to slaughters. Hides and skins collectors were trained on issues of quality treatment. Finally, the programme trained local producer to enhance their technical and business skills, such as capacity building in business management and improving access to inputs and marketing. Development of viable business plans was supported to enhance access to funding. Marketing campaign was organized to improve linkages to buyers. Marketing campaigns to sensitize consumers regarding food safety and meat quality were also conducted. Dialogue between the actors in the value chains was enhanced. Organizational capacity was built at the level of industry association.

(2) IUMP (Industrial Upgrading and Modernization Project)

The objective of the IUMP is to promote competitive industrial production, improve the quality and quantity of industrial output, and facilitate access to national, regional and international markets for local manufacturing SMEs. The project also intends to improve the institutional and technical capacities of industrial support organization (ISOs[62]) to enable them to deliver upgrading services for the wider community of local industrial enterprises. Finally, the IUMP aims to strengthen the business community's capacities to monitor and manage managerial and technological change and adapt to the demands of regional integration and international competition.

Pilot phase of the Project has focused on dairy, edible oils and fruit & vegetable processing sectors. This phase aims to achieve the following results. First, pilot manufacturing SMEs upgrade their production and management skills and improve competitiveness on local and eventually export markets. Second, manufacturing SMEs benefit from locally available and sustainable business support services able to offer best practice inputs on industrial upgrading and enterprise competitiveness. These services are offered continuously by strengthened ISOs and national experts trained on the upgrading methodology and tools. Third, the Upgrading Unit of Tanzania (UUT) is

[62] According to the UNIDO Tanzania office, two organizations have been identified as key ISOs for Industrial Upgrading and Modernization, including (i) The Tanzania Industrial Research and Development Organization (TIRDO) and (ii) the Tanzania Engineering and Manufacturing Design Organization (TEMDO).

established and strengthened to facilitate the management and monitoring of the upgrading activities. UUT will also prepare and launch the project's roll-out phase targeting the upgrading needs of a larger number of local SMEs.

As of January 2014, the IUMP has undertaken industrial diagnosis for 19 enterprises operating in the dairy, edible oil and food processing sectors and trained 50 national experts on industrial upgrading methodologies[63]. Further, 5 dairy and 9 edible oil enterprises received coaching on the implementation of grading plans developed by project-trained national experts. These activities are expected to lead to, among others, productivity improvements, reduced production costs, enhanced marketing of final products, and as a result, increased competitiveness of manufactured goods and market expansion.

To address the upgrading needs of micro and small scale oil processors in Dodoma, a networking and upgrading approach was applied to enhance productivity and competitiveness of 8 members of the Dodoma Sunflower Oil Association. The project also supported the local design and production of semi-refining equipment for oil degumming and neutralization. As a result, the prototype semi-refinery was produced at the VETA. The fabricated equipment was successfully tested in cooperation with the Association. The association was given assistance to consolidate the approach and to disseminate the improved manufacturing practices to its members[64].

4.3.3 AfDB

AfDB jointly finances MIVARF with IFAD. This bank also supports Agriculture Sector Development Programme (Phase II). Apart from these sets of intervention, AfDB does not implement programs that directly focus on promotion of agro-industry. The following programmes are expected to support the expansion of agro-industry by enhancing rural finance as well as by developing industrial skills.

(1) Small Entrepreneurs Loan Facility II

The overall goal of this project is to contribute towards reducing income poverty in Tanzania. The objective of the proposed project is to improve access of 820,000 of the

[63] According to the UNIDO Tanzania office, among the persons trained, 19 are from the private sector and the rest from public institutions. Private sector participants consist of 17 employees and 2 consultants. Public sector participants included two academic, three DPs, 15 ministries' officers and 31 parasternal officers. Training was focused on: (1) Upgrading Methodology on SMEs; (2) Upgrading Methodology on edible oil; (3) Upgrading Methodology on food processing; (4) Cluster and (5) Marketing.

[64] It is noted that TBS does not recommend the production of semi-refined sunflower due to its residual chemical material.

active poor, especially in rural areas, to financial services. The project enhances the incomes of the active poor and low-income categories of the population in rural areas. In addition, by empowering the clients and microfinance institutions through training and provision of basic logistical support, the project contributes to enhance their ability to propose viable micro-enterprises[65] and better manage their businesses. It is expected that the interventions of the project should help introduce a business culture and contribute to the development of an entrepreneurial spirit among the excluded in rural areas.

The project will comprise of the following two components:

a) Financial Services: This component manages a Wholesale Credit Fund. Based on the eligibility criteria stipulated in the Credit Operations Manual, the project lends these funds at a market rate of interest to MFIs for on-lending to end user clients.

b) Capacity Building and Business Development Services: This component includes both training and institutional support through tailor made training programmes for skills and business development enhancement by credible service providers. In order to enhance credit consumer education, the project will support financial literacy programmes as well as sensitization and awareness raising of the population. Support will also be provided to refine and develop and test new innovative products and methodologies in service delivery (mobile banking, loan cards, micro-insurance, etc.).

The proposed intervention is building on the success and lessons learned from the previous phase. It is geared to complement the attainment of reforms through promoting inclusive financial service delivery and fostering growth of rural based financial institutions that are capable of providing sustainable and responsive financial services. Through the Project's provision of sustainable wholesale credit, the intervention is able to effectively address the income poverty pillar.

(2) HEST TVET - Skills Development for Labour Market

It is reported that there is a significant skill gap that needs to be filled over the next 13 years. High skills occupations need to be increased by about five folds while medium skills occupations by three fold. To meet the demand for increasing access to post-primary and post-secondary education and also bridge the skill gap in the country, enrolment in TVET needs to be expanded. Hence, the development objective of this project is to enhance human resources development in order to support inclusive

[65] The program does not specify the sub-sectors or types of micro-enterprises to be supported.

economic growth. The specific project objective is to contribute to increased access and improved quality and equity of technical and vocational education and training, and to build capacity for secondary teacher education in science and mathematics.

The proposed project consists of the following three components.

a) Increasing access and improving the quality and equity of TVET: The TVET sub-sector will be supported through the provision of infrastructure and equipment; capacity building through staff and technical and vocational education teacher training; labour market surveys and tracer studies; curriculum review; and ICT connectivity; provision of technical assistance.

b) Capacity building for secondary teacher education in science and mathematics: The teacher education system will be supported through the provision of new infrastructure and rehabilitation of existing infrastructure; provision of equipment and ICT connectivity; training of staff; review of the curricula.

c) Project Management: The component will provide operating costs for administration, coordination, supervision of project activities; technical assistance; and impact evaluation study.

4.3.4 TPSF/ WB

Tanzanian Private Sector Foundation (TPSF), established in 1998, is APEX organization of private business associations. Most of the major business associations of the country, such as CTI and TCCIA, are the members of TPSF. 'Policy and advocacy' is the core activity of TPSF. When private business faces difficulties in dealing with the government rules, regulations, policies, etc., TPSF creates a platform to discuss the issues between the business representative and the government authority concerned. After both parties reach any agreement, the development of an action plan and its monitoring are also the important function of TSPF.

In addition to 'policy and advocacy', TPSF implements several programmes to support private enterprises, micro and small business in particular in collaboration with development partners. World Bank's Private Sector Competitiveness Program (2008-13) is an example in which TPSF made significant contribution. TPSF was in charge of the 'Enterprise Development' component of the programme, and execute the following three activities.

a) Business Development Gateway (BDG): In collaboration with SIDO, the component provided entrepreneurship training to those who planned to start a new business. The participants were requested to draft their business plan. The contest of these business plans was organized, and the prize winners were given seed money to start the business.

b) Matching Grant Program: This programme has two components. The first component is the support to develop the syllabus for entrepreneurship training. University of Dar es Salaam, CBE, Institute of Accounting and others were involved in this component. The second component is the provision of subsidy to small enterprises when they purchased business software or employed business consultants. Fifty percent of the total cost was granted.

c) Cluster Competitive Program: This component supported the cluster development of food processing, horticulture and tourism in selected regions of the country. Based on the value chain analysis of the sector, the missing parts in the chain were identified and provided supports to strengthen the chain. As part of the programme, an incubation facility was established for food processing business at the campus of the SUA.

CHAPTER 5: INDUSTRIAL HUMAN RESOURCE DEVELOPMENT

This chapter examines the current situation and constraints of industrial human resource development in the manufacturing sector. First, an overview of the workforce as well as the constraints in human resource development in the sector is presented. Second, the governments' policies for industrial human resource development are explained. Third, the current situation and constraints of human resource provision are presented in detail, in terms of quantity, quality and skill needs. Finally, key institutions and current status of cooperation to TVET institutions are reviewed as a preparation for proposing possible interventions in Chapter 6 (Section 6.2).

5.1 Background

5.1.1 Workforce in the manufacturing sector

According to the result of '2012 Population and Housing Census', the population aged 10 years and above are 30,079,834 persons in Tanzania Mainland, of which 17,654,675 are employed at the time of the census in 2012[66]. The largest proportion of the employed goes to the agriculture sector (66.2%) followed by wholesale and retail trade (9.9%). As for the manufacturing sector, the number of employed persons is about 555,000, which accounts for 3.1% of total employed population.

Table 5.1: Employed population of age 10 years and above by industry (2012)

Industry	Number	%
Agriculture/hunting/forestry/Fishing	11,860	66.2
Wholesale & retail trade	1,774	9.9
Manufcaturng	555	3.1
Mining & quarrying	466	2.6
Construction	430	2.4
Transport/storage & communication	305	1.7
Hotels & restaurants	305	1.7
Education	251	1.4
Electricity, gas & water	215	1.2
Public administration & security	197	1.1
Financial institution & insurance	143	0.8
Total (incl. others)	17,916	100.0

Source: NBS 'Basic Demographic and Socio-Economic Profile' (2014).

[66] Data available from: http://50.87.153.5/~eastc/sensa/index.php/welcome

The Annual Survey of Industrial Production (2009) shows the number of employees by subsector in the manufacturing industry[67]. According to the survey, food industry accounts for 38.2% of total employment followed by textile (12.5%). Meanwhile, furniture, leather and machinery and equipment do not absorb significant number of employment.

Table 5.2: Number of persons engaged by industrial activity (2009)

Subsector	Number	%
Food	37,045	38.2
Textile	12,163	12.5
Beverages	5,450	5.6
Plastics	4,329	4.5
Printing	4,055	4.2
Tobacco	3,815	3.9
Chemical	2,831	2.9
Furniture	2,670	2.8
Paper	2,377	2.4
Other non-metalic mineral products	2,375	2.4
Fabricated Metal (excl. Machinery)	2,053	2.1
Basic Metal	1,348	1.4
Leather	1,160	1.2
Wood (excl. furniture)	1,134	1.2
Pharmaceutical	944	1.0
Electrical equipment	529	0.5
Motor Vehicles	223	0.2
Machinery and equipment	132	0.1
Repar and Installation	125	0.1
Other transport equipment	94	0.1
Apparel	21	0.0
Others	12,208	12.6
Total	97,081	100.0

Note: The subjects of the survey are limited to the enterprises that employ 10 or more persons.
Source: MIT 'Annual Survey of Industrial Production, 2009' (2012).

5.1.2 Constraints for human resource development in the manufacturing sector

The manufacturing industry requires a broad range of human resources when broken down to subsectors. For instance, agro-processing industry might need food scientists for development of new products while leather industry might require the technicians specializing in leather technology for producing finished leather. However, the core skills that cut across all the subsectors are considered to be mechanical engineering, electrical engineering and electronics engineering[68]. As GOT promotes the

[67] The subjects of the survey are limited to the enterprises that employ 10 or more persons.
[68] Based on the interviews with private enterprises by the study team.

industrialization of the country in the long run, the needs for the skilled labour in such specialities are expected to grow with introduction of modern technology and machinery and plant automation. Thus, this study particularly focuses on these areas.

From the study results further elaborated in subsequent sections, the following issues are identified as major constraints for human resource development in the manufacturing sector.

- ***Provision of highly skilled labour is limited.***
  Especially, lack of technicians in mechanical engineering, electrical engineering and electronics engineering is a serious constraint. First of all, technical colleges that provide those engineering courses for technicians (i.e. ordinary diploma courses) are limited in number. In addition, those institutions gradually place more emphasis on degree courses, which are designed for providing engineers[69], and there is a concern that the provision of technicians might be overlooked in the future.
- ***Technical level of vocational certificate and diploma holders are not sufficient.***
  This is largely due to 1) poorly maintained machinery used for practical work of the courses (need for introducing brand-new machinery), and 2) lack of instructors' exposure to modern technology (need for retraining the instructors for advanced technology). As private enterprises gradually introduce modern machinery in their workshops and plants, students also need to acquire updated skills to be better prepared for the work environment.
- ***Importance of in-service training is not much addressed.***
  From the viewpoint of private enterprises, the skills acquired through vocational and diploma courses are not sufficient as mentioned above. As a result, the employers need to retrain their employees for accommodating their skill needs. Yet the availability and utilization of in-service training is not sufficient at the moment. Therefore, provision of in-service training should be further encouraged in addition to improve the skill levels of students in academic courses.

5.2 Current status and challenges for industrial human resource development

5.2.1 Government policies for industrial human resource development

The Tanzania Vision 2025 set the goal of becoming semi-industrialized country and attaining a middle income country status by 2025. The government subsequently

[69] In Tanzania, prerequisite of becoming an 'engineer' is the attainment of bachelor's degree or equivalent, whereas the completion of ordinary diploma course is required for a 'technician'. (MoEVT, 'TVETDP Situational Analysis Report' (2013))

formulated the first Five Year Development Plan (FYDP, 2011/12-2015/16) to realize the vision. Referring to the selected model middle income countries, the FYDP set specific objectives for increasing the number of highly skilled workers and called for a massive investment into higher education.

This policy direction is also reflected into the policies of the education sector. In 2013, the Ministry of Education and Vocational Training (MoEVT) formulated a programme document for 'Technical and Vocational Education and Training Development Programme' (TVETDP), a five-year programme to increase the number of highly skilled labour. TVEDP also set the target numbers of enrolment at each educational stage to monitor the progress of the programme (see Section 5.2.3 for details).

In the same vein, the Ministry of Industry and Trade (MIT) formulated 'Integrated Industrial Development Strategy 2025' and identified the lack of middle level skilled labour as a constraint for achieving long-term industrial development. It also suggested the effective use of in-service training for the skill development in the manufacturing sector.

5.2.2 Provision of industrial human resource development

(1) TVET System

Tanzania's formal education system starts from primary education (7 years), lower secondary education (4 years), upper secondary education (2 years), up to tertiary education (3 years +).

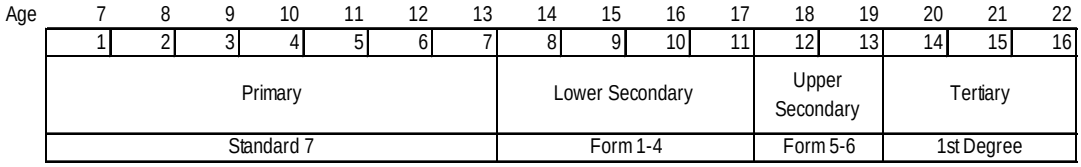
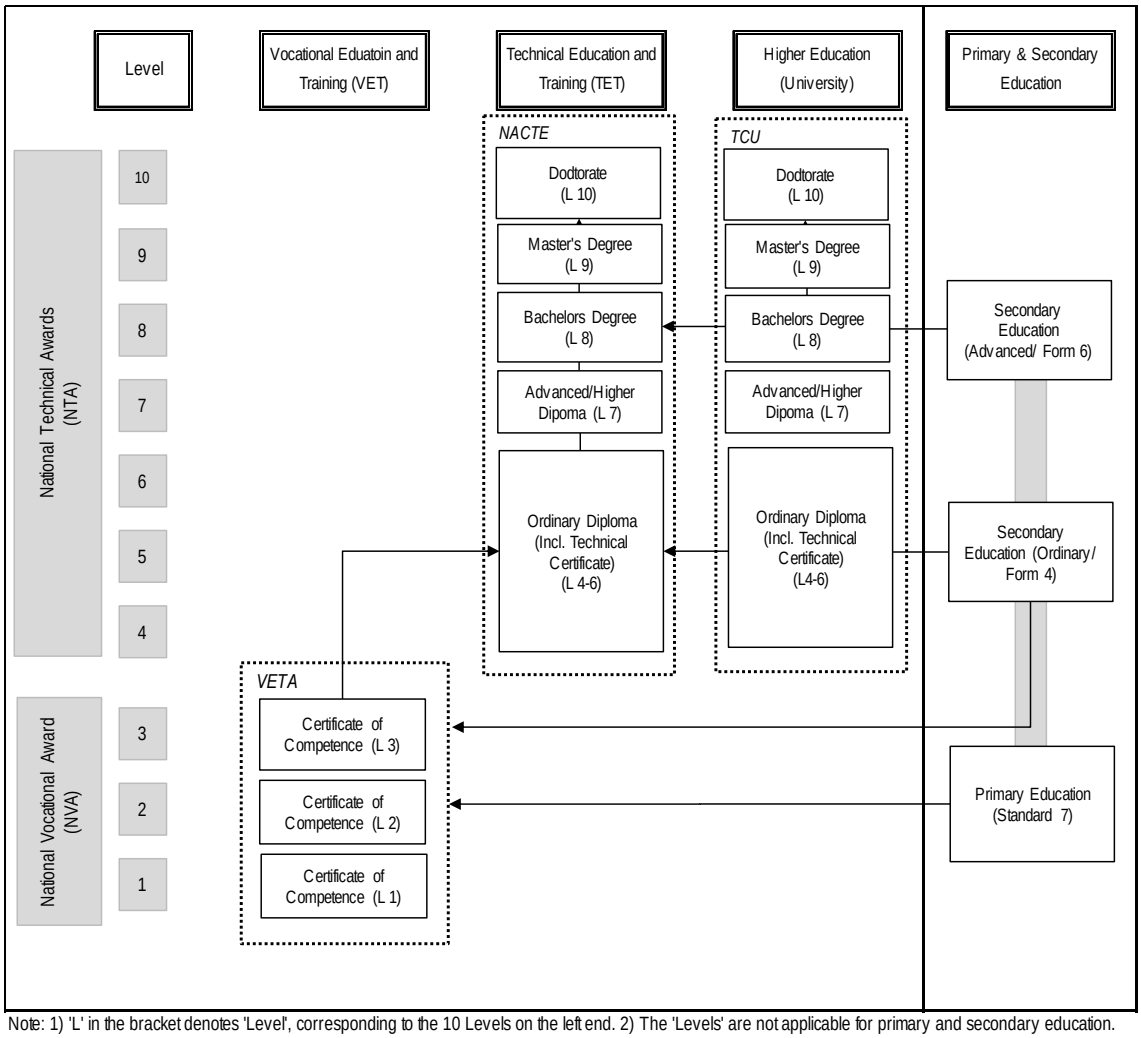


Figure5-1: Education system in Tanzania

In line with the education system, there is a Technical and Vocational Education and Training (TVET) system aimed at industrial human resource development. TVET in Tanzania consists of Vocational Education and Training (VET) and Technical Education and Training (TET). VET provides mainly middle-skilled labour or artisans while TET mainly provides technicians. In the workplace, however, this classification does not necessarily apply; for instance, a secondary school graduate could be called technician if the person has enough work experience in the field.

The government has developed a TVET system called Tanzania National

Qualification Framework and set 10 levels of qualifications (see the figure below).



Note: 1) 'L' in the bracket denotes 'Level', corresponding to the 10 Levels on the left end. 2) The 'Levels' are not applicable for primary and secondary education.

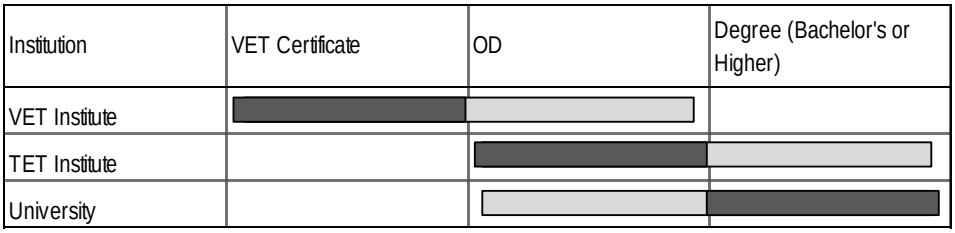
Figure 5-2: National Qualification Framework of TVET

National Vocational Award (NVA) level 1-3 is for VET qualifications, and provide the courses for specific trades (e.g. welding, fitter mechanics, electrical installation, and wood working). The entry level of education varies from one trade to the other, but in general, the graduates of primary school (Standard 7) and lower secondary school (Form 4) are eligible for entry with specific conditions attached to each programme. For these levels, VET institutions are the sole training providers. National Technical Award (NTA) level 4-6 is for Ordinary Diploma (OD) courses aimed at providing technicians. TET institutions, such as technical colleges, are the main provider of these courses. Normally, Form 4 graduates are eligible for entry with certain conditions.

The authorities to accredit the VET institutions and TET institutions are VETA (Vocational Education and Training Authority) and NACTE (The National Council for Technical Education), respectively. The accreditation of universities is undertaken by

Tanzania Commission for Universities (TCU).

There are overlaps among VET institutions, TET institutions and universities in providing different levels of courses. As shown in the figure below, VET institutions are mainly providing vocational courses while some of them started to provide OD courses. In the same vein, TET institutions mainly provide OD courses, but some of them also provide degree courses. Likewise, some universities provide OD courses.



Note: The main area of coverage is highlighted in black.

Figure 5-3: Coverage of each educational institution

(2) Intake Capacity of TVET

In 2011, a total of 1,313,139 students graduated from primary schools (Standard 7) and lower secondary schools (Form 4). Among them, those who proceed to respective further education are 608,457. For the remaining 704,682 graduates, proceeding to VET institutions (for Standard 7 and Form 4 graduates) and TET institutions (for Form 4 graduates) are only left for further learning. Meanwhile, intake capacities of the VET and TET institutions is limited (enrolments of 121,348 and 99,177[70], respectively) and not enough to absorb those graduates.

Table 5-3: Graduates who could not proceed to further education

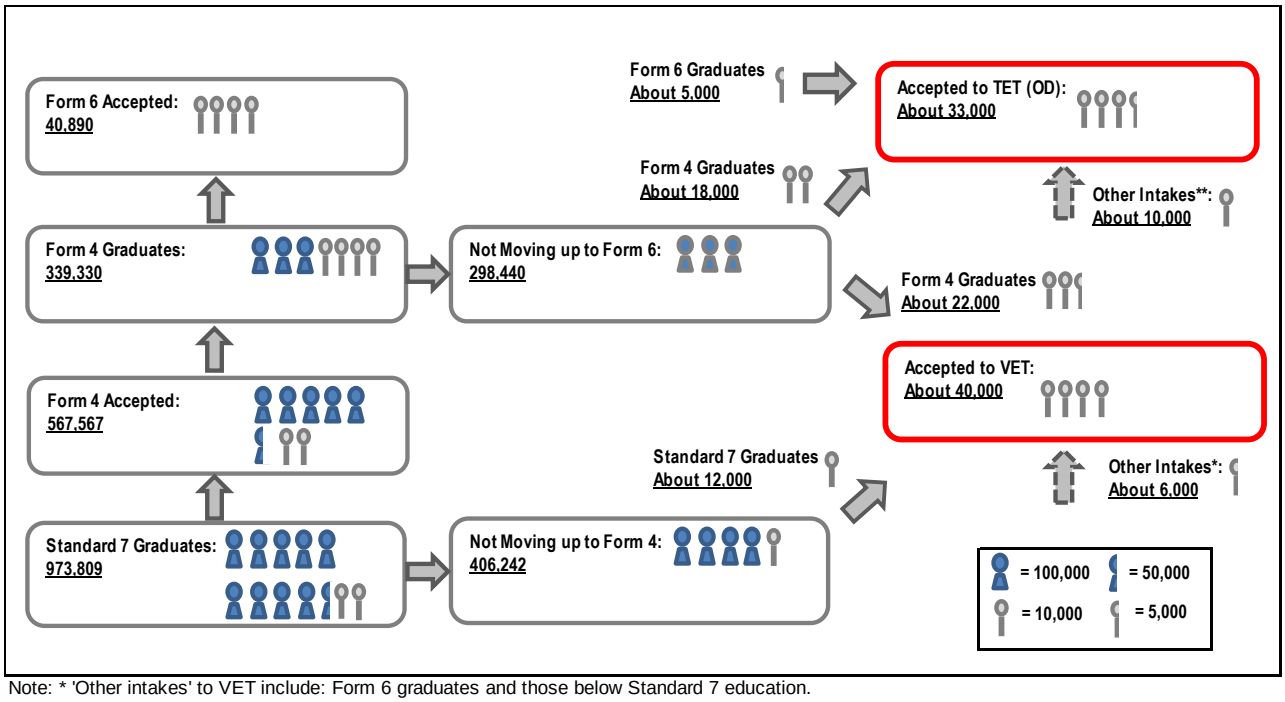
Year	Primary School			Form 4 (Lower Secondary School)		
	Primary School Graduates	Accepted to Form 4	Remaining Graduates	Form 4 Graduates	Accepted to Upper Secondary (Form 6)	Remaining Graduates
2006	664,263	448,448	215,815	85,865	33,088	52,777
2007	773,553	438,901	334,652	125,288	37,816	87,472
2008	1,017,865	524,784	493,081	162,855	43,052	119,803
2009	999,070	438,827	560,243	248,336	38,334	210,002
2010	894,889	467,155	427,734	352,840	41,348	311,492
2011	973,809	567,567	406,242	339,330	40,890	298,440

Source: Basic Statistics in Education 2012, MoEVT.

The following figure shows an estimation on annual flow of Standard 7 graduates

[70] This number is total enrolment for OD courses (NTA 4-6) only. If the enrolment for NTA 7-10 (advanced diploma up to doctorate) is included, the total will be 112,447. (Source: Basic Statistics in Education 2012, MoEVT)

and Form 4 graduates to VET and TET institutions. Since annual intake number of both sets of institutions are not available, the numbers are estimated from the data on enrolments of VET and TET institutions by educational background. First, Standard 7 graduates enrolled in VET institutions are 36,295 in 2011/12. Suppose that VET courses take 3 years to complete, annual intake of standard 7 graduates is: 36,295 / 3 ≒ 12,000. As for Form 4 graduates, the enrolment is 67,488. Therefore, annual intake is: 67,488 / 3 ≒ 22,000. Thus, it is estimated that 12,000 Standard 7 graduates and 22,000 Form 4 graduates enter VET annually. Second, Form 4 graduates enrolled in TET institutions (NTA 4-6) are 53,932 in 2011/12. Suppose that TET courses (i.e. OD courses) take 3 years to complete, annual intake of Form 4 graduates is: 53,932 / 3 ≒ 18,000. Thus, it is estimated that 18,000 Form 4 graduates enter TET annually. While this estimation is based on several assumptions, the figures show an idea of how small the intake capacities of VET and TET institutions are. As the annual intake capacity of TVET institutions is estimated at 73,000 (VET 40,000 and TET 33,000), they can only absorb around 10% of Standard 7 and Form 4 graduates who cannot proceed to further education (704,682 in total). Thanks to the government's continuous efforts, the enrolment of primary and secondary education has achieved steady progress in recent years. Yet the government is now tasked to improve the rate moving up from Standard 7 and Form 4 to TVET.



Note: * 'Other intakes' to VET include: Form 6 graduates and those below Standard 7 education.
** 'Other intakes' to TET (OD) include: graduates of bridging course of VET; mature persons; and degree graduates.
Source: Based on the data of 2011/12 academic year provided by MoEVT and VETA.

Figure 5-4: Annual flow of Standard 7 and Form 4 graduates to TVET institutions (based on the data of 2011/12)

(3) Major TVET institutes for industrial human resources

The following VET and TET institutions are the major source of providing the courses in mechanical, electrical and electrics trades and specialties. Further information of respective institution will be provided in Section 5.3.1.

1) VETA training centres

VETA is in nature an accreditation authority for all VET institutions. At the same time, VETA itself operates 27 vocational training centres. They cover 14 sectors including electrical, mechanical, automotive, ICT, and lab technology. The sectors are further divided into specific trades, and VETA students learn a trade for 2-3 years to obtain the level 3 certificate (NVA 3).

2) TET institutions

There are three key TET institutions that specializes in OD courses of mechanical engineering, electrical engineering and electronics engineering; namely, Dar es Salaam Institute of Technology (DIT), Arusha Technical College (ATC) and Mbeya University of Science and Technology (MUST)[71]. They also provide bachelor's degrees in some specialities, but the main focus, at least in terms of enrolment, remains the provision of technicians with OD courses at the moment.

5.2.3 Challenges for providing industrial human resources

(1) Quantity

1) Supply

VET

As for the provision of artisans (NVA 1-3), 759 training centres are accredited by VETA as of 2012[72]. The enrolment in 2011 is 121,348 in total. The composition of each subject is shown below.

[71] MUST has attained a university status recently but remains the major provider of OD courses in those specialties. Therefore, it is categorized as a TET institution for the sake of convenience in the analysis.
[72] VETA 'National VET Data Handbook 2012: Analytical Report' (2013).

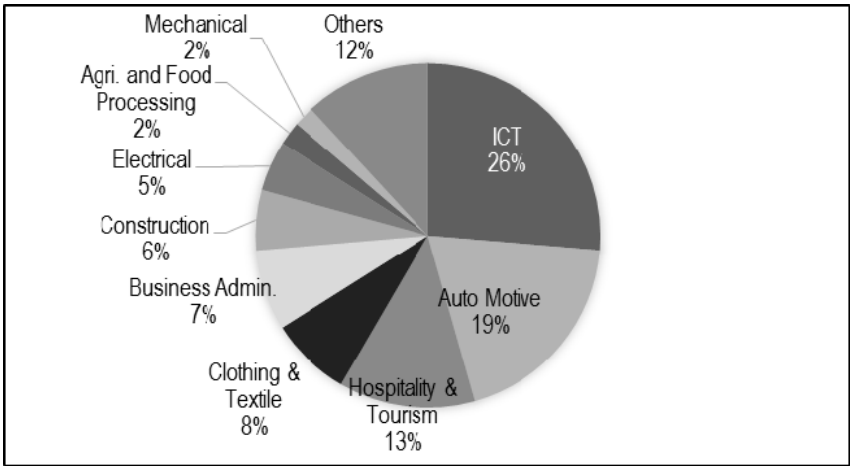


Figure 5-5: Composition of enrolment at VET institutions (2011)

Source: VETA National Handbook 2011 (2013)

The enrolment for ICT related courses is the highest (26 %) followed by auto motive (19%). Electrical and mechanical subjects combined account for only 7% of total enrolment (8,028 trainees).

On the other hand, there is a recent move where VETA training centres are starting to provide OD courses in certain subjects. For instance, OD courses in hospitality and textile technology are already operational at VETA training centres, and some other courses are in the process of application, such as civil engineering, mechanical engineering, electrical engineering and printing and packaging[73].

TET

As for the provision of technicians (NTA 4-6), there are 349 TET institutions accredited by NACTE in 2012. The institutions are categorized by subject as below.

Table 5-4: Number of TET institutions by subject

Subject	No. of Institutes
Business, Tourism and Planning	127
Health and Allied Sciences	126
Science and Allied Technologies	76
Teaching and Learning Facilitation	20
Total	349

Source: NACTE (2013).

The mechanical engineering, electrical engineering and electronics engineering are classified into 'Science and Allied Technology' subject, and there are only 5 TET institutions that provide any of the three engineering courses: namely, 1) ATC; 2) DIT; 3)

[73] Gold mining company in South Africa is currently supporting the establishment of OD courses in mechanical engineering and electrical engineering. (According to an interview with the personnel at VETA Headquarters.)

National Institute of Transport (public institution with mechanical engineering courses); 4) Kilimanjaro International Institute for Telecoms, Electronics & Computers (private institution with electronics course); and 5) AL Maktoum College of Engineering and Technology (private institution with electrical and electronics engineering courses). Further, public institutions that cover all three specialities are limited to two: ATC and DIT. Besides them, two universities, namely MUST (public) and St. Joseph University (private), have OD courses for all of the three subjects.

The OD course enrolment in 2011/12 is 99,177, and its breakdown is shown below.

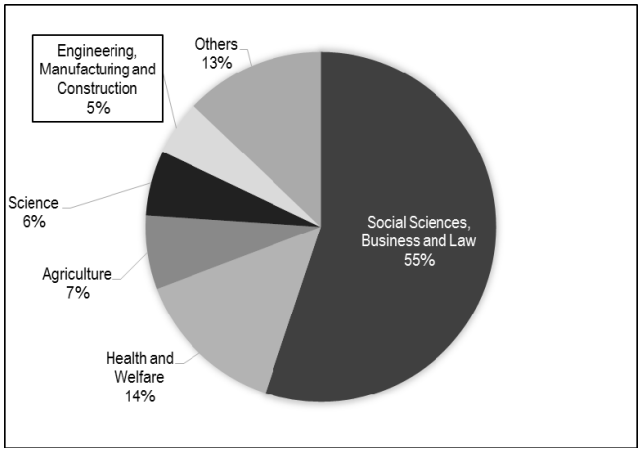


Figure 5-6: Enrolment in OD courses by field of study[74]

Source: MoEVT, Basic Statistics in Education (2012)

According to the figure, more than half of students (55%) are enrolled in social sciences, business and law field. Mechanical engineering, electrical engineering and electronics engineering courses are all included in the Engineering, Manufacturing and Construction (EMC) field[75], and account for only 5% in enrolment (4,987 students). This is largely due to higher investment costs for EMC courses compared to other social science courses. Another reason is the stricter entry requirements for EMC courses[76]. Accordingly, the TET institutions that provide EMC courses are limited in number. ATC, DIT and MUST together provide more than 60% of total enrolment in the EMC field. In other words, these three public institutions are the major source of OD-level technicians. Since certain proportion of OD graduates proceed to degree courses, the provision of

[74] The classification of field of study is based on ISCED2011.
[75] EMC includes the following subjects: 1) Engineering: engineering drawing, mechanics, metal work, electricity, electronics, 2) Manufacturing: Food and drink processing, textiles, clothes, footwear, leather, materials (wood, paper, plastic, glass, etc.), mining and extraction, and 3) Construction: architecture and town planning: structural architecture, landscape architecture, community planning, cartography, building, construction, civil engineering.
[76] For example, engineering courses usually set the minimum scores in mathematics and physics for Form 4 graduates as an application requirement.

technicians to the labour market is assumed to be lower.

Policy Direction

As mentioned above, Tanzania Vision 2025 as well as the FYDP envisages attaining a middle income country (MIC) status by 2025. To achieve this goal, the government set the indicative figures for increasing professionals and technicians/associate professionals being 4.66% and 4.73% of the working population by 2025, respectively[77]. The population aged 15 and above in 2025 is estimated at 38,672,800[78]. If the ratio for working population among this age group remains the same as that of 2006[79] (i.e. 90%), around 34.8 million would be the working population in 2025, that is, professionals and technicians/associate professionals should be around 1.6 million each to achieve the goal. As the numbers are estimated at 0.13 million and 0.34 million each in 2006, massive investments should be made to increase those professionals. At the same time, the efforts for employment creation should also be made to absorb the increased number of highly skilled labour. As explained in Chapter 4, GOT places a high priority on the improvement of business environment so that it can attract private investments to promote industrialization. The FYDP expects that a favourable business environment would also lead to future employment creation.

MoEVT has set up the TVETDP to operationalize the goal of providing high skilled labour (see Box 5-1 for details). The programme document outlines detailed targets of additional skilled labour in the medium and long-term. Also, in terms of educational background, the document set the target as shown below.

Table5-5: Projections of learner's enrolment at different study levels

	Major Study Levels	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Overall	Postgraduate	3,230	3,605	4,040	4,625	5,640	6,995
	Undergraduate	15,715	29,813	32,662	38,430	51,072	73,725
	Ordinary Diploma (incl. TET certificates)	113,393	132,531	192,915	232,904	321,465	400,949
	VET certificates (incl. short courses)	186,749	442,461	541,358	685,677	812,690	1,012,967
EMC	Advanced Diploma & Undergraduate	2,204	2,470	2,990	3,760	5,060	7,310
	Ordinary Diploma	5,460	9,346	12,870	15,070	23,540	35,420
	VET certificates	71,229	97,750	127,600	157,300	182,600	198,000
	VET short courses	1,110	1,450	1,650	2,200	2,750	3,300

Source: MoEVT 'TVETDP 2013/14-2017/18' (2013)

In this projection, the enrolment in OD courses of EMC field should increase sevenfold in 5 years, whereas VET enrolment 2.8 times in the same period. The implication of this goal setting is ambitious, especially when considering the limited

[77] Originally, these indicators are proposed in the working paper jointly produced by POPC and IGC in 2010, referring to the average of selected middle income countries as the benchmark.
[78] United Nations, Department of Economic and Social Affairs Population Division 'World Population Aging: 1950-2050' (2001).
[79] 'Integrated Labour Force Survey 2006' calculates the ratio of working population against total population at about 90%. (ILFS 2006).

source of OD course provision in the EMC field. Also, some TET institutions are gradually shifting their focus from OD courses to degree courses. An increase in the enrolment of degree courses itself is appreciated for the sake of providing more engineers; however, if this increase results in a decrease of enrolment in OD courses, there is a need for either 1) expanding the existing institutions' capacity for accepting more students, or 2) seeking alternative sources of providing technicians. For addressing the latter, establishment of OD courses at VETA training centres could be an option.

Box 5-1: Technical and Vocational Education and Training Development Programme (TVETDP)

The main objective of TVETDP is to operationalize the overall goal of Tanzania's becoming a middle income country by 2025 through increased enrolments of VET and TET institutions. Based on the projections in the POPC/IGC working paper, TVETDP estimates the required numbers of highly skilled workers by field and type of occupation as shown in the table below. The core priority fields for intervention are highlighted in line with the FYDP focus areas.

Table 5-6: Target numbers for highly skilled workers[80] in core priority fields

Broad Study Group	Occupation	Present status (2012/13)	FYDP Target (2015/16)	TVETDP Target (2017/18)	TDV Target (2024/25)
Engineering Manufacture & Construction	Professionals	14,196	17,600	24,800	144,300
	Technicians	26,504	70,400	124,000	146,600
	Medium skilled workers	374,500	440,000	755,000	3,607,500
	Low skilled workers	136,881	291,700	447,200	858,300
Science	Professionals	16,049	20,920	26,400	87,100
	Technicians	11,234	31,080	52,800	87,100
	Medium skilled workers	541	1,040	2,640	8,710
	Low skilled workers	1,073	1,360	1,690	2,560
Agriculture	Professionals	3,717	4,175	5,175	15,130
	Technicians	8,549	19,650	27,300	45,050
	Medium skilled workers	33,200	48,500	61,000	121,044
	Low skilled workers	16,312,000	16,000,000	15,500,000	12,448,800
Health and Welfare	Professionals	48,215	64,000	97,000	212,200
	Technicians	63,785	82,000	121,000	263,200
	Medium skilled workers	n.a.	2,000	8,000	43,000
	Low skilled workers	135	3,100	7,600	38,100
Social Science, Business and Law (SBL)	Professionals	291,270	329,000	379,000	1,089,400
	Technicians	421,040	656,000	946,000	2,178,800
	Medium skilled workers	738,200	1,028,600	1,341,360	2,681,840
	Low skilled workers	18,050	22,200	25,680	43,080
Humanities and Arts	Professionals	8,738	9,870	11,370	32,680
	Associate Professionals	12,631	19,680	28,380	65,360
	Medium skilled workers	22,146	30,860	40,240	80,460
	Low skilled workers	542	670	770	1,300
Education	Professionals	4,135	4,223	8,102	70,585
	Associate Professionals	1,215	20,863	35,190	117,027
	Medium skilled workers	5,027	25,086	43,292	103,822
Servicies	Professionals	105,433	119,200	146,600	400,600
	Associate Professionals	211,058	228,800	252,800	403,500
	Medium skilled workers	997,800	1,241,400	1,442,040	2,035,260
	Low skilled workers	67,784	106,200	135,000	316,480
Total		19,955,648	20,940,177	22,097,429	27,748,888

Source: MoEVT 'TVETDP 2013/14-2017-18' (2013).

[80] According to the ISCO 08 (ILO), the classification of 'professionals', 'technicians and associated professionals', and 'medium skilled workers' loosely denote those with following educational backgrounds: 1) Professionals: 1st degree or higher degrees of tertiary education; 2) Associate Professionals and Technicians: 1st stage of tertiary education (short or medium duration); and 3) Medium Skilled Workers: post-secondary, non-tertiary education & upper secondary level of education (medium skilled workers). ILO direction, however, also mentions that 'the formal education and training requirements are only one component of the measurement of skill level and should be seen as indicative'.

Based on the estimation above, the TVETDP has set 4 priority areas of intervention: 1) access and equity in TVET; 2) quality of outputs; 3) capacity to provide quality TVET; and 4) monitoring and evaluation of TVET. Under the priority areas, the programme has 20 specific goals. Overall, the programme aims at increasing the capacity of TET and VET institutions both in quantity (increased enrolment) and quality (improved teacher-learner ratio, curricula, equipment and facilities).

Another constraint of successful TVEDP execution is a financial arrangement. The programme document estimates the required budget for the realization of the goals, and the financial implication is enormous. Where 4.4 trillion Tsh is required for the programme period of 5 years, only 2.8 trillion Tsh is projected to be covered with existing financial base. For the remaining 1.6 trillion Tsh, the government has to seek alternative sources of funding. TVETDP is to form the implementation team, and the financial arrangement will be further discussed by the team.

One of the sources to fill the gap would be AfDB's 'HEST TVET –Skills Development for Labour Market'. The project provides a 5-year loan through the African Development Fund. Primary focus is on the expansion of enrolment at the VET and TET institutions. As such, the objective of the project coincides with that of TVETDP. The project also has the component of increasing the quality of science and mathematics teaching in secondary education, aiming at providing students with basic academic skills for proceeding to engineering courses. Besides, the project has an activity of providing Mtwara Regional Vocational Education Training & Services Centre (RVETSC) with the equipment for teaching the trades related to the gas sector. The project intends to increase the enrolments of VET and TET institutions by 2,000 each through its supports for establishing 4 new VETA training centres as well as provision of training, equipment and facilities to ATC. In the monetary terms, the project would contribute to around 5 % of the financial gap for TVETDP.

Table 5-7: Details of HEST TVET Project

	Component	Sub-component	Estimated amount (USD Million)
1	Increasing access and improving the quality and equity of TVET	1.1. Support to vocational education and training (VET) (1) Establishment of 4 regional vocational training and service centres (RVTSCs) in newly esbalished regions. (2) Provision of tools and equipment to Mtwara RVTSC for the trades related to the oil and gas sector. (3) Training of VETA staff in Competency Based Education and Training (CBET) and labour market analysis. (4) Training for VET teachers in cross-cutting issues & trades related to the oil and gas sector. (5) Support for the use of ICT (provision of equipment and training) (6) Support for Morogoro Vocational Teacher Training College (MVTTC) (provision of equipment and domitories.	40
		1.2 Support to technical education and training (TET) (1) ToT for the curriculum, development of teaching manuals for ToT and training of TET teachers. (2) Conducting situational analysis on the needs of the labour market (3) Strengthening of policy formulation, management and quality assurance at MoEVT and TET institutions. (4) Support for the use of ICT system at NACTE and TET institutions. (5) Provision of infrastructure, equipment and training to Arusha Technical College (ATC) for coping with the increased enrolment in 5 programmes (civil and irrigation engineering, lapidary and jewelry technology, electronic and telecomunication engineering, multimedia and network technology and maintenance, and biomedical equipment technology).	
2	Capacity building for secondary teacher education in science and mathmatics	(1) Support for the expansion and improvement of facilities at 6 teachers' college (2) Support for a review of existing curriculum (3) Support for the provision to 1,600 teaching staff	13
3	Project Management		5

Source: AfDB 'Project: Support to Technical Vocational Education and Training and Teacher Education' (2014).

2) Demand

VET

VETA conducted a tracer study of VET graduates on their employment status in 2011[81]. According to the report, 66% of graduates were employed at the time of study while 34 % of graduates were either unemployed or inactive. Among the employed, 43% were paid workers, which means about 28%[82] of the VET graduates secured paid employment while 33% are self-employed and 5% are engaged in unpaid work such as supporting family business without pay. There is no data for the employment by trade.

From the interviews with VET institutions and employers, an increasing demand of VET graduates is observed. Application for VETA training centres is increasing dramatically. According to the principals of VETA training centres, applicants are 4-15 times more than their quotas last year. Demands for the graduates is also increasing for the trades related to the construction, gas, mining and hotel industries in recent years.

[81] VETA 'Tracer Study Report for Graduates of Vocational Education and Training Tanzania Mainland' (2011). The subjects are those who graduated in the period of 2004 to 2009 (5,000 respondents in total).
[82] According to the interview with VETA headquarters personnel, there is an increasing demand for their graduates in recent years from the growing industries such as gas and construction; however, such a hike of demand had not emerged at the time of the tracer study. Also, it should be noted if self-employment and engagement in family business are included, 66% of the graduates were employed in 2011.

On the other hand, private enterprises, especially small and medium ones, have some reservation on employing many of VET graduates, indicating that their work ethic and commitment to work are not necessarily high and that cost implications attached to their qualifications are significant i.e. they require higher salary. As a result, some enterprises prefer to employ Standard 7 or Form 4 graduates and train them on the job. The logic is if the work ethic is not different between VET graduates and Standard 7 or Form 4 graduates, the enterprises are better off to employ and train unskilled workers with less salary.

TET

There is no statistical data for substantiating the demand of technicians in the labour market. The government has yet to conduct a tracer study on how many graduates of degree and OD courses have been employed in each sector. On the other hand, a general picture of demand could be inferred from the enterprise survey results. The following figure shows the average number of employees by educational background and by size of enterprise among the surveyed enterprises. In other words, the figure shows how many vocational certificate holders, OD holders and bachelor's degree or higher degree holders are employed on average by micro/small, medium and large enterprises.

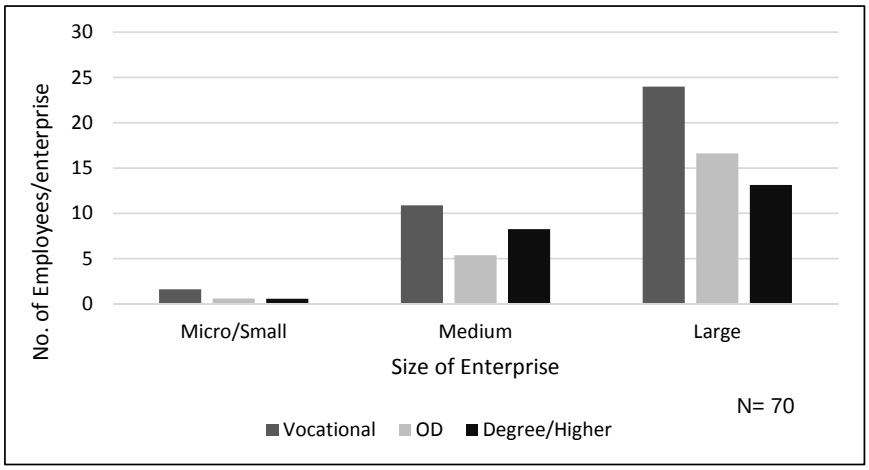


Figure 5-7: Composition of skilled workers by educational background

Note: Among 70 respondents, 50 are micro/small, 9 are medium, and 11 are large enterprises. The classifications of micro/small, medium and large enterprises follow those presented in Chapter 1.
Source: Enterprise Survey

Conventionally, ideal ratio between engineer (bachelor's degree or higher), technician (diploma), and artisan (vocational) is said to be 1:5:25 in the manufacturing

sector[83]. Compared with this ratio, the composition is relatively balanced among the large enterprises. Meanwhile, medium-sized enterprises do not meet the criteria with less number of OD holders. The interviews with medium-sized enterprises support this result; although they are willing to employ diploma holders as production manager or supervisor, they could hardly find qualified ones in the labour market. This is partly due to the fact that the public sector employs a large portion of OD graduates at higher salary level. As an alternative, private enterprises employ Standard 7, Form 4 or VET graduates and train them to fill those positions.

(2) Quality

According to the interviews with private enterprises, there is a room for improving the quality of VET and OD courses, especially for practical work. For instance, DIT uses the 30-60 years old lathe machines and milling machines, some of which are out of order, and the spare parts are not available in the market for such old models. As such, there is a need for renewing the machines so that the trainees can practice with sufficient number of machines.

Another issue is the introduction of new technology. As the middle to large-sized enterprises are starting to introduce modern and automated machinery, the facilities and equipment at VET and TET institutions cannot meet the skill needs of those enterprises. Especially, use of computerized numerically controlled (CNC) machines and Auto CAD, and modern welding and tool and die making techniques are raised by private enterprises as the required skills for the graduates of TVET institutions.

To address the skill gap, the institutions include a module of industrial attachment (internship) in their curricula. The internship is utilized by the students to be familiar with modern machinery and technology. In turn, the employers use it to identify the students with high performance for future employment. Also, some VET and TET institutions are active in building connections with the industry by jointly setting up a new course which caters for private companies' specific skill needs (see 5.3 for an example of such coordination at ATC). Yet the linkage with private enterprises is rather weak for most of the institutions, and there is a room for further coordination with the industry to reflect the industry's skill needs into their curricula and actively promoting what they can provide to the industry using their technical expertise.

[83] ILO initially set the ideal skill mix in the manufacturing sector as 1:5:25, i.e. 1 engineer with 5 technicians and 25 artisans. While an ideal skill mix varies among the countries, 'Situation Analysis' (2013, MoEVT) concludes the ratio is still valid for Tanzania.

Limited number of instructors is another issue for poor quality of practical work. Ideally, the instructor-student ratio is 1:3 for engineering courses. For the visited institutions, however, the ratio ranged from 1:10 to 1:20 due to an increasing number of intakes. In the interviews with private enterprises, they raise their doubt for the teaching skills and capacities of the instructors at TVET institutions, mentioning that some graduates have not acquired even basic skills of using their machinery. Other private enterprises expressed their concerns that the shift of TET institutions' focus from OD to degree courses might affect the technical level of the graduates by placing more focus on theory.

Box 5-2: Private enterprises' views on TVET graduates' performance

For the large and medium enterprises, TVET graduates are supposed to be a good source of skilled labour. While some enterprises positively evaluated their performance, others have rather critical views on them. Those opinions are summarized as follows.

- *TVET graduates, especially TET graduates are reluctant to work in the workshop/factory while the employers require them to be a factory supervisor on the ground. Some employers attribute it to their sense of overqualification for the assignment. Also, their request for higher salary discourages small and medium enterprises to employ them.*
- *Some of TVET graduates do not even have basic skills required for operation and maintenance of machinery. As such, some employers rather prefer to employ Standard 7 or Form 4 graduates with less salary and train on the job from scratch.*
- *Besides the lack of practical skills, their attitude and commitment toward work is not necessarily high. Some enterprises motivate them through additional pay for performance.*
- *A manager of furniture maker describes that even TET graduates are not capable of designing or improving a product; only can they copy ready-made products.*
- *While their technical skills are not sufficient, some employers are reluctant to allow them to attend additional training because it could result in their demand for raise of salary with additional qualification.*

(3) Skill Needs

Through the enterprise survey and interviews, the study identified skill needs by size of enterprise as well as the mode of training the enterprises usually adopt to meet their demands. While the needs differ from one subsector to the other, the following table shows an overview of their skill needs.

Table 5-8: Skill needs by size of enterprise

		Micro & Small	Medium	Large
Market		Local / Domestic	Domestic / Foreign	Domestic / Foreign
Employment		- Std. 7 or less / Form 4	- Degree holders for management - OD & VET graduates for supervisor	- Degree holders for management - OD & VET graduates for supervisor
Skill needs	Technical	- Practical skill on related field	- Specialised skill for modern machinery - Specific skill on related field	- Specialised skill for automated machinery - Specialised skill on related fild
	Manegement	- Basic business skill	- Specific skill for management	- Specialised skill for management
	Regulatory/ QA	- Minimum regulatory requirements	- Regulatory requirements of market - Quality requirements of maerkt	- Regulatory requirements of market - Quality requirements of maerkt
Mode of Training	Technical	- OJT - Public organisation (incl. DPs)	- OJT - Supplier's training - In-service training - Outsourcing	- OJT - Supplier's training - Affiliate company's training - In-service training - Outsourcing
	Management	- OJT - Public organisation (incl. DPs)	- Public org. (incl. DPs) - OJT - In-service training	- OJT - In-service training - Outsourcing
	Regulatory/ QA	- Public organisation & regulatory authoritiy	- Public organisation &regulatory authority - In-service training - Outsourcing	- Regulatory authority - In-service training - Outsourcing

Note: DPs: Development Partners; OD: Ordinary Diploma; OJT: On-the-Job Training; QA: Quality Assurance.
Source: The Study Team

Micro and Small Enterprises

Employment

Micro and small enterprises engage in small-scale production mainly for the sales at local market. The employees consist of Standard 7 or Form 4 graduates while the management could have higher education.

Skill Needs and Mode of Training

Basic technical skill needs are required for their production. In most cases, the skills are acquired on the job. For the expansion of their business, however, the enterprises require further skill enhancement. For managerial skills, the needs are on basic business skills, such as bookkeeping, organizing workplace and time management. Since the financial base is limited, they largely rely on public organizations or development partners for skill enhancement training. As for meeting regulatory and quality requirements, the needs are limited to minimal to comply with government regulations (e.g. food safety, occupational safety or quality assurance). Such needs are also met with the training conducted by public organizations. For instance, SIDO organizes a package of training for addressing those skills in collaboration with business associations, regulatory authorities, and development partners. The specific skill needs identified for micro and small enterprises are listed below.

Table 5-9: Specific skill needs of micro and small enterprises

Sector	Skill needs
All subsector	Operation and maintenance of machinery
All subsector	Organizing techniques and time management at factory
All subsector	Marketing and business linkage establishment with buyers/suppliers
All subsector	Compliance with standards and regulations (TBS, TFDA)
Food processing	Product packaging
Food processing	Sanitation and hygine control
Agro-processing machinery	Modern welding technology and stainless fabrication

Source: The Study Team

Medium Enterprises

Employment

Medium enterprises envisage the sales in the domestic market, and in some cases foreign markets. As such, their operation is market-oriented and in mass production. They employ degree holders for the management and some engineers specialized in the related field. If the engineers are not available in Tanzania, they employ expatriates for the task either on a permanent or contract basis. OD holders and VET graduates are also employed to be supervisors and mid-skilled labour but limited in number. As for OD holders, they mostly employ those in business majors (e.g. accounting, human resources, business management and procurement and supply) reflecting their higher availability in the labour market.

Skill Needs and Mode of Training

For the enterprises that introduced modern machinery, there is a need for the technical skills on its operation and maintenance. However, such technicians are not readily available in the labour market. Consequently, they rely on the supplier's training for operation and maintenance. For managerial skills, the management may require additional training, such as corporate management, human resource management, and accounting. Those needs could be addressed by public organizations or development partners because their financial capacities do not allow them to commission private training providers.

Quality assurance and compliance with set standards are crucial for those enterprises, for their sales extend countrywide up to foreign markets. Therefore, their factories and products have to meet all the standards and regulations required by their clients. At the moment, they largely rely on regulatory authorities, such as TBS, TFDA and Occupational Health and Safety Authority (OSHA) for quality assurance, and public

laboratories, such as Tanzania Industrial Research and Development Organization (TIRDO), for the testing and accreditations of their products.

The specific skill needs identified for medium enterprises are listed below.

Table 5-10: Specific skill needs of medium enterprises

Sector	Skill needs
All subsector	Operation and maintenance of modern machinery (incl. CNC machines)
All subsector	Mechatornics engineering
All subsector	Production process management
All subsector	Business management, marketing and human resource management
All subsector	Compliance with standards and regulations (TBS, TFDA)
All subsector	Quality control
All subsector	Occupational safety
Furniture	Modern technoogy of metal fabrication (tool & die and jig & fixture)
Food processing	Laboratory technoogy
Food processing	Sanitation and hygine control
Leather	Leather tanning technology
Leather	Waste water management and testing

Source: The Study Team

Large Enterprises

Employment

Large enterprises also target both domestic and foreign markets and introduced high-tech machinery for their production. For the leading enterprises with an employment of around 500 or more, automation system is operational in their plants. As such, they usually make a contract with their suppliers for maintenance and repair of the machinery and plant. Also, their engineers and technicians should be highly specialized group of people in specific fields, who are usually not available in Tanzania. Thus, the enterprises rely on the expatriates, who have foreign nationality, to fill the gap[84]. According to the enterprise survey, the average number of expatriates in the large enterprises exceeds 13 employees per enterprise. Even medium enterprises employ more than 3 expatriates on average.

[84] In the long-term, the expatriates could be replaced by Tanzanian nationals. However, utilization of expatriates is a necessary condition and process for promoting the manufacturing industry at the moment, and there is no academic institutions that could provide such highly skilled engineers to the labour market. According to the interviews with private enterprises, the most required expatriates for the large-scale enterprises in the manufacturing sector include: 1) system engineer; 2) industrial designer; 3) leather technologist; and 4) management personnel (marketing, sales, production, human resource, etc.)

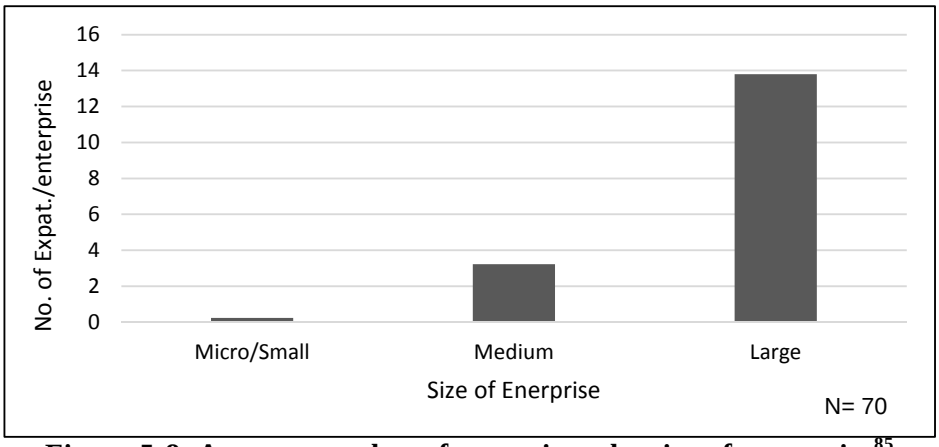


Figure 5-8: Average number of expatriates by size of enterprise[85]

Note: Among 70 respondents, 50 are micro/small, 9 are medium, and 11 are large enterprises.

Source: Enterprise Survey

Skill Needs and Mode of Training

The training is normally coordinated within the enterprise, either through its own programme or a contract with private training provider. Affiliate enterprises also support the provision of training. Quality assurance and compliance with safety regulations are the key concerns for those enterprises to meet the requirements of their domestic and foreign clients. Again, the quality control is dealt within the enterprise or commissioned to private laboratories. For compliance with regulations, they could rely on the training by regulatory authorities.

Table 5-11: Specific skill needs of large enterprises

Sector	Skill needs
All subsector	System engineering
All subsector	Operation and maintenance of CNC machines
All subsector	Electromechanical engineering
All subsector	Industrial automation
All subsector	Waste water management
Food processing	industrial electorical engineering
Food processing	GPS
Food processing	Plastic moulding

Source: The Study Team

5.3 Key institutions and current status of cooperation for TVET

Before examining possible interventions for addressing above mentioned challenges in Chapter 6 (Section 6.2), the following section first identify key institutions that have high potential to provide academic or training courses to meet the demands of the manufacturing industry. Then, the current status of supports to those institutions is

[85] On average, the proportion of expatriates among all the employees is: 2% for small enterprises; 6% for middle-sized enterprises; 4% for large enterprises.

summarized in the next section.

5.3.1 Key institutions

(1) TVET institutions

There is a limited number of public institutions that provide OD courses for mechanical, electrical and electronics engineering; namely, ATC, DIT and MUST. At the same time, these are the key institutions for providing capable technicians if the government is to pursue the path to become a semi-industrialized country by 2025. At the moment, their advantage is that they have existing courses for those three disciplines. Their historical background of providing technician is also an advantage. Although they have started to provide degree courses and is planning to add more, current focus is on OD courses in terms of enrolment.

The following shows the characteristics of each institution (see Appendix 6-1 and 6-2 for their detailed information on annual intake, enrolment and short-term training programs).

1) Arusha Technical College (ATC)

ATC is a TET institution established in 1978. At the time of establishment, the college specialized in providing technicians in automotive engineering, civil engineering, electrical engineering, transport engineering and mechanical engineering. These disciplines remain the core of its teaching up to present. Currently, ATC has 8 academic departments and provides 12 OD courses and 1 degree course. The enrolment for those courses is increasing dramatically from 526 in 2009/10 to 1,489 in 2013/14. The college is planning to start new courses, including degree courses of electrical engineering, laboratory science and technology, and mechatronics engineering. Besides, it is also accredited as a VET institution and provides NVA programmes such as welding and fabrication, fitter and turner and electric installation.

As for the connection with the industry, ATC has an industrial liaison office which coordinates the industrial attachment (internship) for practical training in each course. It also has an independent consulting company called ‘ATC-Production and Consulting Bureau’, which provides engineering consultancy services and training programmes to private enterprises and other organizations. Moreover, the college is active in developing a close relationship with local industries. For instance, it has set up an advisory committee with local car dealers (e.g. Toyota Tanzania, Arusha Arts Limited,

CMC Motors, etc.) to develop new curriculum for a tailor-made course in automotive engineering aimed at the employees of the automotive industry.

2) Dar es Salaam Institute of Technology (DIT)

DIT is a TET institution established in 1957, aiming at the provision of vocational training. In 1962, the institute was upgraded to be the first to provide formal training for technicians in the country. Now the institute provides courses ranging from NTA 4 to 9, i.e. from OD course to master's degree course. DIT has 7 academic departments and provides 12 OD courses and 6 bachelor's degree courses. The enrolment increased from 1,228 in 2009/10 to 2,087 in 2013/14 for OD courses, and 642 to 1,282 for degree courses in the same period.

As for the connection with the industry, DIT has a department of industrial liaison and career guidance which coordinates the internships for practical training in each course. It also has an Institute of Consultancy Bureau, which provides engineering consultancy services, and training programmes to private enterprises and other organizations. While it is located in DSM, where private enterprises are accumulated, the management of DIT considers the institute has not taken advantage of its location very much. However, the management intends to seek collaboration with promising industries, such as the gas industry, to set up new courses.

In addition, DIT has a campus in Mwanza (DIT Mwanza) specifically for leather technology courses. DIT Mwanza has been operational for the past 3 years (2011/12-2013/14) and is currently providing short courses of 1) basic shoe making, 2) leather craft tanning, and 3) footwear pattern engineering (e-learning). Each year, around 150 students enrol in the short courses (basic shoe making: 60; leather craft tanning: 30; footwear pattern engineering: 30). The institute is intending to offer a three-year OD course in leather products technology. Yet there are many challenges such as 1) lack of competent lecturers in the leather sector; 2) lack of basic instruments and equipment in the testing laboratories; 3) lack of basic and modern machines in the workshop; and 4) lack of effluent treatment plant and waste water treatment plant[86]. UNIDO has provided a set of supports to DIT Mwanza as follows: 1) training of trainers on reducing pollution from tanneries, leather goods making, and footwear pattern

[86] The export levy of hides and skins is the revenue source of Livestock Development Fund, and its use articulated in 'Livestock Sector Development Programme' (2011) includes the enhancement of the hides and skin industry in Tanzania, GOT is advised to utilize the fund to support the establishment of long course in leather technology at DIT Mwanza. This support coincides the government policy of promoting the leather industry.

engineering; and 2) provision of equipment (text books, guidelines and DVDs on leather processing and waste water treatment, shoe lasts, and testing materials and devices).

3) Mbeya University of Science and Technology (MUST)

MUST became a university in 2012 but continues to provide OD courses for technicians. It has 6 academic departments and offers 12 OD courses and 12 degree courses, many of which are introduced in recent years. Notably, the university introduced mechatronics course to cater for the increasing demand of private sector for new technologies. The enrolment increased from 819 in 2009/10 to 2,210 in 2012/13 for OD courses, and 238 to 641 for degree courses in the same period. Among the three institutions, MUST has the largest enrolment for OD courses.

As for the connection with the industry, MUST also has an industrial liaison office which coordinates the internships for practical training in each course. For instance, the university has recently conducted in-service training programmes on Programmable Logic Controller (PLC), and maintenance, planning and scheduling for beverage, mining and cement companies. It also has a consultancy bureau to provide engineering consultancy work.

4) VETA training centres

Although VETA training centres are VET provider, they have started providing some OD courses and are in the process of applying for other courses with the support of public and private partners. As the providers of OD courses in engineering are limited in number, VETA training centres could develop as major provider of OD courses in the long run. Yet all the initiatives are still at their initial stages, and they cannot be counted as immediate providers of technicians like TET institutions.

Meanwhile, a relatively strong tie with private sector is an advantage of VETA. For instance, VETA started an in-service training programme called ‘Skill Enhancement Programme’ in 2011, where VETA and certain private enterprise jointly develops an in-service training provided at its training centres. The cost of training is shared evenly between VETA and the enterprise. As of 2014, 19 enterprises in various industries have benefitted from the programme (hotel 11, agro-processing 3, ICT 1, construction 1, other manufacturing 3).

(2) Other training institutions

Besides the TVET institutions, there are other training institutions that provide in-service training programmes. They are not accredited by VETA or NACTE, and therefore their training is not set within the framework of TVET. Still, their programmes are utilized by private enterprises as practical short-term training. Among others, TEMDO and TIRDO have a potential to provide better in-service training which matches skill needs of the industry.

1) Tanzania Engineering and Manufacturing Design Organization (TEMDO)

TEMDO is an applied engineering research and development institution established in 1980 under the MIT. Its main objectives are to design, adapt, and develop machinery and equipment, and to promote their commercial production and use. Specifically, TEMDO has the following mandates: 1) design and development of machine and technology (especially, agro-processing machinery); 2) transfer of technologies to the SMEs in the manufacturing industry; 3) consulting services to the industry; and 4) training of engineers and technicians in the industry. Currently, TEMDO has 48 technical staff members (30 engineers and 18 technicians).

As a training provider, TEMDO has conducted several in-service training programmes, such as supervisory skills, occupational safety, and plant maintenance. Since its equipment and facilities are not sufficient, its instructors visit the private company to conduct training in most cases. TEMDO has an intention to establish a training centre, modelling the High Precision Technology Center (HPTC) which had operated from 1981 to 1997 with the support of Matsushita Electrics Industrial Co., Ltd. of Japan. The intended training centre is to meet skill needs of middle to large enterprises, providing training for electrical discharge machining, operation and maintenance of CNC machinery, AutoCAD operation, etc. As mentioned in Chapter 2, providing a training programme for foundry technology at the centre could also be an option. To realize the plan, however, there is a need for funding necessary facilities and equipment, increasing the number of staff members and their retraining.

2) Tanzania Industrial Research and Development Organization (TIRDO)

TIRDO is a research and development organization established in 1979. Its mandate is to support the industrial development of the country through research and development and technical expertise including training. Currently, it has 45 researchers

and technicians. As for the research and development, it has 4 laboratories (food and microbiology, agricultural technology and industrial chemistry, environment, and materials science and technology) and plans to add 2 more (energy and textile and leather technology). TIRDO aims at developing those laboratories to meet the international standards so that it can inspect the quality of export products domestically. In fact, it has been accredited for 7 methods of testing for food sanitation at its food and microbiology laboratory, complying with ISO/IEC17025. The major clients of the testing include hotels and food-processing enterprises (milk, juice and cashew nuts). It has also conducted a testing of waste water for private tanneries, and component testing of sunflower oil produced by SIDO Iringa refining machine. As such, its comparative advantage lies in its function as a laboratory, and TIRDO actually provides training on non-destructive testing to private enterprises. Other training programmes include welding and metal fabrication, and casting/foundry technology.

5.3.2 Current status of cooperation for TVET

Current supports for TVET are limited compared to those to primary education and secondary education. At the moment, the development partners' supports are provided mainly as an investment for human resources in the booming industries, such as mining, gas, and tourism. On the other hand, there is no support specifically focusing on the manufacturing sector per se.

Table 5-12: Current Support for TVET

Unit: USD Million

Support	DP	Amount	Related Component	Focus Industry
HEST TVET- Skills Development for Labor Market	AfDB	52.2	Support for expanding the capacity of TET & VET institutions - Establishment of 4 VETA training centres - Provision of facilities & equipment to ATC.	Gas (for VETA Mtwara)
Improving Skills Training for Employment Programme (ISTEP)	DFATD (Canada)	13.1	Support for VET institutions on curriculum development of relevant trades	Mining & Tourism
Italia-Tanzania Technical Education & Labour Market Support Programme (TELMS)	Italian Development Coopeartion	3.8	Provision of training equipment in electronics, mechatronics and civil engineering for TET institutions (ATC, DIT, MUST)	Cross-cutting (science and technology)
Enhancing Employability through Vocational Training	VSO, BG Tanzania, City&Guilds	NA	Support for VETA on tutors' teaching skill development in related trades (welding, plumbing, electrical installation, etc.)	Gas
Support for establishing OD courses at VETA Moshi	Barrick Gold Cooperation	NA	Support for establishing OD courses in mechanical engineering and electrical engineering.	Mining

Source: Interviews and related documents.

CHAPTER 6: CONCLUSION

6.1 Agro-industry promotion: findings and recommendations

6.1.1 Cross cutting challenges of agro-industry

Agro-industry in Tanzania is one of the most promising sectors reflecting the very competitive agricultural production in the country. However, the enterprises engaged in this industry are facing various constraints. The constraints for small enterprises are different from those for larger enterprises. Therefore, the constraints of agro-industry are summarized for micro, small, medium and large enterprises.

(1) Challenges for micro and small enterprises

There are a number of micro and small enterprises engaged in agro-industry employing only a few workers. These micro and small enterprises face severe constraints in operating their business. The first constraint is caused by their humble working place. These enterprises are often located in residential or commercial area, which is already packed with many business establishments. It is difficult for them to physically expand their business. Besides, noise and bad smell from their factory cause conflicts with neighbours.

Second, packaging materials are not easily accessible and also expensive. The quantity of the production of micro and small enterprises is usually small. The minimum quantity of order of packages is often too large for these small scale enterprises. According to one printing company in DSM, the minimum order of printed label is 5,000 per week. It is difficult for small enterprises to order 5,000 labels every week. Moreover, enterprises located outside DSM find it difficult to obtain packaging materials at affordable price. In most cases, these materials are not locally available and should be procured from DSM or even from foreign countries. High transportation cost of packaging materials makes their products less competitive in the market.

Third, the targeted consumers of micro and small enterprises are sensitive on price and pay little attention to the quality of products, which undermines the effort of producers to increase quality. Some enterprises struggled to increase the quality of their products, but they eventually found that the local consumers were much concerned with the price of products and purchased cheap imported products. Grading rice based on quality, for instance, does not make sense, when the local consumers are not willing to pay more for higher quality rice.

Forth, the agro-processing enterprises are often engaged in only the processing part

of the value chain. This business practice again weakens the incentive of processing enterprises to increase the quality of products. For example, a small scale sunflower miller receives sunflower seeds from local farmers or middlemen. After extracting oil from the seeds, the local farmers or middlemen get the oil from the miller. The miller only gets service charge of the extraction. The same business practice is also found in rice milling or red meat processing industry. Processing operators do not sell the products in the market, so they are not necessarily concerned with the quality of processed products. With this practice, the processing operators might not have an incentive to invest in their machinery to produce higher quality products.

Finally, some micro scale producers process foods and sell in the market without certification from the authorities concerned, such as TFDA and TBS. All food processing establishments should obtain the certificate if they sell products to the public. Poor quality foods processed in inappropriate workplace might cause health hazard to consumers. We need to have strict control on uncertified producers, as well as technical support for them to obtain the certificate.

(2) Challenges for medium scale enterprises

Medium scale enterprises in agro-industry also face constraints in operating their business. The first constraint is the shortage of technicians who are sufficiently equipped with practical skills. Only a few technical colleges, such as DIT and ATC, can supply the industry with technicians at Ordinary Degree level. The graduates of these colleges do not necessarily have sufficient practical skills that are required by local enterprises due to a limited amount of machinery and equipment available at these colleges. Medium sized enterprises need to employ good technicians with practical skills, but they are not easily available in the labour market. Therefore, these enterprises have no other choice but offer on-the-job training to VETA or Form 4 graduates to upgrade their skills to be technicians.

Second, access to investment capital is also a severe constraint for medium enterprises. Their machinery and equipment are often very outdated, and need urgent renovation to be competitive in the market. However, their retained profit is not sufficient for major investment, and the bank interest rates are too high for long term borrowing. Limited access to investment capital prohibits these enterprises refurbish their machinery.

(3) Challenges for large scale enterprises

Large scale enterprises in agro-industry have their own constraints with regard to human resources in particular. They need qualified engineers and technicians in specific fields, such as factory automation with ICT. Higher educational institutions in the country do not have the specified courses to meet such demand. Therefore, these enterprises have to employ foreign expatriates to fill the gaps, which inevitably increase their production cost.

It is also expressed by some large scale producers that uncertified waste water management system causes a problem when the enterprise tries to export its product to overseas markets. Some buyers, those in the EU countries for instance, request the internationally recognized certification on waste water management from the exporters. Without such certification, the producers are not able to sell the products in such market.

6.1.2 Proposed supportive measures: Technical

(1) Policy dialogue and monitoring

As shown in the case of the local tanning industry (see Section 2.2), the agro-industry enterprises do not necessarily have the same view on the way how the government should promote the industry. The country has a variety of sector and/or area specific business associations, such as Central Zone Sunflower Oil Processors Association (CEZOSOPA), and these associations are expected to play a critical role to foster constructive dialogue among the member enterprises and with the relevant government authorities so that they could have mutual understanding on strategic issues.

To enhance the dialogue between these associations and the government, moreover, the country has a specific forum called ‘Tanzania National/Regional Business Council’. Tanzania Private Sector Foundation (TPSF) is an Apex body to accommodate the interests of private business associations and present their interests to this council. At this council, a number of issues have been discussed and critical decisions have been made.

According to the TPSF, however, the meetings at this council are not regularly held. Only when some issues are raised for the discussion, the stakeholders are invited to participate in the council meeting. As the business argument is often complicated and wide-ranging, it is not easy to reach consensus among the stakeholders in this way. Such meetings should be regularly held and continuous follow-up needs to be in place.

It is suggested that the structure of the dialogue between the government and the

private sector should have the following features. First, the **high level executives** of the two parties should be involved in the dialogue. The improvement of business environment is related to a variety of issues, such as taxation, labour policy, vocational training, industrial standards, etc. The participation of a high level executive in the government is needed in order to coordinate various interests of the government offices.

Second, the agenda of the dialogue should be carefully structured and the meeting should be held **regularly**. The improvement of business environment is related to a number of issues, and these issues are mutually related complicatedly. Ad hoc gathering of the stakeholders cannot cope with complicated and sometimes deeply rooted problems. The meeting should be held consistently. Third, the **monitoring mechanism** should be embedded in the dialogue. The progress of the action plans should be regularly monitored. Consultants can be employed for this monitoring. Finally, the process of the discussion and the agreements at the meeting should be **open to public**. It is needed to inform private business persons about the way how the business environment shall be improved. Besides, this openness to the public should put some pressure on the stakeholders to play their role.

(2) Cluster development

Most enterprises are small in size and they face difficulties in expanding workplace, investing in machinery, accessing to the market, etc. Clustering small producers could generate the scale merit, which eventually results in improvement of productivity and efficiency of their operation.

Establishment of industrial estates or incubators to accommodate micro and small enterprises is a good step to develop the cluster. This physical concentration of workplaces is, however, only one of the initial steps of cluster development. The benefit of clustering could not be fully realized by simply gathering small producers in one place. It is needed to change the member structure from ‘collective business’ to ‘one management’.

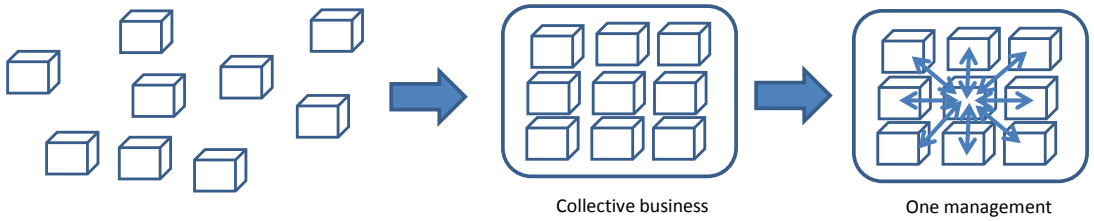


Figure 6-1: Image of clustering small enterprises

Cluster development is not an easy task. A sense of trust among the members is one of the important conditions to realize the benefit of the clustering, but it takes time that the cluster members should start growing such a feeling. In order to promote the development of the cluster, the following incentives can possibly be provided.

The first incentive is the establishment of industrial estates or incubators for the expected cluster members. It is observed that the public and private organizations in Tanzania have made sustained efforts to provide such processing workplace to small business. SIDO, for instance, in the process of developing 'Food Processing cum Training Centre' in Morogoro with technical support from the Korean government (KOICA). 'Training cum Production Centre (Leather products)', managed by SIDO, is now vigorously utilized by small producers of leather products. Moreover, SUA in Morogoro provides incubation facilities to small food processing enterprise with support from the World Bank project. TEMDO in Arusha also offers small but properly designed workplace to start-up entrepreneurs[87].

The second incentive is the provision of subsidized machinery and equipment for the collective use by the cluster members. Large scale rice milling machine or edible oil refinery equipment is expensive and a single small producer cannot afford to introduce such facilities. One of the benefits of the clustering is that the members share the cost of investing in facilities and use them collectively. However, it is not easy to create an appropriate management structure in the cluster for the collective use. This difficulty often discourages the members to purchase the machinery as one organization.

Therefore, subsidizing the purchase of such machinery can promote the development of appropriate management structure. On condition that the cluster members establish a suitable management structure for collective use of the machinery, the subsidized machinery shall be given to the members.[88] A good example is found in Japan. In the 1960s, the Japanese government attempted to promote the establishment of rice milling cluster in the country. At that time, most rice millers were small in size equipped with a small scale milling machine. Therefore, the government subsidized the purchase of a large scale milling machine to the small rice millers, if they were able to establish an appropriate management structure to take care of this machine. This measure was successful to promote the development of clustering among the rice millers (Box 6-1).

[87] Local Government Authorities could also take a role in allocating a plot of land for the formation of a cluster.

[88] Where management structure is relatively weak, SIDO or private enterprises with good experience should provide support for strengthening management structure as well as technical advice.

Box 6-1: Subsidization of rice milling machine in Japan

In order to modernize the rice milling industry, the Japanese government introduced a programme to encourage the clustering of small millers by providing subsidy to procure a large scale milling machine. This programme was implemented at three phases. During the first phase from 1962 to 1963, several millers were selected as pilot cases and given a subsidized milling machine. Following the achievement of the first phase, this subsidization programme was applied to the millers in four major urban areas of the country in the second phase implemented from1977 to 1981. In the third phase after 1981, all areas of the country became the target of the programme. The central government, Ministry of Agriculture, Forestry and Fishery and the local governments jointly covered the cost of the subsidization. The level of subsidization was various, but it was often observed that the central government covered 40 to 50% of the cost, and the local government covered 20%, and the remaining part was borne by the beneficiaries. In participating to this subsidization programme, the small millers were required to set up a partnership that jointly operated the subsidized rice miller. This subsidization programme encouraged the small rice millers to get together to form a cluster.

The third incentive is a set of supportive measures to encourage the use of a common brand among the cluster members[89]. At this moment, it is not often observed that the cluster members use the common brand for their products. Each member uses its own brand and sells its products in the market. If these members use a common brand for their products, a variety of benefits can be found. These benefits can be illustrated as follow (Figure 6-2).

Figure 6-2: Benefits of using the common Brand by the cluster members

First of all, as the members use the same brand for its products, the unit cost of printing labels and other packaging materials, for instance, can be significantly reduced ([1] in the figure above). Besides, the volume of production of that brand becomes much larger, which helps the members meet the requirement of a large scale buyer, such as the super market ([2]). The presence in the local market becomes significant by using the single brand as well ([3]). The quality of the products among the members is also

[89] A common local brand is often observed in the Japanese agro industry. For instance, tea producers located in a specific area form a cluster and use a common local brand. Use of this brand is controlled by the association established by the cluster members.

assured because the use of the common brand inevitably imposes each member to keep its product quality at the unified standard ([4]). Once a member is no longer able to produce its products with the required standard, this producer is required to make the utmost effort to raise its quality standard. Otherwise, the producer has to leave the group. To be competitive in the market, the cluster members need to raise the quality of products of all members. This could result in the overall improvement of quality standard of the members in the clusters ([5]).

In order to promote the use of a common brand, following supportive measures can be considered.

1) Preferential treatment for the certification:
   - Shortening the process of granting the TFDA and TBS certification
   - Discounted fee for applying the TFDA and TBS certification
   - Lessening the number of inspections conducted on sites
   - Speeding the process of granting compliance certificates for export
2) Promotion to participate exhibition
   - Discounted participation fees in TANTRADE Exhibition
   - Discounted participation fees in SIDO Exhibition
   - Preferential participation to other export promotion programmes
3) Preferential treatment at the government procurement
   - Granting additional points to the technical assessment of the government tenders

Besides, the Ministry of Industry and Trade in collaboration with Tanzania Private Sector Foundation is organizing a 'Top 50 Local Brands Award' to take place May 2015[90]. This event not only encourages Tanzanians to buy locally made products and services but also motivates entrepreneurs to improve quality of their products. Brands embody a core promise of values and benefits consistently delivered. Brands also provide clarity and guidance for choices made by enterprises, consumers, investors and others stakeholders. As most of the small business owners do not have enough outlets for their products, this Brand Award event should offer a good opportunity for SMEs to promote their sales. It is much expected that the effort to use a common brand among the cluster members should be linked with this Brand Award campaign. This campaign can work as an incentive for the cluster members to enhance their united efforts.

[90] Concept Note for the Top 50 Local Brands in Tanzania for Tanzania Private Sector Foundation (2014), TPSF.

(3) Food safety

The country has a large economy in the informal sector with millions of micro and small enterprises. They are not registered at authorities concerned, and not given any certificate to produce products. In the case of processed foods, all establishments which sell the products to unidentified consumers in the market should be certified by TFDA and TBS. However, in practice, there are many processed foods in the market, which are obviously produced by uncertified establishments. Crude sunflower oil packed in reused pet bottles and sold on the street could be a notable example.

Poor quality foods produced by inappropriate workplaces could cause health hazard to consumers. Public authorities should make the utmost effort to control the uncertified producers, and also help them obtain the certificate. The institutional capacity of these authorities should be enhanced to examine as well as to support a number of small establishments in the country. Their effort to train small business owners to get the certificate should be assisted.

TFDA and TBS are the public authorities in charge of checking the quality of processed foods and their workplace processed. In collaboration with the district officers, their staff members are looking into the hygienic condition of the workplace throughout the country. Considering the urgent need of TFDA/TBS examination and certification of food producers, the capacity of these authorities should be much enhanced. External financial and technical support is needed to upgrade their laboratory equipment as well as to enhance the capacity of their staff members.

Besides, the TFDA and TBS's training programmes to micro and small food processing enterprises should be supported. In collaboration with SIDO, they regularly hold a few days' training programs at various part of the country (see Table 6-1). It is needed to increase the coverage and frequency of such training programmes.

Table 6-1: TFDA/TBS Training for small food processors (June2-3, 2014)

Day 1

Topic	Moderator/Presenter
Concept of food safety	TFDA
Legal process of registering food processing premise	TFDA
Legal process of registering packed food	TFDA
Packaging process	TFDA
How to put label on the package	TFDA

Day 2

Topic	Moderator/Presenter
Better regulations of food processing	TFDA
Food processing technology	SIDO
Legal steps to obtain TBS mark	TBS
Bar Codes	GS1
Hygiene of processed food	TFDA
End remark	TPSF

Source: TFDA

6.1.3 Proposed supportive measures: Business Finance

Some private FIs and government FI such as TIB have provided medium and long term loans to small and medium scale enterprises for procuring machinery, equipment and production lines. However, the field analysis reveals that small and medium scale enterprises have limited accessed to existing financial services and even those who have potential to grow could not easily access to the existing medium and long term loans, which is one of the serious constraints associated with agro-industry development in Tanzania.

In order to help solve the limited access problem, it would therefore be appropriate for development partners to consider about providing (i) medium and long term loans targeting for small and medium scale enterprises which have potential to grow but could not access to existing financial services due to lack of collateral and low capability to bear the high interests and (ii) partial credit guarantee schemes which would strengthen credit worthiness of enterprises. The loan would be soft loan with concessional lending conditions. Asset financing needs to be further considered in the long run.

(1) Provision of medium-long term loans for agricultural capital investment (facility and equipment)

In the agriculture value chain, loans provided to crop purchasers are estimated to account for about 50 to 60 percent at present in Tanzania. In order to develop agro-industry, it is necessary to increase medium and long term loans targeted for agro-industrial enterprises which have potential forward and backward linkages among the industries and could generate new employment opportunities. Therefore, it is rational to provide financial support targeted at agro-industrial enterprises.

On the other hand, the study team is concerned about the limited numbers of formally registered agro-industrial enterprises. Taking the enterprises employing more than 10 persons, the total number is still less than 250 according to UNIDO's report.

Provision of medium-long term loans for agricultural capital investment might have a limited impact if the loans are provided to the small number of formally registered agro-industrial enterprises.

Providing financial and technical support could be a way to incorporate such small and medium scale enterprises as beneficiaries of the loans. TIB and NMB have provided loans not only to established formal small and medium scale agro-industrial enterprises, but also those which are informal but have potential to grow. These banks have helped formalization of such informal but potential enterprises by helping the registration of business and title deeds of land and building, formulation of business development plan, teaching how to keep record, etc. By doing so, they have lent money to non-registered informal enterprises. These attempts are useful for the Tanzanian economy as a whole in the medium to long run by developing the agro-industry as a driving force.

In order to increase the impacts of the loans, it will be necessary to incorporate such informal but potential agro-industrial enterprises as borrowers. NMB and TIB recognize the existence of such enterprises and have provided loans. However, it was not possible to obtain the data which identify the whole picture of such enterprises numerically from the field study.

In addition, it is crucial to design a lending scheme which would prevent moral hazard of borrowers when the loans are delivered. Based on the interviews with different financial institutions, it is likely for small and medium scale enterprises to consider development partners' money as 'grant' and will not repay. Such FIs stated that it was necessary for development partners to design a scheme which would not reveal that the seed money comes from development partners.

Consideration about financial intermediaries of medium-long term loans for agricultural capital investment

The scope of MIT's planned loans for agro-processing industries is similar to lending activities of TIB and NMB. Therefore, these 2 banks could be candidate financial intermediaries of medium-long term loans for agricultural capital investment.

TIB has actively provided loans to agro-industrial SME and the total loan outstanding amount to agriculture and agro-processing reached to 120 billion Tsh as of 2013. In addition, TIB fully recognises the necessity of providing small and medium scale agro-processing enterprises with medium and long term loans at concessional basis. Presently, small and medium scale agro-processing enterprises have to bear 17 percent interest rate annually while individual agriculture producers could borrow money from

Agricultural Window at 5 percent annually. TIB considers it difficult for such small and medium scale enterprises to bear such high interest rate and that considers it would be helpful if development partners could provide concessional loans as follows.[91]

Table 6-2: TIB's ideas about concessional loans

Loan amount	200 million Tsh to 30 Billion Tsh
Maturity period	10 years
Annual interest rate	5 percent for loans denominated in Tsh 11 percent for loans denominated in US$
Grace period	6 to 24 months
Repayment	Monthly, quarterly, biannually and annually depending upon the types of introduced machinery and equipment
Collateral	Land, building and third party guarantee

Source: study team

On the other hand, there are several concerns about considering TIB as a financial intermediary. First, non-performing loans and advances amounted to 78.9 billion Tsh out of total 410 billion Tsh (NPL=19.2 percent) in 2013 when applying the BOT's regulation for commercial banks[92]. The ratio decreases to 9 percent if BOT's regulation for development banks[93] is applied. Second, TIB has only 4 branches throughout the country apart from the headquarters office, which might prevent smooth outreach to SME operating throughout the country. TIB has a plan to increase the branch number by 2 to 3 for the coming years, but no more branches will be added. The enterprise survey reveals that many of them utilize commercial banks such as CRDB, NMB and NBC and only one enterprise utilizes TIB. Some interviewed enterprises preferred NMB to TIB taking into account of the wide branch network.

Third, being a development financial institution, TIB could not provide loans purely based on cash flow analysis as private commercial banks normally do. When screening applicants, TIB needs to take into account not only of cash flows of the business, but also the impact of loans on generating employments in the area or on purchasing raw material such as cassava from farmers in the area. As a result, credit screening process takes longer time compared with commercial banks and sometimes TIB needs to lend to enterprises commercial banks would not have lent taking into account of the cash flow analysis only. These TIB's business approach might make other commercial banks and PASS think that TIB's credit screening criteria is not as strict as those of commercial banks.

Taking into account of the nationwide branch network consisting of 153 branches,

[91] Based on an interview with TIB on 4th August 2014.
[92] Loans whose repayment delay more than 30 days are regarded as NPL.
[93] Loans whose repayment delay more than 180 days are regarded as NPL.

NMB is easier to identify appropriate borrowers even among informal but potential SME as a financial intermediary. However, NMB allocates 67 percent of loans and advances to treasury bills and consumer loans, etc. and loan outstanding amounts to agriculture and manufacturing sectors are far smaller than those of TIB and CRDB as we described in Table 3-2 of Chapter 3. In addition, NMB is rather reluctant to receive loans from any development partners due to the associated burdensome procedures staff members of 153 branches need to follow.

(2) Private sector investment finance

'Private sector investment finance' is one of the cooperation modalities of development partners. It aims to stimulate economic activity and improve the living standards of people in developing countries through equity investments and loans for projects undertaken in developing countries by the private sector. It could be worth considering that investing in equity of and providing loans to financial institutions which have provided loans to agro-industrial SME which are informal but have potential to grow.

(3) Credit guarantee scheme

SIDO is preparing for a credit guarantee for SMEs which have participated SIDO's training program and been proved to be creditworthy. Taking the lessons obtained from past experiences, such as BOT's SME Credit Guarantee Scheme, into account, the scheme is being designed in a way that FIs could smoothly withdraw the guaranteed amount from the credit guarantee fund once the guaranteed clients fail to repay for a predetermined period. In addition, if high guarantee fees and different credit screening criteria between associated FIs and SIDO are set, they could discourage the actual utilization of the scheme. For instance, in the case of PASS, borrowers need to pay additional 6 percent as technical fees for formulating business plan and guarantee fees in addition to normal loan interest rate. Borrowers consider the rates as heavy burden and become reluctant to utilize the credit guarantee scheme. Furthermore, it is likely to happen that associated FIs decline credit application even though SIDO guarantees the partial of the principle amounts based on cash flow analysis whereas SIDO makes credit screening of application taking into account of development impacts of the loans in addition to the cash flow analysis. It is worth noting as well that different FIs pointed out the necessity to consider devices which would make the credit guarantee scheme sustainable. PASS and NMB strongly recommended that (i) apart from the credit guarantee, first mortgage should be taken even though the charged mortgage has only symbolic value for borrowers

and does not have market values so that borrowers feel the necessity to repay in order not to lose the first mortgage: and (ii) development partners should not reveal the name if it is to finance credit guarantee scheme. Once development partners show the name in the credit guarantee scheme, many people would consider they do not have to repay the loans as their loans are covered by grant provided by development partners.

In order to remove these difficulties associated with practical implementation of the scheme, it is necessary to test the design of such a scheme with the private financial institution before launching, in order to evolve the schemes if necessary so that private FIs could utilize the scheme effectively.

6.2 Industrial human resources development: findings and recommendations

As explained in Chapter 5, there are three major constraints identified for industrial human resource development in the manufacturing sector.

- Provision of highly skilled labour is limited.
- Technical level of vocational and diploma holders are not sufficient.
- Importance of in-service training is not much addressed.

The first constraint is concerned about the quantity of skilled workers provided to the labour market. Therefore, the appropriate measures to cope with the problem would be **increasing the intake capacity** of TVET institutions. The second constraint is about the quality of current courses. This can be dealt with by **improving the quality of current courses** at VET and TET institutions, including renewal of poorly maintained machinery and introduction of new technology in the practical work. The third constraint is due to lack of affordable and accessible in-service training at existing training institutions. Thus, this issue should be addressed through **setting up new in-service training courses** that cater for the needs of the industry. As such, the following recommendations are made to address these three issues.

(1) Increasing the number of engineers and technicians

This proposal is to **increase the quantity of highly skilled labour** in accordance with the government policy.

Tanzania Vision 2025 and the Five Year Development Plan set the goal of attaining the status of middle income country by 2025. Based on this strategic objective, the TVETDP (2013/14-2017/18) set the goal of increasing the enrolment of VET institutions

from 154,103 to 661,193 and that of TET institutions from 113,393 to 400,949 in the five years. The total cost is estimated at 4.4 trillion Tsh for the five-year period, of which 1.6 trillion Tsh exceeds the budget estimation. To fill the gap, AfDB will finance 83 billion Tsh (5 percent of total deficit), focusing on 1) establishment of 4 VETA regional centres together with capacity building of VET teachers, 2) provision of infrastructure and equipment to ATC, and 3) Capacity building of secondary teachers in science and mathematics. Yet this cooperation alone could not fill the financial gap to achieve the target enrolment. Moreover, as mentioned in Chapter 5, massive investment is required to increase the EMC field enrolment (e.g. 7 times more for OD courses by 2025) considering higher cost implications for engineering courses compared to other fields, such as social sciences, business and law fields. If the government is to achieve industrialization of the country without solely dependent on resource-based development, focus on increasing EMC field enrolment and subsequent provision of sufficient numbers of engineers and technicians in the manufacturing sector is mandatory.

Therefore, it is proposed that GOT allocate further **financial resources for the increase of TET institutions' intake capacity**. This allocation is aimed at the provision of facilities and equipment to the TET institutions. Focus should be made on the degree and OD courses of mechanical engineering, electrical engineering and electronics engineering, which is directly contributing to the provision of engineers and technicians in the manufacturing industry. As the government envisions to become a semi-industrialized country by 2025, the provision of quality human resources in the manufacturing sector is a necessary condition.

VETA training centres could be a target for this support in the long run, for they have started to provide OD courses in specific specialties. A training centre in Arusha currently provides an OD course of hospitality, and the VETA is now in the process of starting new OD courses of civil engineering, mechanical engineering, electrical engineering and printing and packaging. Considering the limited number of TET institutions in the related subjects, this support could be extended to establishing new OD courses if longer-term benefits are to be taken into consideration.

(2) Retraining Programme at Nakawa Vocational Training Institute in Uganda

This proposal is to address **quality of existing training programmes provided by TVET institutions**.

As indicated in Section 5.2.3, the teaching capacity of the instructors at VET and

TET institutions is limited largely due to 1) the use of poorly maintained machinery and 2) their slow adaptation to new technology. As for the former, introduction of new machinery should be promoted with the government's support. As for the latter, a retraining programme of instructors on new technologies should be conducted.

One option is to provide such a retraining programme at Nakawa Vocational Training Institute (NVTI) in Uganda. NVTI has become a leading vocational institution in East Africa with continuous efforts of improving its courses since the 1960s. The salient features of NVTI are 1) extensive focus on practical work, 2) teaching on work ethic, 3) strong connection with private enterprises and provision of in-service training for their workers, 4) adaptation to up-dated technology to accommodate industrial needs, and 5) establishment of effective management system. As a result, the graduates of NVTI are highly evaluated by the industry, and the employment rate of graduates is high. NVTI also provides training programme for in-service instructors of vocational institutions. In the past, Tanzanian instructors also participated in the programme.

As such, the instructors of VET and TET could learn a lot from NVTI experience in terms of how to accommodate the needs of students and the industry. Thus, it is proposed to implement a **retraining programme for VET and TET instructors and their management personnel**.

The programme sends the instructors and the management teams of VETA regional centres and TET institutions to the NTVI's in-service training. The trades to be trained for instructors could be electrical, electronics, automotive (including agro-machinery), mechanical and metal fabrication and woodworking. While NVTI is a vocational institution in nature, the training methods of practical work can be informative and applicable for the instructors of TET institutions. As for the management, the NVTI runs a diploma course for institutional management (Diploma in Training Institution Management), and several components of the course can be included in the programme for the management of VET and TET institutions.

Also, the participants could learn the NVTI's approach to develop a strong connection to private enterprises, which many of VET and TET institutions lack in Tanzania. By learning and actually applying NVTI's approach to build strong connection with the private sector, TVET institution could benefit from increasing additional financial source through providing in-service training to private companies, which could enhance financial sustainability of the institutions in the long run.

The expected outcomes of the training are that: 1) the training approach and

methods are practiced and disseminated through the trainees; and 2) the management system of NVTI is adopted and disseminated through the trainees so that the connection between the TVET institutions and the industry will be enhanced.

According to the principal of NVTI, the in-service training programme is still ongoing, and the NVTI could accept the instructors of foreign TVET institutions[94]. Once the connection between NVTI and TVET institutions has been developed, this training can be routinely conducted to secure the sustainability of the programme.

Box 6-2: Nakawa Vocational Training Institute

Nakawa Vocational Training Institute (NVTI) is one of four public vocational training institutes operated and administered by the Ministry of Education and Sports in Uganda. NVTI's training courses include the trades of electronics, electrics, mechanics, automotive, welding, plumbing, metal fabrication and woodworking. It was awarded the second best vocational training centre in the contest organized by the Inter-University Council for East Africa in 2011, and the government positions it as the centre of excellence in its TVET strategic plan (2012/13-2021/22).

With its well-equipped facilities, NVTI puts emphasis on the practical work. Also, its strong linkage with private enterprises should be well noted. For instance, with an increase in the oil production in Uganda, British oil major Tullow Oil plc concluded a contract with the NVTI for developing a tailor-made training programme for its workers. Under the contract, the NVTI instructors teach fitter mechanics and welding of pipelines whereas the company's technicians provide a ToT to NVTI instructors on specialized skills. Oil companies of Belgium and Netherlands and local beverage companies are also interested in similar arrangement with NVTI. Other in-service training at NVTI include one for Nile Breweries Ltd. As the demand for skilled labour is increasing in Tanzania with its emerging industries, there is a lot to learn from the experience of NVTI.

Source: JICA 'Study on Human Resources Development Projects in African Countries' (2013).

[94] Confirmed in the correspondence with the principal through email (August 2014).

(3) Support for In-service Training Programmes at Key Institutions

This proposal is to address **specific skill needs of private enterprises**.

In general, private enterprises consider TVET institutions as the place where students learn basic technical skills and knowledge. Practical and specific skills in the work environment are mainly acquired through on-the-job training or in-service training. As described in Section 5.2.3, there are specific needs addressed by private enterprises. Also, the needs for in-service training are confirmed through the interviews with private enterprises although actual use of in-service training is limited due mainly to its availability. For instance, the training needs identified across the subsectors include: 1) operation and maintenance of modern machinery (including CNC machines); 2) modern technology of metal fabrication (welding and tool and die making); 3) process management in the factory; 4) quality assurance (including laboratory testing); and 5) waste water management.

Here, it should also be noted that the enterprises also expressed their concerns about the duration of training. Since the participation of their employees in the training implies an opportunity cost of production during training period, private enterprises are reluctant to allow them to register for long-term courses. This situation is quite different from the case for the public sector, in which the officials are normally accepted to improve their technical expertise in long-term courses (e.g. diploma, bachelor's or master's degree courses). Therefore, the arrangement of short-term, in-service training is more appropriate and convenient for private enterprises.

Thus, it is proposed to support the establishment of **in-service training programmes at selected training institutions**. The institutions would be selected based on their specialties and comparative advantage. Since the connection between training institutions and the industry is relatively weak, the training programmes should involve economic organizations which have good relationship with private enterprises as an intermediate, such as Confederations of Tanzania Industries (CTI) and Tanzania Chamber of Commerce, Industry and Agriculture (TCCIA). An advantage of involving these organizations is that they could also conduct business training. To combine technical and managerial skills, the training would be more attractive to private enterprises.

There is a good example of the collaboration between economic organization and training institutions in Malaysia, utilizing the scheme of Human Resources Development Fund, an equivalent of Skill Development Levy of Tanzania (see Box 6-3). Such initiative can also be applied to Tanzania. Also, the experience of Japan in

industry-university cooperation supported by the government can be a reference for considering the means to promote the collaboration (see Box 6-4).

The actual steps to develop in-service training would be as follows.

1) Identification of capable and committed training institutions
2) Skill needs analysis of the private sector by the selected institutions with the support of economic organizations
3) Set-up of advisory committee (training institution, private enterprises, and economic organizations) for curriculum development
4) Actual development of curriculum and preparation of necessary facilities, equipment and human resources.

While the initiative should be primarily taken by the direct stakeholders (training institutions, private enterprises and economic organizations), there should be the government's intervention to set up an enabling environment.

First, there needs (i) a support for initial investment for necessary equipment, facilities and (ii) training for instructors on the use of new machinery and teaching methods for practical work.

Second, there is a need for setting up a financial scheme to support the in-service training programmes. For this issue, the government is advised to consider the use of Skill Development Levy (SDL) as a subsidy for the training. Currently, one third of SDL revenue is disbursed to VETA for covering all VET institutions' operational costs. Using the SDL budget, VETA started a cost-sharing scheme of in-service training called 'Skill Enhancement Programme' in 2010. In this programme, VETA and interested private enterprises jointly develop curricula for in-service training of the employees. The cost of this in-service training is shared by the two parties (50/50), and 19 enterprises in various industries have benefitted from the programme as of 2014 (hotel 11, agro-processing 3, ICT 1, construction 1, other manufacturing 3). Such practice is also introduced in Malaysia (see Box 6-3) and has contributed to the enhancement of employers' incentive to use in-service training. At the moment, Skill Enhancement Programme is not widely recognized by private enterprises, and it is limited in VETA training centres with limited practice (1,662 employees have been trained from 2011/12 to 2013/14). Therefore, it is recommended that this financial arrangement be further extended to other training institutions.

The below is a preliminary list of candidate institutions identified by the study

team[95]. Those institutions have a past history of conducting in-service training and have comparative advantage in providing training to the manufacturing industries (see the column 'Possible Training Programmes' for what they can provide with existing instructors, equipment and facilities).

Table 6-3: Candidate Institutions for In-service Training

Institution	Specialty	Comparative Advantage	Possible Training programme
ATC	Mechanical Engineering, Electrical Engineering and Electronics Engineering	- Coverage of major engineering disciplines - Good connection with local industries - Existence of autonomous consulting agency (ATC-PCB)	- Auto electrics wirings - Auto CAD - Auto electronics maintenance and repair - Welding and metal fabrication techniques
DIT	Mechanical Engineering, Electrical Engineering and Electronics Engineering	- Coverage of major engineering disciplines - Located in the largest industrial area - Existence of Institute Consultancy Bureau	- Auto CAD - Modern welding - Electrical installation - Industrial maintenance
MUST	Mechanical Engineering, Electrical Engineering, Electronics Engineering and Mechatronics Engineering	- Coverage of major engineering disciplines (including mechatronics) - Large intake capacity	- Programmable Logic Controller (PLC) - Mechatronics - Preventive maintenance of mechanical & electrical equipment
TEMDO	Design, fabrication and instalment of machinery and plant facilities	- Specialty in producing prototype machinery - Experience in short-course training	- Modern supervisory skills - Casting & foundry technology - Occupational safety - Auto CAD - Plant maintenance
TIRDO	Food safety and hygiene testing, material testing, wastewater testing, welding and metal fabrication	- Expertise on quality assurance - Experience in short course training	- Non-destructive testing - Food safety and hygiene - Waste water management - Welding and metal fabrication - Casting & foundry technology
CTI	Marketing and business management	- Good connection with middle to large enterprises	- Marketing - Business management
TCCIA	Marketing, entrepreneurship skills, business management, export procedure	- Good connection with small to medium enterprises. - Existence of extension offices at district level	- Packaging & traceability - Managerial skills - Marketing

The trainees are expected to be the artisans and technicians who are actually engaged in production process in the workshop/factory. The duration and timing of the training should be carefully arranged. For instance, there are several choices as follows: 1)

[95] Considering specific subsectors, DIT Mwanza (leather industry), Leather Association of Tanzania (leather industry) and National Sugar Institute Kidatu (sugar industry) could be the candidates of in-service training as well.

short-term, intensive course (1-2 weeks up to 1 month); 2) setting certain day of the week for training (e.g. every Friday for 11 weeks); and 3) evening class (e.g. starting from 16:00).

Box 6-3: In-service Training of FMM in Malaysia

The Federation of Malaysian Manufacturers (FMM) is an economic organization established in 1968. It is currently the largest private sector economic organization representing over 2,500 manufacturers. Its training centre, FMM institute, provides a range of in-service training, e.g. mechanical design, welding technology, electrical engineering, in collaboration with the industry, training institutes and private consultants. Also, the institute can provide the business courses, e.g. quality management, and marketing, so that the combination of technical and managerial skills could be provided to the trainees.

The FMM training programmes are financially supported by the Malaysian Government's Human Resources Development Fund (HRDF). The financial base of the HRDF is the Human Resources Development Levy, an equivalent of the Skill Development Levy (SDL) of Tanzania. The aim is to motivate the employers for retraining their employees. As VETA has started the Skill Enhancement Programme, where the cost of its in-service training is shared by the employer and VETA, such scheme should be further promoted to give the employers an incentive to invest in the skill enhancement of their employees.

Box 6-4: Industry-University Cooperation in Japan

In Japan, industry-university cooperation has been active since the 1990s, when the government set the Science and Technology Basic Act (1995) to promote the cooperation for technological innovation. Subsequently, the government set up the Technology Licencing Offices (TLO) in 1998 to support technological transfer from the academic institutions to private enterprises. A TLO can either be established in a university or obtain a corporate status, and functions as an entity to support patenting of research outputs and transferring the outputs to private enterprises for technological transfer.

According to a follow-up survey on industry-university cooperation, the number of joint studies between private enterprises and academic institutions was 16,925 in 2012, and that of applications for patent was 6,158. Joint studies were conducted mainly in the fields of life science, information and communication, environment and nanotechnology. Good practices include: high-strength and collagen fibre membranes for regenerative medicine (Tokyo Institute of Technology and Taki Chemical Co., Ltd.); ultrasonic elliptical vibration cutting unit (Nagoya University and Taga Electric Co., Ltd.); Antibacterial coating material using photocatalysis (Kyushu Institute of Technology and Pialex Technologies Co.)

Source: http://sangakukan.jp/journal/journal_contents/2014/04/articles/1404-03-1/1404-03-1_article.html; http://www.tagaele.com/industrial/ids02.html

APPENDIX

Appendix1-1: References

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Appendix 1-2: Enterprise Survey Questionnaire

Questionnaire

Enterprise Survey

Data collection survey on promotion of agro-industry and industrial human resource development in Tanzania

JICA

Date of interview	
Name of interviewer	

Name of Interviewee	
Position of the Interviewee	
Company name	
Phone number	
Email address	
District name	

0. Company profile

0.1 Types of business

□ Food processing
□ Metal
□ Furniture
□ Leather
□ Other manufacturing (specify: _____)

0.2 Ages of establishment (years)

_____ **years old**

0.3 Ownership

□ Private domestic
□ Private foreign (nationality:_____ ___)
□ Government/State
□ Other (specify: _____)

0.4 Number of total employees

_____ **persons**

In which

□ Tanzanian _____ **persons**

□ Foreign _____ **persons**
(nationalities: _____ _____ _____)

0.5 Main clients

_____

0.6 Annual turnover

_____ **Million Tsh.**

I. Production and Marketing

I-1 What do you produce? Please specify three main products.

_____

_____

_____

I-2 Have you registered your company?

□ Registered □ Not registered

If *registered,* which office you have registered?
□ Ministry of Agriculture
□ Ministry of Industry
□ Others
（Please specify the office_____）

If n*ot registered,* what is the reason behind?
□ Difficult process
□ Tax levy
□ Don’t feel any necessity
□ Other reasons
（Please specify the reason_____）

I-3.1. What types of material inputs do you need for your production?
Please specify three main inputs for your production. .

_____

_____

_____

I-3.2. Are these inputs domestic or foreign origin?

	Input x	Input y	Input z
Domestic	□	□	□
Foreign	□	□	□
Both	□	□	□
Countries of origin of foreign inputs			

If you use foreign inputs, why do you need to import the inputs?

□ Domestic inputs are not available.
□ Domestic inputs are poor in quality.
□ Domestic inputs are expensive.
□Other reasons
（_____）

I-3.3 Do you face any trouble to obtain these inputs?

□ Yes
□ No

If yes, what are the troubles that you face?

□ Difficulty in procurement
□ Price fluctuation
□ Unstable sizes and quality
□ Unstable supply in some seasons
□ Other reasons
（_____）

I-3.4 How do you obtain the material inputs?

	Inputs x	Input y	Input z
Obtain from distributors	□	□	□
Directly purchase from producers	□	□	□
Purchase in the market in production area	□	□	□
Purchase in the market nearby	□	□	□
Others (please specify）			

I-3.5 Where is the market of your main products?

	Product a	Product b	Product c
Domestic	□	□	□
Foreign	□	□	□
Both	□	□	□
Countries of destination for export			

→ If you sell in *Domestic market*, how do you sell your products?
□ Wholesale
□ Retail
□ Both (percentage of wholesale: _____%)

→ If you export your products, what encourage you to sell overseas?
□ Because the size of the domestic market is small.
□ Because we receive big order from foreign clients
□ Because we expect bigger profit from the export
□ Other reasons
(_____)

I-4 Scale of the annual operation

I-4.1 Purchase of the main inputs

	Input x	Input y	Input z
Purchase volume per year	Ton/year	Ton/year	Ton/year
Purchase volume per order	Ton/order	Ton/order	Ton/order
Annual expenditure	Mill.tsh./year	Mill.tsh./year	Mill.tsh./year

I-4.2 Sales of the main products

	Product a	Product b	Product c
Domestic sales	Ton/year	Ton/year	Ton/year
Export sales	Ton/year	Ton/year	Ton/year
Export destinations (country names)			
Annual volume of sales	Mill.tsh./year	Mill.tsh./year	Mill.tsh./year

I-4.3 Terms of payment

	When you procure inputs	When you sell products
Cash settlement	□	□
Payment after delivery (condition)	□ (_____)	□ (_____)
Installment payment (condition)	□ (_____)	□ (_____)
Others (Please specify)	□ (_____)	□ (_____)

I-5. Processing factory and machines/equipment

I-5.1 Main machines and equipment

Please specify four main machines in your factory.

M1) _____

M2) _____

M3) _____

M4) _____

I-5.2 Details of your machines

	M1	M2	M3	M4
Locally manufactured machine	□	□	□	□
Imported machine	□	□	□	□
Country of origin of imported machine				
Brand-new machine	□	□	□	□
Used machine	□	□	□	□
Condition of machine	□ Good □ Fair □ Poor	□ Good □ Fair □ Poor	□ Good □ Fair □ Poor	□ Good □ Fair □ Poor

I-5.3a Main problems of your machines

	M1	M2	M3	M4
Frequent breakdown	□	□	□	□
Unavailability of spare parts	□	□	□	□
Poor performance	□	□	□	□
Others (please specify)				

I-5.3b Please ☑ to major challenges you face while manufacturing.

□ Procurement of material inputs
□ Marketing
□ Electrical outrages
□ Unavailability of engineers
□ Water insufficiency
□ Poor waste water treatment service
□ Poor waste disposal service
□ Others (_____)

I-5.4 Please ☑ to all facilities that you use for the production.

Telephone	Fax	Personal computer (Internet)	Motor cycle	Light truck	Heavy truck
□	□	□	□	□	□

Other facilities (please specify)

(_____)

I-5.5 Troubles for the transportation.
What are your main troubles during transportation? Please ☑ to all items you are facing.

Lack of vehicle	Cost of fuel	Bad road condition	Expensive toll fare	Lack of storage facilities
□	□	□	□	□

Other troubles (please specify)
(_____)

I-6. Information management

I-6.1 How do you collect information about material inputs with regards to quality, prices and others?

□ From newspapers/ radio
□ From traders
□ Directory from producers
□ From business partners
□ From official announcement

I-6.2 Do you conduct sales promotion by yourself?

□ Yes, □ No

→If *Yes,* what type of sales promotion do you conduct?

□ Advertise by newspapers, TV and radio
□ Promote to retailers
□ Access to new markets
□ Participate to exhibitions
□ Distribute handouts, etc.
□ Utilize Inter-net
□ Promote by discounting
□ Improve the quality/ deliver sample products
□ Others
(Please describe_____)

II. Finance

II-1 Please indicate Financial Institutions (FIs)[1] you are using.
What are their names?
When you start using these institutions? .

□ Banks
Name(s)： _____
Year from _____
□ Non Banks
Name(s)： _____
Year from _____
□ Informal FIs
Name(s)： _____
Year from _____

□ Never used FIs

II-2. Have you borrowed from any of the FIs?

□ Yes, □ No

If *No,* why you did not borrow from them? Please check all the relevant reasons for this.

□ Have adequate financial resources and do not need to borrow
□ Concerned about failure in repayment
□ Cannot provide collateral FIs request
□ Cannot write the application forms
□ Do not know where to go to borrow money
□ No nearby FIs exist
□ It takes long time for loan applications to be approved and it is bothersome to visit FIs several times upon FI's requests
□ Cannot trust FIs
（Name(s) of FIs_____）
□ Can borrow money from relatives and friends
□ Others
（Please specify:_____）

[1] Banks：commercial banks, postbank
Non Banks： SACCOs、insurance companies、microfinance Institutions、remittance companies、mobile money operators
Informal FIs： Village Savings & Loan Associations, Village Community Banks, Savings & Credit Associations, Rotating Savings & Credit Associations),Suppliers' credit、money lenders

II-3 Please indicate purposes of utilizing the following FIs.

	Deposit	Withdrawal	Loans	Insurance	Remittance	Others
Banks	□	□	□	□	□	
Non Banks	□	□	□	□	□	
Informal FIs	□	□	□	□	□	

II-4 When do you face the financial difficulties? Please select all cases. .

□ Purchase of raw materials
□ Payment of utility such as electricity, water, gas and telecommunication
□ Purchase machinery and equipment
□ Construction and rehabilitation of facility
□ Storing costs
□ Payment of transportation costs
□ Payment of salary
□ Payment of taxes
□ Payment of insurance
□ Others
(please specify_____)

II-5a. Do you consider that access to finance as a major constraint for your business?

□ Yes, □ No

II-5b. Please select all the troubles when you apply for loans to FIs

□ Cannot provide requested collateral
□ Cannot maintain the requested level of deposits
□ FI did not accept the purposes of borrowing
□ High interest rates
□ Cannot formulate business plan indicating purposes of the applied loans
□ Cannot borrow sufficient money
□ Long procedures from loan application to the disburse of loans
(_____months)
□ FIs' misuse of money made us difficult to borrow adequate money on time
□ Others
(please specify _____)

II-6 Where do you save extra money for daily use and for withdraw?

□ Banks
□ Non banks
□ SASSOs
□ Mobile money operators
□ Suppliers
□ Safe
□ Others
(please specify _____)

II-7a. Have you used mobile money?

□ Yes, □ No

II-7b If yes, what are the purposes of using mobile money?

□ Send and receive money to / from （_____）
□ Payment of utility
□ Payment of salary
□ Payment of machinery and equipment
□ Payment of taxes
□ Payment of insurance
□ Payment of storing costs
□ Payment of transportation costs
□ Receive loans
□ Deposit extra money
□ Others
(please specify_____)

II-8 If no, please select all the reasons why you have not.

□ Do not have mobile phone
□ Nearby mobile money agent does not exist
□ Mobile money agent does not maintain adequate levels of money
□ High fees
□ Don't know how to use mobile money
□ Others
(please specify_____)

II-9. Have you ever utilized warehouse receipts?

□ Yes
□ No

II-10. If yes, please select all the purposes you utilized the receipt.

□ Working capital
□ Maintain the high quality of products
□ Obtain higher profits by sales during the off- crop seasons
□ Responding to buyers' request
□ Others
(please specify_____)

III. Human Resource Development

III-1 Information about personnel affairs

Number by contract:
Permanent ( ) Temporary ( )

Number by job titles

Manager	( )
Engineer	( )
Technician	( )
Artisan	( )
Unskilled worker	( )
Clerical worker	( )
Others	( )

Number by academic background

Standard 7 or less	( )
Form 4	( )
Form 6	( )
Vocational training Certificate	( )
Ordinary Diploma	( )
Bachelor's degree	( )
Master's degree	( )
Others	( )

Type of training or academic courses

Vocational Training Certificate

_____

_____

_____

Ordinary Diploma

_____

_____

_____

Bachelor's degree

_____

_____

_____

Master's degree

_____

_____

_____

III-2. Please inform us where and how you and your workers obtained technical and business skills.

Type of skill (e.g. agro-processing)	Vocational Training	NGO Training	College Course	Extension Worker	On-the-Job Training	In-service Training	Self-taught
	□	□	□	□	□	□	□
	□	□	□	□	□	□	□
	□	□	□	□	□	□	□
	□	□	□	□	□	□	□

Others (please specify)

_____

III-3. How many of your workers are foreigners? And what are their job titles?

1) Total Number ( )

2) Breakdown by job title:

Manager ( )
Engineer ( )
Technician ( )
Artisan ( )
Unskilled worker ( )
Clerical worker ( )
Others ( )

3) Reason for hiring foreigners

□ Their skill is high
□ Their productivity is high
□ Their motivation for work is high
□ Their wage is cheap
□ Others
(please specify_____)

III-4 Do you consider that an inadequately educated workforce as a major constraint?

□ Yes
□ No

III-5 Have your employees participated in any in-service skill training?

□ Yes
□ No

If answer yes, please specify the types of training and training provider

Type of training _____

Provider _____

Type of training _____

Provider _____

Type of training _____

Provider _____

If answer is no, please select the reason that you have not.

□ There is no nearby training center
□ Tuition fee is too high
□ Government subsidy is not available
□ Training is not practical for work
□ There is no time to join
□ Others
(please specify_____)

III-6. How do you recruit new employees?

□ Job advertisement
□ Interview
□ Introduction from vocational training centers
□ Introduction from relatives and friends
□ Others
(please specify_____)

III-7 What aspects of the job seekers do you examine when they apply ?

□ Academic background
□ Job career
□ Technical skill
□ Others
(please specify_____)

III-8. Currently what kinds of skills are required for new employees?

□ Technical skill
□ Business management
□ Clerical skill
□ Accounting skill
□ Information Technology skill
□ Others (please specify _____)

III-9. Have you get any supports from “business development service providers[2]”?

□ Yes
□ No

[2] “Business development service providers” are public agency or private company that help private companies expand their business. Their services include training, provision of market information, new product development, introduction of new technology, linking with potential buyers or supplies. As for public agencies, SIDO, TCCIA, Confederation of Tanzania Industries provide such services.

If yes, please specify the names of service provider and type of service that you receive.

Name of service provider

_____

_____

Type of service
□ Market information
□ New product development
□ Introduction of new technology
□ Business linkage with buyers/suppliers
□ Networking with other companies in the same sector
□ Others
(please specify_____)

If answer is “NO” please select the reason from below.

□ There is no service provider nearby
□ Consultation fee is too high
□ Government subsidy is not available
□ Service is not practical for work
□ Others
(please specify_____)

Appendix 1-3: Summary of the Enterprise Survey Results

1. General Information on the respondents

1) Number of Respondents by Subsector

Subsector	No.
Food Processing	42
Metal Fabrication	5
Furniture Making	6
Leather Processing	12
Other Manufacturing	5
Total	70

2) Number of Respondents by City

City	No.
Arusha	8
Dodoma	8
Dar es Salaam	18
Mbeya	17
Morogoro	11
Moshi	8
Total	70

3) Number of Respondents by Size of Enterprise

Size of Enterprise	No.
Micro and Small	50
Medium	9
Large	11
Total	70

4) Number of Respondents by Ownership

Ownership	No.
Private Domestic	59
Private Foreign	3
Government/State	4
Others	4
Total	70

5) Number of Employees (Average)

Size of Enterprise	No.
Micro and Small	13.3
Medium	65.9
Large	384.4

6) Annual Tunover (Average)

Size of Enterprise	Tsh. Mil.
Micro and Small	1,159
Medium	6,746
Large	71,478

2. Summary of Survey Results

I Production and Marketing

I-3.2. A) Are the inputs of your production domestic or foreign origin?

	Micro and Small	Medium	Large
Domestic	44	5	2
Foreign	1	3	3
Both	5	1	6
Total	50	9	11

I-3.2 B) Why do you need to import the inputs?

(For those enterprises importing inputs, Multiple Answer)

	Micro and Small	Medium	Large	**Total**
Domestic inputs are not available	12	6	8	26
Domestic inputs are poor in quality	3	1	1	5
Domestic inputs are expensive	0	0	1	1
Other reasons	0	0	0	0

I-3.3 A) Do you have any trouble to obtain inputs?

	Micro and Small	Medium	Large
Yes	35	6	5
No	15	3	6
Total	50	9	11

I-3.3 B) What are the troubles that you face?

(For those enterprises answered 'Yes' to 1-3.3 A), Multiple Answer)

	Micro and Small	Medium	Large	**Total**
Difficulty in procurement	16	3	3	22
Price fluctuation	15	3	0	18
Unstable sizes and quality	9	2	0	11
Unstable supply in some seasons	15	2	1	18
Other reasons	5	3	2	10

I-3.4 How do you obtain material inputs?

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
Obtain from distributors	24	4	5	33
Directly purchase from producers	27	6	8	41
Purchase in the market in production area	13	1	1	15
Purchase in the market nearby	9	2	0	11
Others	0	0	0	0

I-3.5 A) Where is the market of your main products?

	Micro and Small	Medium	Large
Domestic	43	4	8
Foreign	1	2	0
Both	6	3	3
Total	50	9	11

I-3.5 B) If you sell in 'domestic market', how do you sell your products?

	Micro and Small	Medium	Large
Wholesale	2	2	4
Retail	16	1	0
Both	31	5	7
Total	49	8	11

* Nonresponse: 2

I-3.5 C) If you export your products, what encourage you to sell overseas?

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
Because the size of the domestic market is small.	1	1	2	4
Because we receive big order from foreign clients	0	0	2	2
Because we expect bigger profit from the export	1	1	1	3
Other reasons	0	1	0	1

I-4.3 Terms of payment

A) When you procure inputs

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
Cash settlement	39	5	5	49
Payment after delivery	23	5	4	32
Installation payment	13	6	2	21
Others	1	0	2	3

B) When you sell products

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
Cash settlement	40	5	5	50
Payment after delivery	23	6	3	32
Installation payment	13	7	2	22
Others	1	0	3	4

I-5.2 Details of main machine used in the factory

A) Origin

	Micro and Small	Medium	Large
Locally manufactured machine	10	0	1
Imported machine	37	9	10
Total	47	9	11

B) New/used

	Micro and Small	Medium	Large
Brand-new	29	6	8
Used	11	2	1
Total	40	8	9

* Nonresponse: 10

C) Condition

	Micro and Small	Medium	Large
Good	24	2	7
Fair	18	5	2
Poor	2	0	0
Total	44	7	9

* Nonresponse: 7

I-5.3 a Main problems of main machine

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
Frequent breakdown	20	4	2	26
Unavailability of spare parts	11	7	4	22
Poor performance	12	1	0	13
Others	1	0	1	2

I-5.3 b Major challenges you face while manufacturing

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
Procurement of material inputs	31	3	3	37
Marketing	25	0	2	27
Electrical outage	30	3	9	42
Unavailability of engineers	9	3	2	14
Water insufficiency	6	3	2	11
Poor waste water treatment service	9	4	4	17
Poor waste disposal service	6	3	0	9
Others	7	1	0	8

I-5.5 What are the main troubles of transportation?

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
Lack of Vehicle	22	3	3	28
Cost of fuel	30	8	5	43
Bad road condition	32	6	9	47
Expensive toll fare	9	0	1	10
Lack of storage facilities	23	2	5	30

I-6.1 How do you collect information about material inputs with regard to quality, prices, and others?

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
From newspaper/radio	7	0	1	8
From traders	28	9	2	39
Directly from producers	29	6	9	44
From business partners	27	2	3	32
From official announcement	4	1	1	6

II Finance

II-1 Indicate Financial Institutions (FIs) you are using.

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
Banks	43	9	11	63
Non Banks	0	0	0	0
Informal FIs	4	0	0	4
Never used FIs	0	0	0	0

II-2 A) Have you borrowed from any of the FIs?

	Micro and Small	Medium	Large
Yes	16	6	6
No	31	3	5
Total	47	9	11

* Nonresponse: 3

II-2 B) Reasons for not borrowing from FIs (If you have not borrowed from FIs).

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
Have adequate financial resources and do not need to borrow	3	0	4	7
Concerned about failure in repayment	5	1	0	6
Cannot provide collateral FIs request	13	4	0	17
Cannot write the application forms	0	2	0	2
Do not know where to go to borrow money	0	8	0	8
No nearby FIs exist	0	1	0	1
It takes long time for loan applications to be approved and it is bothersome to visit FIs several times upon FI's request	6	1	0	7
Cannot trust FIs	0	4	0	4
Can borrow money from relatives and friends	4	5	0	9
Others	17	0	2	19

II-3 Indicate the purposes of using the following FIs.

(Multiple Answer)

A) Banks

	Micro and Small	Medium	Large	**Total**
Deposit	37	8	9	54
Withdrawal	38	9	8	55
Loans	21	6	5	32
Insurance	6	2	3	11
Remittance	7	5	5	17
Others	1	0	1	2

B) Non Banks

	Micro and Small	Medium	Large	**Total**
Deposit	2	0	0	2
Withdrawal	2	0	0	2
Loans	1	0	0	1
Insurance	0	0	0	0
Remittance	0	0	0	0
Others	0	0	0	0

C) Informal FIs

	Micro and Small	Medium	Large	**Total**
Deposit	0	0	0	0
Withdrawal	0	0	0	0
Loans	0	0	0	0
Insurance	0	0	0	0
Remittance	0	0	0	0
Others	0	0	0	0

II-4 When do you face financial difficulties?

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
Purchase of raw materials	44	6	7	57
Payment of utility such as electricity, water, gas and telecommunication	7	1	1	9
Purchase machinery and equipment	30	7	5	42
Construction and rehabilitation of facility	16	4	2	22
Storing costs	12	0	2	14
Payment of transportation costs	11	1	0	12
Payment of salary	4	1	1	6
Payment of taxes	8	0	1	9
Payment of insurance	0	1	0	1
Others	3	0	1	4

II-5 a. Do you consider that access to finance as a major constraint for your business?

	Micro and Small	Medium	Large
Yes	44	6	1
No	5	3	9
Total	49	9	10

* Nonresponse: 2

II-5 b. Select all the troubles when you apply for loans to FIs

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
Cannot provide requested collateral	22	2	0	24
Cannot maintain the requested level of deposits	4	0	0	4
FI did not accept the purposes of borrowing	5	1	0	6
High interest rates	30	5	5	40
Cannot formulate business plan indicating purposes of the applied loans	2	0	0	2
Cannot borrow sufficient money	17	2	0	19
Long procedures from loan application to the disburse of loans	17	2	2	21
FIs' misuse of money made us difficult to borrow adequate money on time	0	0	0	0
Others	2	1	1	4

II-6 Where do you save extra money for daily use and for withdraw?

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
Banks	40	7	11	58
Non banks	1	0	0	1
SACCOs	2	0	0	2
Mobile money operators	7	1	0	8
Suppliers	0	0	0	0
Safe	8	3	0	11
Others	2	0	0	2

II-7a. Have you used mobile money?

	Micro and Small	Medium	Large
Yes	24	5	5
No	23	3	6
Total	47	8	11

* Nonresponse: 4

II-7b. (If you have used mobile money,) What are the purposes of using mobile money?

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
Send and receive money	20	5	5	30
Payment of utility	12	0	0	12
Payment of salary	4	1	0	5
Payment of machinery and equipment	4	0	0	4
Payment of taxes	8	0	0	8
Payment of insurance	2	0	0	2
Payment of storing costs	1	0	0	1
Payment of transportation costs	5	1	0	6
Receive loans	1	0	0	1
Deposit extra money	4	0	0	4
Others	0	0	1	1

II-8 (If you have not used mobile money,) Why have you not used mobile money?

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
Do not have mobile phone	0	0	0	0
Nearby mobile money agent does not exist	2	1	0	3
Mobile money agent does not maintain adequate levels of money	9	1	3	13
High fees	5	1	1	7
Don’t know how to use mobile money	0	0	0	0
Others	9	0	2	11

II-9 Have you ever utilized warehouse receipts?

	Micro and Small	Medium	Large
Yes	6	0	4
No	41	9	7
Total	47	9	11

* Nonresponse: 3

II-10 (If you have used warehouse receipts,) What are the purposes of using the receipts?

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
Working capital	1	0	0	1
Maintain the high quality of products	5	0	2	7
Obtain higher profits by sales during off-crop seasons	2	0	1	3
Responding to buyers' request	1	0	2	3
Other	0	0	0	0

III Human Resource Development

III-2 Where and how do your workers obtained technical and business skills?

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
Vocational Training	20	3	7	30
NGO Training	8	0	1	9
College course	24	2	7	33
Extension worker	6	0	0	6
OJT	40	7	10	57
In-service training	13	4	5	22
Self-taught	11	0	3	14

III-3 How many of your workers are foreigners? And what are their job titles?

1) Number (average)

	Micro and Small	Medium	Large
No. of total employees	13.3	65.9	384.4
No. of foreigners	0.2	3.2	13.8

2) Job title (average)

	Micro and Small	Medium	Large
Manager	0.2	1.8	5.2
Engineer	0.0	0.4	1.6
Technician	-	0.8	4.6
Artisan	-	-	1.1
Unskilled worker	-	-	-
Clerical worker	-	0.2	-
Others	-	-	1.1

3) Reason for hiring foreigners

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
Their skill is high	3	4	6	13
Their productivity is high	1	3	2	6
Their motivation for work is high	3	5	2	10
Their wage is cheap	0	0	0	0
Others	0	0	1	1

III-4 Do you consider that an inadequately educated workforce as a major constraint?

	Micro and Small	Medium	Large
Yes	30	7	7
No	18	2	4
Total	48	9	11

* Nonresponse: 2

III-5 A) Have your employees participated in any in-service training?

	Micro and Small	Medium	Large
Yes	30	6	9
No	19	3	2
Total	49	9	11

* Nonresponse: 1

III-5 B) Reason for not using in-service training

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
There is no nearby training center	7	1	2	10
Tuition is too high	7	0	0	7
Government subsidy is not available	5	1	0	6
Training is not practical for work	6	0	0	6
There is no time to join	4	1	0	5
Others	1	0	0	1

III-6 How do you recruit new employees?

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
Job advertisement	15	5	10	30
Interview	35	7	10	52
Introduction from vocational training center	9	2	5	16
Introduction from relatives and friends	10	1	1	12
Others	1	1	1	3

III-7 What aspects of the job seekers do you examine when they apply?

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
Academic background	18	3	6	27
Job career	15	6	8	29
Technical skill	42	7	10	59
Others	3	1	1	5

III-8 Currently what kinds of skills are required for new employees?

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
Technical skill	44	6	9	59
Business management	25	3	5	33
Clerical skill	3	1	3	7
Accounting skill	15	0	3	18
Information Technology skill	10	2	4	16
Others	2	2	0	4

III-9 A) Have you get any supports from 'business development service providers'?

	Micro and Small	Medium	Large
Yes	25	1	3
No	25	8	8
Total	50	9	11

III-9 B) (If the answer is 'Yes') What type of service did you get?

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
Market information	17	0	0	17
New product development	13	0	0	13
Introduction of new technology	8	1	2	11
Business linkage with buyers/suppliers	12	1	2	15
Networking with other companies in the same sector	9	1	1	11
Others	5	1	1	7

III-9 C) (If the answer is 'No') What are the reasons?

(Multiple Answer)

	Micro and Small	Medium	Large	**Total**
There is no service provider nearby	6	1	4	11
Consultation fee is too high	10	4	2	16
Government subsidy is not available	12	2	3	17
Service is not practical for work	1	4	1	6
Others	2	0	0	2

Appendix 2-1: Response to the Questionnaire from MAFC

Q1. How much is the production of major crops in each region (trend in the last 5 years)? Major crops are: rice, maize, sorghum, cassava, sugarcane, wheat, sunflower seeds, sesame, bean, potato, coffee, cashew nuts, sisal, tea, tobacco, and banana. Please fill in the tables for each crop attached to this questionnaire (Attachment I).

A: See Attachment I

Q2. How much is the consumption of major crops in each region (trend in the last 5 years)?
Major crops are: rice, maize, sorghum, cassava, sugarcane, wheat, sunflower seeds, sesame, bean, potato, coffee, cashew nuts, sisal, tea, tobacco, and banana. Please fill in the tables for each crop attached to this questionnaire (Attachment II).

A: Consumption data on various major crops are not available.

Q3. How much is the import amount **('000' Tons)** of major crops (trend in the last 5 years)?

Crop	2008/09	2009/10	2010/11	2011/12	2012/13
Rice	63.18	9.15	33.33	20.23	126.71
Maize	4.54	10.69	15.59	62.87	71.96
Sorghum	0.19	0.99	0.25	0.93	-
Cassava					
Sugarcane		14.71	1.16	27.90	-
Wheat	38.17	148.76	204.08	27.81	340.09
Sunflower					
Sesame					
Bean	2.87	0.12	0.47	1.51	3.42
Potato	0.15	0.93	1.60	1.63	2.48
Coffee	0.05	0.06	0.11	0.17	0.09
Cashew Nuts	0.04	0.05	0.02	0.002	0.003
Sisal					
Tea	0.03	0.04	0.06	0.06	0.10
Tobacco	2.38	3.00	1.11	2.62	2.17
Banana	0.001	0.0002	0.00002	0.0002	-

Q4. How much is the export amount **('000' Tons)** of major crops(trend in the last 5 years)？

Crop	2008/09	2009/10	2010/11	2011/12	2012/13
Rice	0.40	8.04	70.64	13.62	30.55
Maize	12.94	0.46	1.21	157.54	33.79
Sorghum	3.71	0.62	1.36	11.41	-
Cassava					
Sugarcane					
Wheat	-	0.10	-	0.04	0.16
Sunflower					
Sesame					
Bean	3.10	-	-	8.95	9.67
Potato	7.52	0.14	7.91	8.48	0.33
Coffee	66.99	48.22	62.81	51.97	70.10
Cashew Nuts	64.33	63.04	113.37	127.11	127.18
Sisal					
Tea	24.40	26.13	27.11	27.78	28.06
Tobacco	-	-	78.13		74.47
Banana	0.09	0.03	0.37	0.49	0.03

Q5. What is the prioritized crop in each region and district and its reasons?

No Answer

Q6. What is the main processed agricultural food in Tanzania (production trend in the last 5 years, area, etc.)

Product	2008/09	2009/10	2010/11	2011/12	2012/13
Rice	NA	NA	NA	NA	NA
Maize flour	NA	NA	NA	NA	NA
Sunflower oil	NA	NA	NA	NA	NA
Wheat flour	NA	NA	NA	NA	NA

Q7. How much is the import amount of main processed agricultural food (trend in the last 5 years)?

Product	2008/09	2009/10	2010/11	2011/12	2012/13
Wheat or meslin flour	14.54	67.93	64.73	7.08	1.51
Maize (corn) flour	3.79	6.02	8.44	11.15	14.58
Potato flour, meal and powder.	0.88		0.01	0.01	1.64
Potato starch	0.0004	0.01	0.01	0.004	0.01
Maize (corn) starch	7.24	8.32	3.89	1.86	1.82
Wheat starch		0.0003	0.002	0.01	0.02
Sesame oil and fractions	0.01	0.01	0.01	0.02	0.02

Q8. How much is the export amount **('000' Tons)** of main processed agricultural food (trend in the last 5 years)?

Product	2008/09	2009/10	2010/11	2011/12	2012/13
Wheat or meslin flour	57.10	85.62	81.78	62.20	64.19
Maize (corn) flour	5.72	7.57	28.28	4.27	2.07
Potato flour, meal and powder.	0.25	-	0.08	0.33	0.10
Potato starch	0.0002	0.03	0.0001		
Maize (corn) starch	-	-	0.03	1.72	10.63
Wheat starch	-	-		0.01	0.15

Q9-1. Who are the main distributors of processed agricultural products? (e.g. producers/farmers, cooperatives, wholesalers, middlemen, retailors, etc.)

Product (name)	Main distributors (*if specific names of companies/cooperatives are available, please note them.)
Wheat and maize	Mikoani Traders Ltd, Dar es salaam
Wheat and maize	Said Salim Bakhresa & Co, Dar es salaam
Wheat and maize	Coast Millers LTD, Dar es salaam
Wheat and maize	Pembe Flour Mills LTD, Dar es salaam and Tanga
Wheat and maize	21 Century, Dar es salaam
Wheat and maize	Mohamed Enterprises (T) LTD, Dar es salaam
Wheat	Mount Meru Products Ltd, Arusha
Maize	National Milling Cooperation,Iringa
Wheat	Sunkist Bakery Ltd,Arusha
Wheat and maize	Azania
Tomato sause and tomato paste	Dabaga Veg. & Fruits, Dar es Salaam and Iringa
Seed oil	BIDCO Tanzania Ltd, Dar es Salaam
Tea	Tanzania Tea Blenders, Dar es Salaam
Tea	Tanzania Tea Packers Ltd, Dar es Salaam and Iringa
Tea	Chai bora Tanzania ltd,Mafinga, Iringa
Tea and coffee	Afri tea and coffee blanders,Dar es Salaam
Coffee	Arusha Coffee Mills Ltd,Arusha
Sugar	Kilombero sugar company,Morogoro
Sugar	Mtimbwa sugar company,Morogoro
Sugar	Kagera sugar company,Kagera
Sugar	Tanzania Plantation Company(TPC),Moshi, Kilimanjaro

Q9-2 Which of the processed agricultural products are most competitive? Why are the products so competitive?

A:

Sugar: Production of sugar is low compared to demand

Wheat: Production of wheat in Tanzania is very low, so most of wheat used in the country is imported. Also all barkery and confectionary products are mostly made from wheat

Cooking oil (sunflower): Production of sunflower is low also sunflower is chollestrol free.

Local produced Rice: Good flavour and taste for local rice also rice is staple food to some areas in the country.

Maize flour: This is a staple food for most of Tanzanians.

Q10. What is the current situation of production, import, distribution, consumption of fertilizer? And what are the bottlenecks in the supply chain?

Fertilizer (Name)	Production (Amount) **(Tons)**	Import (Amount)	Distribution (Amount)	Consumption (Amount)	Bottlenecks in the supply chain (Producer, importer, distributer, consumer, etc.)
Minjingu	36,000	-	36,000	-	Agro dealers lack enough capital to purchase and supply fertilizers to farmers. Fertilizer not supplied to farmers on time

Q 11. The current situation of production, import, distribution, consumption of agricultural chemicals and the bottlenecks in supply chain for the year 2013/2014

A 1:

Agricultural chemical (Name)	Production (Amount)	Import (Amount)	Distribution (Amount)	Consumption (Amount)
Fenhexamid 500g/Kg	Nil	30.00	30.00	NA
Thiacloprid 480g/l		36.00	36.00	NA
Diazinon 500g/l		40.00	40.00	NA
Cyromazine 750g/Kg		42.58	42.58	NA
Azadirachtin		48.00	48.00	NA
Clofentezine 50g/l		60.00	60.00	NA
Oxycarboxin 200g/l		60.00	60.00	NA
Propargite 21.2% + Tetradifon 7.5%		72.00	72.00	NA
Halosulfuron - Methyl 500g/kg		90.00	90.00	NA
Clorantra Niliprole 200g/l		100.00	100.00	NA
Cypermethrin 50g/l + Profenofos 500g/l		100.00	100.00	NA
Cyprodinil 375g/Kg + Fludioxonil 250g/Kg		100.00	100.00	NA
Famoxadime 225g/Kg + Cymoxanil 300g/L		100.00	100.00	NA
Thiamethoxam 20g/Kg + Metalaxyl –M 20g/Kg + Difenoconazole 2g/kg		109.60	109.60	NA
Hexythiazon 100g/l		120.00	120.00	NA

Agricultural chemical (Name)	Production (Amount)	Import (Amount)	Distribution (Amount)	Consumption (Amount)
Linuron 500g/Kg		18.00	158.00	NA
Daminozide 850g/L		176.00	176.00	NA
Novaluron 100g/l		192.00	192.00	NA
Azoxystrobin 280g/l		200.00	200.00	NA
Carbendazim 500g/l		200.00	200.00	NA
Milbemectin 10g/l		200.00	200.00	NA
Thiamethoxam 250g/kg		209.84	209.84	NA
Spinosyn 480g/l		216.00	216.00	NA
Diafenthiouron 500g/l		228.00	228.00	NA
Acrinathrin 75g/l		240.00	240.00	NA
Propineb 70g/kg		240.00	240.00	NA
Azoxystrobin 500g/l		250.40	250.40	NA
Propineb 700g/kg + Cymoxanil 60g/kg		255.00	255.00	NA
Fosetyl-Aluminium 800g/Kg		270.00	270.00	NA
Spiroxamine 500 g/l		276.00	276.00	NA
Thiocyclam 500g/kg		320.00	320.00	NA
Methyl Eugenol 13.5% + Mercapthion 500 EC 500/ul		350.00	350.00	NA
Seed Plus 30WS		360.00	360.00	NA
Pyrimethanil 400 g/l		372.00	372.00	NA
Bromatrol Concentrate 0.25 EC		400.00	400.00	NA
Indoxacarb 150g/l		400.00	400.00	NA
Thiophanate-Methyl 500g/L		400.00	400.00	NA
Amido Sulfuron + Dosylfuron - Methyl		408.00	408.00	NA
Dodemorph-Acetate 400g/l		460.00	460.00	NA
Thiamethoxam 30g/L + Lambdacyhalothrin 15g/L		480.00	480.00	NA
Imidacloprid 350g/l		500.00	500.00	NA
Pyrazosulfuron 100g/l		507.60	507.60	NA
Lambdacyhalothrin 100g/l CS		525.00	525.00	NA
Acephate 750g/l		528.00	528.00	NA
Beta-Cyfluthrin 12.5g/L + Chlorpyrifos 250g/L		600.00	600.00	NA
Permethrin				NA

Agricultural chemical (Name)	Production (Amount)	Import (Amount)	Distribution (Amount)	Consumption (Amount)
		600.00	600.00	
Pinoxaden 22.5g/L + Clodinafop propagyl 22.5g/L (as safener-5.63g/L Cloquintocet-methyl)		600.00	600.00	NA
Captan		800.00	800.00	NA
Oxadiazon 250g/l		800.00	800.00	NA
Pirimiphos - Methyl + Permethrin		800.00	800.00	NA
Propamocarb hydrochloride 530g/L + Fosetyl Aluminium 310g/L		864.00	864.00	NA
Trifloxystrobin 100 g/L + and Tebuconazole 200g/L		900.00	900.00	NA
Betacyfluthrin + Imidacloprid		1,000.00	1,000.00	NA
Glufosinate Ammonium 500g/l		1,000.00	1,000.00	NA
Metham Sodium		1,000.00	1,000.00	NA
Pirimicarb 500g/kg		1,000.00	1,000.00	NA
S-Metochlor 960g/l		1,000.00	1,000.00	NA
Tebuconazole 250g/Kg		1,000.00	1,000.00	NA
Metribuzine 700g/kg		1,004.00	1,004.00	NA
Iprodione 500g/l		1,020.00	1,020.00	NA
Dimethomorph 90g/Kg + Mancozeb 600g/Kg		1,080.00	1,080.00	NA
Lufenuron 500g/kg		1,086.00	1,086.00	NA
Ametryn 500g/l		1,100.00	1,100.00	NA
Deltamethrin 250g/l		1,188.00	1,188.00	NA
Propineb 613g/Kg + Iprovalicarb 55g/Kg		1,254.00	1,254.00	NA
Bupirimate 250g/l		1,273.00	1,273.00	NA
Cyproconazole 80g/l + Propiconazole 250g/L		1,400.00	1,400.00	NA
Beta - Cyfluthrin 250g/l		1,500.00	1,500.00	NA
Bromacil 800g/kg		1,600.00	1,600.00	NA
Azoxystrobin 250g/l		1,648.00	1,648.00	NA
Triclopyr 480g/l		1,720.00	1,720.00	NA
Emamectin Benzoate 19.2g/L		1,804.60	1,804.60	NA
Magnesium Phosphide 56% w/w equivalent to 28% hydrogen phosphide gas		1,825.00	1,825.00	NA
Bromoxynil		1,924.00	1,924.00	NA
Copper Hydroxide 500g/kg		2,000.00	2,000.00	NA

Agricultural chemical (Name)	Production (Amount)	Import (Amount)	Distribution (Amount)	Consumption (Amount)
Fenitrothion 960g/l		2,000.00	2,000.00	NA
Paraquat + Diuron		2,000.00	2,000.00	NA
Acetamiprid 150g/L + Cypermethrin 50g/L		2,100.00	2,100.00	NA
MCPA 720g/l		2,100.00	2,100.00	NA
Propiconazole 250g/l		2,260.00	2,260.00	NA
Difeconazole 250g		2,296.00	2,296.00	NA
Imidacloprid 100g/L + Betacyfluthrin 45g/L		2,300.00	2,300.00	NA
Fenoxaprop - P - Ethyl 750g/l		2,400.00	2,400.00	NA
Paraquat 276g/l		1,254.00	1,254.00	NA
Trisiloxane alkoxylate (organosilicone) 80%w/w + polyalkyleneoxides 20%w/w		2,436.00	2,436.00	NA
Picloram 65 g/L + 2,4-Dichorophenoxy acetic acid 240 g/L		2,880.00	2,880.00	NA
Carbaryl		3,000.00	3,000.00	NA
Chlorpyrifos 250g/l		3,000.00	3,000.00	NA
Zeta - Cypermethrin 100g/l		3,000.00	3,000.00	NA
Triadimefon 250 g/kg		3,207.00	3,207.00	NA
Spinosad		3,840.00	3,840.00	NA
Acetamiprid 30g/l + Lambda Cyhalothrin 30g/l		4,000.00	4,000.00	NA
Atrazine + S-Metlachlor		4,000.00	4,000.00	NA
Cartap Hydrochloride		4,000.00	4,000.00	NA
Chlorpyrifos 240g/L		4,000.00	4,000.00	NA
Fluazifop-Butyl 125g/l		4,000.00	4,000.00	NA
Fludioxinil 25g/L + Metalaxyl-M 10g/L		4,000.00	4,000.00	NA
Imidacloprid 100g/kg + Metalaxyl 100g/kg + Thiram 100g/kg		4,000.00	4,000.00	NA
Cymoxanil 80g/kg + Mancozeb 640g/kg		4,088.80	4,088.80	NA
Chlorimuron 500g/Kg		4,655.00	4,655.00	NA
Fluazifop-Butyl 125g/l		4,800.00	4,800.00	NA
Diazinon 600g/l		5,000.00	5,000.00	NA
Epoxiconazole 125g/L + Carbendazim 125g/L		5,000.00	5,000.00	NA
Imidacloprid 350g/l		5,000.00	5,000.00	NA
Pirimiphos-Methyl 500g/L		5,960.00	5,960.00	NA

Agricultural chemical (Name)	Production (Amount)	Import (Amount)	Distribution (Amount)	Consumption (Amount)
Atrazine + Acetochlor		6,000.00	6,000.00	NA
Carbaryl 50g/Kg + Lambdacyhalothrin 1g/Kg		6,000.00	6,000.00	NA
Permethrin 36.8%		6,000.00	6,000.00	NA
Terbuthylazine 125g/L + Mesotrione 37.5g/L + S-Metolachlor 375g/L		6,000.00	6,000.00	NA
Deltamethrin 25g/l		6,166.00	6,166.00	NA
Fenoxaprofethyl + Ethoxysulfuron		6,520.00	6,520.00	NA
Carbendazim 500g/Kg		7,000.00	7,000.00	NA
Bromaxynil Octanoate + MCPA 2-Ethyl Hexyl Ester		7,500.00	7,500.00	NA
Glyphosate 41%		7,500.00	7,500.00	NA
Malathion 2.0% w/w + Permethrin 0.3% w/w (40/60 cis/trans)		8,100.00	8,100.00	NA
Alphacypermethrin 100g/l		8,380.00	8,380.00	NA
Imidacloprid 200g/l		8,906.00	8,906.00	NA
Malathion 500g/l		9,000.00	9,000.00	NA
Mancozeb 400g/Kg + Cymoxanil 300g/Kg		9,000.00	9,000.00	NA
Imidacloprid 700g/kg		9,396.02	9,396.02	NA
Imidacloprid 350g/l		9,601.22	9,601.22	NA
Carbendazim 800g/Kg		10,000.00	10,000.00	NA
Mancozeb + Fosetyl - Aluminium		10,000.00	10,000.00	NA
Chlorpyrifos 500g/l + cypermethrin 50g/l		10,469.00	10,469.00	NA
Profenofos 500g/l		11,200.00	11,200.00	NA
Pirimiphos-Methyl 16g/Kg + Thiamethoxam 3.6g/Kg		11,500.00	11,500.00	NA
Abamectin 18g/l		11,527.00	11,527.00	NA
Metribuzine 480g/l		11,540.00	11,540.00	NA
Pretichlor 500g/l		12,000.00	12,000.00	NA
Cypermethrin 144g/l + Imidacloprid 200g/l		12,200.00	12,200.00	NA
Bifenthrin 80g/L		47,267.00	47,267.00	NA
S-Metalochlor 290g/L + Atrazine 370g/L		12,264.00	12,264.00	NA
Aluminium Phosphide 56%		13,354.12	13,354.12	NA
Metalaxyl-M 40g/Kg + Mancozeb 640g/Kg		13,650.00	13,650.00	NA
Atrazine		15,000.00	15,000.00	NA
Cypermethrin 50g/l				NA

Agricultural chemical (Name)	Production (Amount)	Import (Amount)	Distribution (Amount)	Consumption (Amount)
		16,000.00	16,000.00	
Abamectin 20g/l		16,200.00	16,200.00	NA
Amitraz		17,000.00	17,000.00	NA
Paraquat Dichloride 240g/l		17,846.00	17,846.00	NA
Oxyfluorfen 240g/l		18,596.00	18,596.00	NA
Endosulfan 350g/l		19,140.00	19,140.00	NA
Tebuconazole 250g/l		20,600.00	20,600.00	NA
Fenitrothion 1% + Deltamethrin 0.13%		23,000.00	23,000.00	NA
Carbosulfan 250g/l		24,000.00	24,000.00	NA
Copper Carbonate + Tebunazole + Propiconazole		24,000.00	24,000.00	NA
Metolachlor + Atrazine 660SC		24,000.00	24,000.00	NA
Copper Carbonate + Tebunazole + Propiconazole		24,000.00	24,000.00	NA
Pendimethalin 500g/l		26,680.00	26,680.00	NA
Ametryn + Atrazine		27,200.00	27,200.00	NA
Hexazinone 240g/l		27,420.00	27,420.00	NA
copper oxychloride 500g/kg		29,900.00	29,900.00	NA
Dichlorvos 500g/l		31,200.00	31,200.00	NA
MSMA 720g/l		33,000.00	33,000.00	NA
Dimethoate		36,070.00	36,070.00	NA
Cuprous Oxide 500g/kg		40,000.00	40,000.00	NA
Pirimiphos-Methyl 1.6% + Permethrin (40/60 cis/trans) 0.3%		40,000.00	40,000.00	NA
Glyphosate 500g/l		46,100.00	46,100.00	NA
Acetochlor 900g/l		52,520.00	52,520.00	NA
Chlorpyrifos 480g/l		59,154.00	59,154.00	NA
Diuron 800g/l		64,000.00	64,000.00	NA
Mancozeb 48g/Kg + Metalaxy 10g/Kg		85,000.00	85,000.00	NA
Bronopol		90,000.00	90,000.00	NA
Profenofos 720g/l		96,548.00	96,548.00	NA
Chlorpyrifos 350EC + Cypermethrin 100EC		105,150.00	105,150.00	NA
Triadimefon 250g/l		109,000.00	109,000.00	NA

Agricultural chemical (Name)	Production (Amount)	Import (Amount)	Distribution (Amount)	Consumption (Amount)
Sulphur (elemental) 80%w/w WP		112,700.00	112,700.00	NA
Chlorothalonil 720g/l		113,894.00	113,894.00	NA
Hexaconazole 50g/l		124,000.00	124,000.00	NA
Lambdacyhalothrin 50g/l		137,920.00	137,920.00	NA
Mancozeb 640 g/Kg + Metalaxyl 80g/Kg		172,380.00	172,380.00	NA
Paraquat Dichloride, 200g/L as paraquat ion		176,309.00	176,309.00	NA
copper oxide + Arsenic Pentoxide + Chromium Trioxide		177,120.00	177,120.00	NA
Sulphur (elemental) 800g/Kg WDG		201,000.00	201,000.00	NA
Mancozeb 80g/Kg		205,205.00	205,205.00	NA
Glyphosate 480g/l		318,842.00	318,842.00	NA
Glyphosate 360g/l		329,884.00	329,884.00	NA
2,4 d Amine 720 g/l		392,620.00	392,620.00	NA
Sulphur 999g/kg		5,050,500.00	5,050,500.00	NA

A 2: Bottlenecks in the supply chain of Agricultural chemicals

Importer bottlenecks

- Delaying of issuing of importation certificates due to shortage of fund required for facilitating pesticide registration approval sub-committees.

Consumer bottlenecks

- Counterfeit products
- Improper labelling of pesticides from distributors

Q12. What is the current situation of production, import, distribution, consumption of improved seeds? And what are the bottlenecks in the supply chain?

Improved seed (Name)	Production (Amount)	Import (Amount)	Distribution (Amount)	Consumption (Amount)	Bottlenecks in the supply chain (Producer, importer, distributer, consumer, etc.)

Q13. What is the current situation of production, import, distribution, consumption of agricultural machinery? And what are the bottlenecks in the supply chain?

Agricultural machinery (Name)	Production (Amount)	Import (Amount)	Distribution (Amount)	Consumption (Amount)	Key players (Producer, importer, distributer, consumer, etc.)
Tractors	NA	900	NA	NA	AFRICATIC Limited, Box 4851 DSM.: Importer and distributor of tractors (Duo Fang Hou type) CAMARTEC, Box 764 Arusha: local manufacturer of tractors and doing research on agricultural machinery and equipments for use in Tanzania Hughes (T) Ltd, USA River, Box 711 Arusha: Importer &distributor of tractors (New Holland from India, Turkey and Brazil) and CASE from USA ETC Agro Tractors and Implements Ltd, Box 10295 DSM: importer and distributor of tractors (Mahindra type) Farm equip (T) Company Ltd, Box 39914 Quality Plaza DSM: Importer and distributor of tractors (Sonalika type). General Motor Investment(GMI), 14 Nyerere Road, Box 16541DSM: Importer and distributor of tractors (New Holland type) Incar Tanzania Ltd, Nyerere Road, Box 20479 DSM: Importer and distributor of tractors (New Holland type). Kihelya Auto Tractors Ltd, Box 7534 DSM: Importe and distributor of tractors (KAMA and MF) Noble Motors Ltd, Box 20066 DSM: Importer and distributor of tractors

					(Escort-Ex India, Farmtrac and Europad Tractors Ltd, Viwanda la Kange Area, Box 34 Tanga: Importer and distributor of tractors
Power tillers	0	800	NA	NA	AFRICATIC Limited, Box 4851 DSM.: Importer and distributor of power tillers (Changfa & AMEC), water pump for irrigation Farm equip (T) Company Ltd, Box 39914 Quality Plaza DSM: Importer and distributor of power tillers (Siam Kubota, and Dongfeng) Incar Tanzania Ltd, Nyerere Road, Box 20479 DSM: Importer and distributor of Power tillers (VST Shakti D) Noble Motors Ltd, Box 20066 DSM: Importer and distributor of power tiller (VST Shakti). SAVOY FARM Ltd, Nelson Mandela Road, near BP Filling station, Box 8257 DSM: Importer and distributor of power tiller (Daedong), Daedong combine harvesters and Daedong Trans planters and KIOTI tractors

NA: Not Available

Q14.Could you specify the policies to promote agro-industry and what is the focus of each policy?

Policy	Its focus
Promote conducive environment for private sector participation in agro-industry	To increase participation of private sector in mechanization of different farm activities using different farm machineries, equipment and implements.
Quality of agricultural machineries, implements, equipment and tools shall be supervised	To Regulate the quality and enforce the standards of agricultural machineries, implements, equipment and tools
Utilization of agro-mechanization packages and mechanical technologies to local condition shall be promoted	To ensure suitability of the mechanical technologies to local conditions
Promote efficient utilization of agricultural machinery, implements, equipment and tool among women and men	To encourage the adoption of mechanical technologies focusing in different needs of women and men
In collaboration with private sector to strengthen the provision of training program on farm machinery, processing facilities and after sales services.	Encourage Public Private Partnerships (PPP) in providing agro industry training for different levels.

Q15. Which stakeholders under your Ministry is responsible for promotion of agro-industry and what are their mandates?

Ministry/Agency	Responsibilities
MAFC DPP (including Marketing Unit)	To undertake internal as well as external monitoring and evaluation of the Ministry's activities, targets and performance To provide a basis for making informed decisions on the future direction of the Ministry To encourage and facilitate the provision of services by the Private Sector in the Ministry To collect and analyze information on Agriculture, Food and Cooperatives sectors to make informed decisions To prepare Ministerial contributions to the Budget Speech and Annual Economic Report To institutionalize strategic planning and Budget skills in the Ministry To ensure that Agriculture, Food and Cooperatives plans and budgeting are integrated into the government budgeting process To provide overall coordination of sector strategy and program implementation
MAFC Crop Development	To formulate, review and monitor implementation of crop development policies, legislations and rules To develop crop development strategies and programmes To build capacity of RS and LGAs in crop development To promote sustainable agriculture
MAFC Mechanization	To facilitate modernization of farm machinery including use of alternate power sources and conservation tillage equipment.

Ministry/Agency	Responsibilities
	To promote agro processing machines and renewable energy technologies To build capacity of RS and LGAs in profitable mechanization and agro processing technologies
MAFC Training	Facilitate Management and Development of the Ministry's training institutes Carry out pre and in-service training to the technical staff of the Sector Develop strategies and programs for Training Institutes sustainably Facilitate review and updating of curricula in line with clients' demands Carry out tailor made training short courses on agriculture disciplines for extension staff in ***RS***, LGAs, farmers and youth Seek and provide scholarships within and outside the country to in-service technical staff in the Sector Facilitate staff exchange programs within and outside the country for farmers and technical staff in the Sector To build capacity of sector staff including ***RS*** and LGAs and farmers Enforce NACTE standards within agricultural training institutes
MAFC Research	To undertake research in farming systems, crops and environmental friendly agricultural technologies To collect, document and disseminate agricultural research findings
MATI	To provide agricultural training to agricultural technician who would work with farmers in privates and public farms as change agents of new technological innovations; To training farmers on improved crop and livestock husbandry practices for improved farm production and productivity To train young Tanzanians who would find "self employment" opportunities in the agricultural industry as "Professional farmers". To participate in the practical implementation of agricultural extension service delivery through students' outreach and field practical attachment programmes. To produce, process and market various agricultural products using entrepreneurial skills so as to effectively implement the policy of self reliance.
ARI	To undertake research in farming systems, crops and environmental friendly agricultural technologies To collect, document and disseminate agricultural research findings
CAMARTEC	Carry out and promote approved research Develop and manufacture approved prototypes and components Perform tests on all types of machinery and equipments intended for use in Tanzania

Q16. Who are the main players among private companies in the agricultural processing business in Tanzania and what is the outline of their business?

Company name	Type of business	Outline of the business
Bakresa	Processing agricultural food	

Q17. Questionnaire to the Agricultural Inputs Section of the Crop Development Department, MAFC
Please fill in the table below related to the "National Agricultural Input Voucher Scheme (NAIVS)" whose targets are 65 districts with 2.5 million farmers producing maize and rice in the high potential areas in 6 years to 2014.

	2009	2010	2011	2012	2013
Total amount of subsidies (Tsh)	92,039,501,466	105,059,523,260.38	94,252,115,180.00	5,896,369,466,812	52,385,735,936.43
Informed demand for fertilizer by MAFC to importers	485,000	566,466	578,466	669,598	885,019
No. of benefitted farmers	0.75 million	1.5 Million	2 Million	1.8million	940,783
No. of covered districts	65	109	109	109	121
No. of fertilizer wholesalers working in NAIVS	9	10	13	35	39
No. of retailers working in NAIVS	2335	2335	2335	2335	2335
Names of engaged financial institutions	NMB	NMB	NMB	NMB	NMB

Please let us know your prospect for NAIVS after 2014 when the program terminates. Will the government continue providing the subsidies after 2014?
A: Yes

Please let us know names of any other subsidies provided to small scale farmers to purchase agricultural inputs such as seeds and pesticides, should you have any.
A: Loans giving to farmers through Farmers groups.

Q18. SACCOs data

Please provide us with the latest information about SACCOS by filling in the attached excel sheets (Attachment III).

A: See attached.

Requested Data:

1) Data set of Agriculture Sample Census Survey 2012 (if available).

2) List of MATIs and their training courses

S/N	INSTITUTE	COURSES OFFERED
1	MATI Igurusi, Mbeya	Diploma in Land Use Planning Diploma in Irrigation
2	MATI Ilonga, Kilosa	Diploma in General Agriculture Certificate in general Agriculture Diploma in Food Production and Nutrition
3	MATI Uyole, Mbeya	Diploma in General Agriculture Diploma in Crop Production Certificate in general Agriculture
4	MATI Mlingano, Tanga	Diploma in Agricultural Mechanization
5	MATI Mtwara, Mtwara	Diploma in General Agriculture Certificate in general Agriculture
6	MATI Tumbi, Tabora	Diploma in General Agriculture Certificate in general Agriculture
7	MATI Ukiriguru, Mwanza	Diploma in General Agriculture Certificate in general Agriculture
8	NSI Kidatu, Morogoro	Diploma in General Agriculture Certificate in general Agriculture
9	KATC Moshi	Diploma in General Agriculture Certificate in general Agriculture
10	HORTI Tengeru, Arusha	Diploma in Horticulture
11	KATRIN Ifakara ,Morogoro	Certificate in general Agriculture
12	MATI Maruku, Bukoba	Certificate in general Agriculture
13	MATI Mubondo ,Kasulu, Kigoma	Certificate in general Agriculture
14	Inyala FTC, Mbeya	Certificate in general Agriculture

END

Attachment I

Q1: How much is the production of major crops in each region (trend in the last 5 years)?

1. Rice (Reported on Paddy)

Q1. Production Data of **Paddy ('000' Tons)** in Each Region					
Region	2008/09	2009/10	2010/11	2011/12	2012/13
Dodoma	15.54	22.11	11.57	9.62	10.46
Arusha	9.18	12.10	180.89	312.60	108.65
Kilimanjaro	58.27	210.35	22.56	21.19	18.45
Tanga	19.31	36.54	70.16	20.352	22.68
Morogoro	246.83	469.24	246.32	185.22	507.02
Pwani	33.00	88.91	403.08	64.19	69.04
DSM	0.51	3.50	4.02	3.777	1.18
Lindi	31.30	38.45	26.44	17.14	13.32
Mtwara	24.35	41.87	101.04	44.33	31.06
Ruvuma	71.12	180.49	82.97	71.62	186.46
Iringa	49.88	37.86	18.49	15.44	1.30
Mbeya	121.74	295.19	174.87	212.75	195.93
Singida	1.75	4.73	6.26	5.35	8.02
Tabora	68.26	64.27	215.068	242.86	121.19
Rukwa	128.40	332.68	166.74	94.83	92.85
Kigoma	77.38	89.31	116.204	98.92	100.44
Shinyanga	212.41	353.64	170.815	147.97	359.07
Kagera	6.82	34.57	11.48	8.63	7.28
Mwanza	114.09	278.53	212.10	204.40	109.59
Mara	11.11	34.18	3.46	16.53	21.87
Manyara	33.56	21.60	3.78	2.84	10.77
Njombe	-	-	-	-	1.54
Katavi	-	-	-	-	54.30
Simiyu	-	-	-	-	48.12
Geita	-	-	-	-	65.92
Total	**1334.81**	**2650.12**	**2248.317**	**1800.559**	**2166.51**

2. Maize

Q1. Production Data of **Maize ('000' Tons)** in Each Region					
Region	2008/09	2009/10	2010/11	2011/12	2012/13
Dodoma	43.78	78.02	62.57	70.94	84.92
Arusha	102.32	143.95	109.31	86.78	88.25
Kilimanjaro	197.38	216.49	61.02	119.81	131.90
Tanga	220.80	193.45	331.29	87.37	134.83
Morogoro	205.25	274.91	292.55	306.85	294.84
Pwani	38.11	82.07	94.55	15.56	64.65
DSM	1.02	1.90	0.97	3.06	0.66
Lindi	41.11	89.48	**38.62**	40.51	66.97
Mtwara	20.21	65.58	105.67	23.25	73.68
Ruvuma	176.88	289.59	225.47	423.081	527.31
Iringa	443.91	393.16	**359.16**	639.42	368.33
Mbeya	393.41	621.54	628.42	659.16	596.57
Singida	48.89	91.90	77.74	81.54	72.33
Tabora	129.93	245.24	08.023	231.52	163.12
Rukwa	375.73	372.83	330.82	523.80	345.50
Kigoma	162.60	170.67	17.803	524.10	522.22
Shinyanga	237.51	607.10	67.740	334.05	330.96
Kagera	149.18	182.63	197.81	306.36	208.11
Mwanza	128.68	202.15	221.32	296.25	275.73
Mara	94.24	169.45	64.31	158.90	99.67
Manyara	115.27	240.97	245.68	171.95	181.70
Njombe	-	-	-	-	409.48
Katavi	-	-	-	-	68.90
Simiyu	-	-	-	-	139.68
Geita	-	-	-	-	106.02
Total	**3,326.21**	**4,733.08**	**3,540.846**	**5,104.261**	**5,356.33**

3. Sorghum

Q1. Production Data of **Sorghum ('000' Tons)** in Each Region					
Region	2008/09	2009/10	2010/11	2011/12	2012/13
Dodoma	64.69	96.00	215.07	241.50	148.91
Arusha	2.48	1.76	35.07	3.68	0.47
Kilimanjaro	0.63	2.95	2.46	2.50	0.87
Tanga	0.66	0.67	8.59	0.06	2.38
Morogoro	13.07	10.69	9.35	9.51	38.09
Pwani	4.46	4.07	48.79	5.24	12.44
DSM	0.00	0.00	1.00	0.00	0.01
Lindi	50.52	37.51	46.99	47.80	51.39
Mtwara	22.13	26.97	49.94	20.81	29.40
Ruvuma	1.01	0.62	12.41	4.05	0.84
Iringa	1.13	18.35	8.85	9.01	32.68
Mbeya	61.30	54.98	42.49	43.22	72.73
Singida	137.47	97.04	63.43	65.42	136.45
Tabora	24.55	35.15	36.61	37.24	38.61
Rukwa	25.57	25.98	45.61	46.40	11.72
Kigoma	9.72	4.56	19.96	20.31	13.44
Shinyanga	152.99	82.93	53.65	53.70	30.97
Kagera	8.86	4.80	28.34	28.83	14.58
Mwanza	56.06	30.93	21.34	102.00	26.41
Mara	61.86	256.16	49.82	89.50	115.73
Manyara	10.17	6.41	7.81	7.94	13.91
Njombe	-	-	-	-	0.92
Katavi	-	-	-	-	0.80
Simiyu	-	-	-	-	34.69
Geita	-	-	-	-	3.67
Total	**709.33**	**798.53**	**807.58**	**838.72**	**832.11**

4. Cassava

Q1. Production Data of **Cassava ('000' Tons)** in Each Region					
Region	2008/09	2009/10	2010/11	2011/12	2012/13
Dodoma	169.69	51.11	107.28	115.71	67.48
Arusha	-	-	8.69	9.11	6.31
Kilimanjaro	57.20	53.62	21.55	22.58	47.76
Tanga	377.73	366.48	206.05	215.90	361.94
Morogoro	139.03	201.72	205.97	215.81	328.80
Pwani	218.56	505.88	978.95	502.43	745.15
DSM	18.28	21.84	17.00	23.34	14.78
Lindi	230.63	154.63	280.66	295.62	158.90
Mtwara	401.90	502.71	409.45	987.40	526.25
Ruvuma	92.86	259.65	143.01	406.21	176.45
Iringa	122.18	30.62	5.59	5.85	17.16
Mbeya	132.44	87.31	49.81	54.26	262.12
Singida	83.74	40.73	189.76	203.02	28.68
Tabora	267.01	88.92	83.37	87.42	121.36
Rukwa	126.59	241.03	101.46	106.30	95.32
Kigoma	951.38	368.53	110.40	115.67	383.91
Shinyanga	506.79	551.82	329.91	319.49	96.33
Kagera	614.84	332.32	597.82	626.38	580.95
Mwanza	560.71	254.93	482.61	616.15	156.49
Mara	831.32	432.22	315.95	532.51	150.48
Manyara	13.55	1.86	1.24	1.29	8.25
Njombe	-	-	-	-	98.95
Katavi	-	-	-	-	51.77
Simiyu	-	-	-	-	26.64
Geita	-	-	-	-	242.92
Total	**5,916.43**	**4,547.93**	**4,646.51**	**5,462.45**	**4,755.15**

5. Sugarcane

	Q1. Production Data of **Sugarcane ('000' Tons)** in Each Region					
Region	Company/Estate	2008/09	2009/10	2010/11	2011/12	2012/13
Dodoma	-	-	-	-	-	-
Arusha	-	-	-	-	-	-
Kilimanjaro	TPC	787.77	650.97	797.6	824.16	794.49
Tanga	-	-	-	-	-	-
Morogoro	Kilombero Sugar Co.	1,081.47	1,089.97	1,207.66	1,159.10	1,316.73
	Mtibwa Sugar Estate.	445.49	436.84	520.31	346	424.09
Pwani	-	-	-	-	-	-
DSM	-	-	-	-	-	-
Lindi	-	-	-	-	-	-
Mtwara	-	-	-	-	-	-
Ruvuma	-	-	-	-	-	-
Iringa	-	-	-	-	-	-
Mbeya	-	-	-	-	-	-
Singida	-	-	-	-	-	-
Tabora	-	-	-	-	-	-
Rukwa	-	-	-	-	-	-
Kigoma	-	-	-	-	-	-
Shinyanga	-	-	-	-	-	-
Kagera	Kagera Sugar Co.	434.66	391.87	495.74	387.35	456.86
Mwanza	-	-	-	-	-	-
Mara	-	-	-	-	-	-
Manyara	-	-	-	-	-	-
Njombe	-	-	-	-	-	-
Katavi	-	-	-	-	-	-
Simiyu	-	-	-	-	-	-
Geita	-	-	-	-	-	-
Total		**2749.39**	**2569.65**	**3021.31**	**2716.61**	**2992.17**

Additional Data on Sugarcane Production

SUGARCANE PRODUCTION (2000/01 -2012/13)													
	KSCL			Mtibwa Sugar Estates			TPC Ltd	Kagera Sugar Ltd			TOTAL		
YEAR	MCP	OG	Total	MCP	OG	Total	MCP	MCP	OG	Total	MCP	OG	GRAND TOTAL
2000/01	418,664	125,130	543,794	220,777	120,144	340,921	447,759	0	0	0	1,087,200	245,274	1,332,474
2001/02	429,851	192,979	622,830	202,000	246,143	448,143	451,887	0	0	0	1,083,738	439,122	1,522,860
2002/03	584,708	246,529	831,237	251,218	176,000	427,218	552,302	0	0	0	1,388,228	422,529	1,810,757
2003/04	665,206	429,632	1,094,838	197,556	240,201	437,757	621,001	0	0	0	1,483,763	669,833	2,153,596
2004/05	622,037	588,051	1,210,088	186,525	241,063	427,588	512,944	201,741	NA	201,741	1,523,247	829,114	2,352,361
2005/06	524,789	696,253	1,221,042	248,554	259,952	508,505	594,778	177,209	NA	177,209	1,545,330	956,205	2,501,534
2006/07	507,774	481,147	988,921	232,122	129,624	361,746	417,894	271,791	NA	271,791	1,429,581	610,771	2,040,352
2007/08	614,062	568,169	1,182,231	281,161	230,874	512,035	699,241	372,516	NA	372,516	1,966,980	799,043	2,766,023
2008/09	608,016	473,456	1,081,472	228,885	216,600	445,485	787,766	431,948	2,712	434,660	2,056,615	692,768	2,749,383
2009/10	676,328	413,640	1,089,968	256,954	179,884	436,838	650,965	387,792	4,082	391,874	1,972,039	597,606	2,569,645
2010/11	708,734	491,697	1,200,431	340,648	179,663	520,311	797,603	491,280	4,462	495,742	2,338,265	675,822	3,014,087
2011/12	597,636	561,464	1,159,100	237,973	108,030	346,003	824,163	376,660	10,693	387,353	2,036,432	680,187	2,716,619
2012/13	733,254	583,474	1,316,728	285,502	138,590	424,092	794,494	441,282	15,581	456,863	2,254,531	737,645	2,992,176
TOTAL (2005-2012)	5,592,630	4,857,351	10,449,981	2,298,323	1,684,280	3,982,603	6,079,848	3,152,220	37,529	3,189,749	17,123,020	6,579,160	23,702,180
Factory share (%)			44%			14%	27%			15%			100%

MCP: millers cum planter; OG: other grower

Source: Sugar Board of Tanzania, 2014 provided by MAFC.

6. Wheat

Q1. Production Data of **Wheat ('000' Tons)** in Each Region					
Region	2008/09	2009/10	2010/11	2011/12	2012/13
Dodoma	-	-	-	-	-
Arusha	23.58	5.08	19.15	15.82	9.00
Kilimanjaro	2.83	22.45	10.87	10.78	26.30
Tanga	-	-	0.77	0.31	0.27
Morogoro	0.16	-	0.07	0.00	0.01
Pwani	-	-	-	-	-
DSM	-	-	-	-	-
Lindi	-	-	-	-	-
Mtwara	-	-	-	-	-
Ruvuma	1.62	0.84	-	-	2.99
Iringa	29.33	11.49	44.87	40.07	5.17
Mbeya	2.91	0.64	7.09	6.52	10.35
Singida	-	-	-	-	-
Tabora	-	-	-	-	-
Rukwa	3.55	4.23	5.74	5.60	5.30
Kigoma	-	-	-	-	-
Shinyanga	-	-	-	-	-
Kagera	-	-	-	-	-
Mwanza	-	-	-	-	-
Mara	-	-	-	-	-
Manyara	18.41	17.64	24.10	29.79	32.48
Njombe	-	-	-	-	12.09
Katavi	-	-	-	-	-
Simiyu	-	-	-	-	-
Geita	-	-	-	-	-
Total	**82.39**	**62.37**	**112.66**	**108.89**	**103.96**

7. Sunflower Seed

Q1. Production Data of **Sunflower Seed ('000' Tons)** in Each Region					
Region	2008/09	2009/10	2010/11	2011/12	2012/13
Dodoma	36.87	32.51	110.53	158.02	421.93
Arusha	7.23	11.44	5.42	7.74	25.91
Kilimanjaro	2.31	5.95	3.99	5.70	23.86
Tanga	-	-	2.94	4.20	22.75
Morogoro	8.26	-	27.76	39.69	44.66
Pwani	0.48	0.23	8.34	11.92	10.30
DSM	-	-	-	-	-
Lindi	-	-	-	-	13.83
Mtwara	-	-	-	-	8.36
Ruvuma	1.26	3.62	4.00	5.72	14.93
Iringa	41.41	57.43	204.48	292.33	222.37
Mbeya	5.72	15.43	30.95	44.25	129.77
Singida	97.41	82.48	158.66	226.83	284.24
Tabora	18.83	24.07	38.64	55.25	75.20
Rukwa	66.47	46.29	94.00	134.38	345.65
Kigoma	-	-	-	-	19.41
Shinyanga	7.18	11.70	20.28	29.00	33.45
Kagera	0.01	0.01	0.04	0.05	-
Mwanza	0.02	0.80	1.58	2.26	22.01
Mara	-	6.47	1.71	2.45	7.63
Manyara	17.42	14.70	68.16	97.45	163.22
Njombe	-	-	-	-	692.88
Katavi	-	-	-	-	17.29
Simiyu	-	-	-	-	24.07
Geita	-	-	-	-	1.28
Total	**310.88**	**313.13**	**781.48**	**1,117.24**	**2,625.00**

8. Sesame

Q1. Production Data of **Sesame ('000' Tons)** in Each Region					
Region	2008/09	2009/10	2010/11	2011/12	2012/13
Dodoma	13.06	29.48	56.39	72.00	120.93
Arusha	-	-	-	-	-
Kilimanjaro	-	-	-	-	4.90
Tanga	153.27	203.42	1.60	2.04	69.14
Morogoro	23.24	-	85.10	108.69	182.55
Pwani	0.83	31.40	45.74	58.40	125.20
DSM	-	-	-	-	-
Lindi	18.80	33.09	65.76	83.96	263.77
Mtwara	4.17	18.42	10.80	13.79	56.48
Ruvuma	7.20	8.33	16.48	21.04	80.26
Iringa	-	-	0.71	0.91	1.93
Mbeya	6.76	9.92	35.90	45.83	61.53
Singida	8.04	5.52	5.76	7.36	34.00
Tabora	1.45	2.09	2.86	3.65	13.50
Rukwa	0.96	2.30	26.42	33.73	20.26
Kigoma			-	-	0.42
Shinyanga	-	-	1.01	1.29	0.05
Kagera	-	-	-	-	-
Mwanza	-	-	-	-	0.06
Mara	-	1.40	-	-	-
Manyara	5.47	2.45	2.59	3.31	12.65
Njombe	-	-		-	0.01
Katavi	-	-		-	1.47
Simiyu	-	-		-	0.91
Geita	-	-		-	-
Total	**243.25**	**347.82**	**357.13**	**456.00**	**1,050.02**

9. Bean

Q1. Production Data of **Bean** in Each Region					
Region	2008/09	2009/10	2010/11	2011/12	2012/13
Dodoma	4.61	9.73	6.08	25.00	2.85
Arusha	31.35	25.14	11.66	31.00	44.79
Kilimanjaro	12.30	61.75	44.96	45.02	49.19
Tanga	43.63	50.63	35.96	209.83	88.26
Morogoro	15.19	23.53	28.09	37.60	26.16
Pwani	-	-	-	-	-
DSM					
Lindi	-	-	0.00	0.01	0.00
Mtwara	0.06	0.43	0.32	0.58	0.62
Ruvuma	13.84	22.41	30.58	43.05	45.00
Iringa	79.05	92.83	21.53	27.64	82.92
Mbeya	140.08	96.67	54.20	68.52	184.55
Singida	13.45	6.86	31.48	65.36	10.84
Tabora	15.34	12.84	22.02	21.00	22.12
Rukwa	111.57	58.82	60.93	71.99	115.00
Kigoma	70.78	83.72	110.24	134.53	114.32
Shinyanga	54.37	79.62	49.25	38.68	17.52
Kagera	112.72	112.14	73.69	163.42	75.23
Mwanza	30.20	30.11	0.19	51.21	12.64
Mara	14.94	19.71	32.42	31.01	27.40
Manyara	10.24	80.61	62.33	133.82	46.03
Njombe	-	-	-	-	70.68
Katavi	-	-	-	-	9.04
Simiyu	-	-	-	-	1.81
Geita	-	-	-	-	66.58
Total	**773.72**	**867.55**	**675.93**	**1,199.27**	**1,113.55**

10. Potato: (a) Sweet Potatoes

Q1. Production Data of **Sweet Potato ('000' Tons)** in Each Region					
Region	2008/09	2009/10	2010/11	2011/12	2012/13
Dodoma	10.66	36.35	112.20	95.11	21.44
Arusha	5.26	4.93	2.60	5.66	2.68
Kilimanjaro	20.28	28.52	79.24	98.81	25.83
Tanga	1.22	0.86	68.80	25.30	16.92
Morogoro	62.64	57.67	186.82	155.47	220.37
Pwani	18.30	78.06	40.96	201.60	129.78
DSM	32.32	43.38	51.38	18.59	19.75
Lindi	3.48	0.48	1.41	9.55	9.37
Mtwara	0.19	1.21	1.46	13.17	6.43
Ruvuma	39.82	85.33	97.65	132.33	226.48
Iringa	-	70.65	86.62	34.22	62.38
Mbeya	105.68	262.15	240.51	21.85	586.60
Singida	49.89	39.33	41.24	116.04	125.84
Tabora	61.27	70.81	366.74	271.30	183.15
Rukwa	153.64	292.71	115.08	101.74	180.64
Kigoma	231.97	330.51	216.45	184.80	66.95
Shinyanga	318.37	589.37	785.19	636.15	227.36
Kagera	129.23	188.18	162.43	136.06	456.21
Mwanza	107.76	125.94	726.18	610.29	164.99
Mara	58.10	114.67	179.53	136.20	96.73
Manyara	7.31	3.09	10.82	13.95	17.87
Njombe	-	-	-	-	58.71
Katavi	-	-	-	-	31.87
Simiyu	-	-	-	-	298.47
Geita	-	-	-	-	233.49
Total	**1,417.39**	**2,424.20**	**3,573.31**	**3,018.19**	**3,470.31**

10. Potato: (b) Irish Potatoes

Q1. Production Data of **Irish** **Potato ('000' Tons)** in Each Region					
Region	2008/09	2009/10	2010/11	2011/12	2012/13
Dodoma	1.88	10.44	6.68	8.40	0.67
Arusha	3.11	4.77	7.41	0.63	2.08
Kilimanjaro	114.48	128.77	361.15	26.22	29.86
Tanga	-	-	61.44	707.39	24.55
Morogoro	-	-	0.06	1.58	0.61
Pwani	-	-	-	-	-
DSM	-	-	-	-	-
Lindi	-	-	-	-	-
Mtwara	-	-	-	-	-
Ruvuma	0.49	0.90	0.80	1.18	1.37
Iringa	340.75	411.14	376.22	17.09	85.03
Mbeya	293.12	699.29	249.55	415.20	668.60
Singida	-	-	92.55	-	-
Tabora	-	-	-	-	-
Rukwa	89.78	111.09	43.55	**31.58**	50.20
Kigoma	11.16	23.52	5.70	7.82	14.39
Shinyanga	-	-	-	-	-
Kagera	4.49	66.60	162.43	0.45	2.53
Mwanza	-	-	-	-	-
Mara	-	12.38	179.53	14.68	
Manyara	1.72	3.65	8.45	2.82	8.55
Njombe	-	-	-	-	871.37
Katavi	-	-	-	-	0.65
Simiyu	-	-	-	-	-
Geita	-	-	-	-	-
Total	**860.98**	**1,472.55**	**1,555.52**	**1,235.04**	**1,760.46**

11. Coffee

Q1. Production Data of **Coffee** **('000' Tons**) in Each Region					
Region	2008/09	2009/10	2010/11	2011/12	2012/13
Dodoma	-	-	-	-	-
Arusha	3.4	4.41	6.21	0	2.08
Kilimanjaro	9.69	8.1	3.57	0	4.41
Tanga	0.42	0.42	3.39	0.09	0.16
Morogoro	1.06	-	0.07	0.07	-
Pwani	-	-	-	-	-
DSM	-	-	-	-	-
Lindi	-	-	-	-	-
Mtwara	-	-	-	-	-
Ruvuma	9.46	4.09	5.67	6.85	9.38
Iringa	-	-	0.09	0.02	0.21
Mbeya	13.86	4.1	7.98	3.65	15.83
Singida	-	-	-	-	
Tabora	-	-	-	-	
Rukwa	0	0.02	0	0	0.01
Kigoma	3.02	2.94	2.44	0.68	1.08
Shinyanga	-	-	-	-	-
Kagera	21.31	11.08	29.94	20.08	37.4
Mwanza	-	-	-	0.28	0.02
Mara	-	4.77	1.19	1.47	0.62
Manyara	0.13	0.07	0.03	0.02	0.02
Njombe	-	-	-	-	0.12
Katavi	-	-	-	-	-
Simiyu	-	-	-	-	-
Geita	-	-	-	-	-
Total	**62.35**	**40**	**60.58**	**33.21**	**71.34**

12. Cashew Nuts

Q1. Production Data of **Cashew Nuts ('000' Tons)** in Each Region					
Region	2008/09	2009/10	2010/11	2011/12	2012/13
Dodoma	-	-	-	-	-
Arusha	-	-	-	-	-
Kilimanjaro	-	-	-	-	-
Tanga	2.21	1.13	1.26	1.41	0.11
Morogoro	0.03	-	-	-	-
Pwani	13.21	15.53	13.23	14.10	2.40
DSM	5.35	2.34	-	0.39	-
Lindi	17.31	13.59	30.32	40.09	34.97
Mtwara	35.39	38.99	72.65	94.79	87.29
Ruvuma	5.19	2.10	3.08	8.15	3.18
Iringa	-	-	-	0.63	-
Mbeya	0.37	0.48	0.52	0.44	0.01
Singida	-	-	-	-	-
Tabora	-	-	-	-	-
Rukwa	-	-	-	-	-
Kigoma	-	-	-	-	-
Shinyanga	-	-	-	-	-
Kagera	-	-	-	-	-
Mwanza	-	-	-	-	-
Mara	-	-	-	-	-
Manyara	-	-	-	-	-
Njombe	-	-	-	-	-
Katavi	-	-	-	-	-
Simiyu	-	-	-	-	-
Geita	-	-	-	-	-
Total	**79.06**	**74.16**	**121.06**	**160.00**	**127.96**

13. Sisal

Q1. Production Data of **Sisal ('000' Tons)** in Each Region					
Region	2008/09	2009/10	2010/11	2011/12	2012/13
Dodoma	-	-	-	-	-
Arusha	0.09	0.06	0.06	-	0.22
Kilimanjaro	1.77	1.87	1.78	1.57	1.78
Tanga	14.73	16.69	16.19	17.13	18.86
Morogoro	3.97	5.09	5.56	5.13	5.17
Pwani	0.85	0.82	0.81	0.99	1.20
DSM	-	-	-	-	-
Lindi	-	-	-	-	-
Mtwara	-	-	-	-	-
Ruvuma	-	-	-	-	-
Iringa	-	-	-	-	-
Mbeya	-	-	-	-	-
Singida	-	-	-	-	-
Tabora	-	-	-	-	-
Rukwa	-	-	-	-	-
Kigoma	-	-	-	-	-
Shinyanga	-	-	-	-	-
Kagera	-	-	-	-	-
Mwanza	-	-	-	-	-
Mara	-	-	-	-	-
Manyara	-	-	-	-	-
Njombe	-	-	-	-	-
Katavi	-	-	-	-	-
Simiyu	-	-	-	-	-
Geita	-	-	-	-	-
Total	**21.41**	**24.53**	**24.40**	**24.82**	**27.23**

14. Tea

Q1. Production Data of **Tea ('000' Tons)**in Each Region					
Region	2008/09	2009/10	2010/11	2011/12	2012/13
Dodoma	-	-	-	-	-
Arusha	-	-	-	-	-
Kilimanjaro	-	-	-	-	-
Tanga	7.94	7.80	3.22	2.38	5.63
Morogoro	-	-	-	-	-
Pwani	-	-	-	-	-
DSM	-	-	-	-	-
Lindi	-	-	-	-	-
Mtwara	-	-	-	-	-
Ruvuma	-	-	-	-	-
Iringa	-	-	16.78	21.14	15.50
Mbeya	26.23	21.61	11.16	6.50	6.46
Singida	-	-	-	-	-
Tabora	-	-	-	-	-
Rukwa	-	-	-	-	-
Kigoma	-	-	-	-	-
Shinyanga	-	-	-	-	-
Kagera	-	3.75	0.84	2.79	0.57
Mwanza	-	-	-	-	-
Mara	-	-	-	-	-
Manyara	-	-	-	-	-
Njombe	-	-	-	-	5.54
Katavi	-	-	-	-	-
Simiyu	-	-	-	-	-
Geita	-	-	-	-	-
Total	**34.17**	**33.16**	**32.00**	**32.81**	**33.70**

15. Tobacco

Q1. Production Data of **Tobacco ('000' Tons)** in Each Region					
Region	2008/09	2009/10	2010/11	2011/12	2012/13
Dodoma	-	-	-	-	-
Arusha	-	-	-	-	-
Kilimanjaro	-	-	-	-	-
Tanga	-	-	-	-	-
Morogoro	-	-	-	-	0.06
Pwani	-	-	-	-	-
DSM	-	-	-	-	-
Lindi	-	-	-	-	-
Mtwara	-	-	-	-	-
Ruvuma	2.90	5.34	6.52	9.79	0.85
Iringa	1.73	2.12	2.22	2.66	1.55
Mbeya	7.50	7.52	13.87	11.37	10.74
Singida	2.19	2.84	4.67	4.77	0.92
Tabora	26.66	25.08	70.48	41.79	50.11
Rukwa	8.62	6.16	0.00	15.36	8.96
Kigoma	3.58	6.32	20.15	15.09	
Shinyanga	5.46	4.71	10.27	23.32	8.40
Kagera	0.07	0.37	0.10	0.13	-
Mwanza	-	-	-		
Mara	-	0.46	1.73	2.36	2.52
Manyara	-	-	-		
Njombe	-	-	-	-	
Katavi	-	-	-	-	
Simiyu	-	-	-	-	
Geita	-	-	-	-	
Total	**58.71**	**60.92**	**130.00**	**126.64**	**84.11**

16. Banana

Q1. Production Data of **Banana ('000' Tons)** in Each Region					
Region	2008/09	2009/10	2010/11	2011/12	2012/13
Dodoma	-	-	-	-	0.43
Arusha	155.17	95.23	212.03	195.97	38.99
Kilimanjaro	426.37	558.03	503.46	412.45	542.83
Tanga	30.60	56.73	238.90	36.62	78.72
Morogoro	108.06	121.73	124.88	99.97	143.27
Pwani	-	23.40	-	-	25.79
DSM	13.69	9.64	-	2.37	5.87
Lindi	-	-	-	-	3.14
Mtwara	0.40	0.53	-	1.21	1.40
Ruvuma	10.72	24.85	4.46	3.57	6.62
Iringa	1.08	-	**2.37**	1.89	0.85
Mbeya	466.38	550.17	224.44	192.87	468.79
Singida	-	-	-	-	1.31
Tabora	-	-	-	-	-
Rukwa	93.17	97.41	63.73	51.01	11.53
Kigoma	370.50	342.58	637.17	558.07	22.66
Shinyanga	-	0.23	0.22	0.18	0.04
Kagera	1,203.69	1,150.20	783.02	887.31	1,212.08
Mwanza	2.13	2.25	36.34	29.09	6.97
Mara	113.89	120.02	285.47	28.56	98.21
Manyara	10.55	2.71	27.36	23.61	5.55
Njombe	-	-	-	-	3.00
Katavi	-	-	-	-	0.15
Simiyu	-	-	-	-	0.03
Geita	-	-	-	-	0.42
Total	**3,006.40**	**3,155.71**	**3,143.85**	**2,524.75**	**2,678.65**

Attachment II

Q2: How much is the consumption of major crops in each region (trend in the last 5 years)?

A: Consumption data on various major crops are not available.

HALI YA VYAMA VYA USHIRIKA WA AKIBA NA MIKOPO HADI 2014

MKOA	WILAYA	IDADI YA VYAMA			VYAMA VIPYA ANDIKISHWA/FUTWA		WANACHAMA				HISA	AKIBA	AMANA	MIKOPO (TSH)		Hai	Kaguliwa	Sinzia
		M	V	JML	V	F	ME	KE	V/T	JUMLA	TSH.	TSH.	TSH.	TOLEWA	BAKI			
ARUSHA	Arusha (M)	139		139	4		6,653	7,821	23	14,497	1,407,000	18,095,000	430,000,000	78,954,000	19,913,000	126	15	13
	Arusha (V)	1	24	25			2,041	11,981		14,022	14,022,000	1,004,000	19,000,000	9,980,000	2,376,000	21	4	4
	Arumeru	7	31	38	1		4,528	3,047	63	7,738	3,770,000	1,733,000	198,000,000	2,895,000	2,613,000	32	9	6
	Karatu	9	33	42			2,780	1,899	34	4,713	130,000,000	703,000,000	75,000,000	2,195,000	730,000,000	40	2	2
	Monduli	5	18	23			2,343	1,704	45	4,092	180,000,000	252,000,000	86,000,000	1,837,000	620,000,000	13	5	10
	Longido	6	8	14			161	227	86	474	13,000,000	143,000,000	1,000,000	268,000,000	38,000,000	10	2	4
	Ngorongoro	3	23	26	1		756	3,329		4,085	90,000,000	1,157,000	120,000,000	6,433,000	1,883,000	26	6	
	Jumla	**170**	**137**	**307**	**6**		**19,262**	**30,008**	**251**	**49,621**	**2,477,000,000**	**23,087,000**	**920,000,000**	**102,562,000**	**28,173,000**	**268**	**43**	**39**
DSM	Ilala			234			32,041	46,642	15	78,698	4,398,220,800	83,038,677,799	231,350,800	196,500,167,106	18,455,575,599	188	311	46
	Kinondoni			211			40,958	38,874	1,397	81,229	3,067,550,000	2,978,450,000	2,568,500,000	29,566,500,000		164	106	47
	Temeke			204			16,730	12,520	24	29,274	1,859,811,300	14,770,707,672	981,614,200	21,330,180,338	3,980,220,000	136	78	68
	Jumla			**649**			**89,729**	**98,036**	**1,436**	**189,201**	**9,325,582,100**	**100,787,835,471**	**3,781,465,000**	**247,396,847,444**	**22,435,795,599**	**488**	**495**	**161**
DODOMA	Kongwa	2	16	18			3,971	1,921	202	6,094	138,992,912	686,306,751	71,178,304	4,680,825,728	1,385,366,751			
	Kondoa	5	26	31			4,751	3,071	360	8,182	394,333,992	553,699,165	21,449,179	5,537,162,100	1,224,750,539			
	Mpwapwa	7	20	27			3,093	2,108	262	5,463	187,412,000	749,738,000	573,927,000	2,458,208,000	1,070,359,000			
	Bahi		16	16			1,301	1,012	45	2,358	25,290,000	46,259,353	2,327,400	274,413,630	1,070,359,000			
	Chamwino	4	26	30			2,718	1,759	276	4,753	103,621,650	327,095,400	251,645,300	1,071,281,958	67,084,887			
	Dodoma (M)	42	6	48			5,681	4,579	224	10,484	1,253,758,000	1,565,748,000	166,292,000	9,147,257,000	391,315,900			
	Jumla	**60**	**110**	**170**			**21,515**	**14,450**	**1,369**	**37,334**	**2,103,338,554**	**3,928,846,669**	**1,086,819,183**	**23,169,148,416**	**8,705,375,077**			
IRINGA	Njombe	18	9	27			4,872	3,045	683	8,600	252,442,800	1,954,437,000	529,179,300	7,933,833,300	2,299,757,490			
	Ludewa	6	10	16			650	500	25	1,175	48,844,368	181,382,243		193,132,596	90,175,799			
	Makete	7	12	19			1,121	476	271	1,868	72,998,388	141,048,487	69,377,077	222,867,834	196,721,220			
	Mufindi	19	25	44			9,299	7,424	1,131	17,854	466,680,761	1,878,135,709	437,687,892	10,009,398,909	3,066,163,432	37	-	
	Kilolo	4	11	15			3,142	1,545	321	5,008	104,194,154	928,365,000	662,020,000	6,986,695,000	995,185,000	14	1	
	Iringa (M)	37	0	37			2,893	2,275	34	5,202	312,287,947	1,849,762,243	330,622,619	651,117,902	2,997,686,597	28	2	
	Iringa (V)	3	26	29			2,381	1,569	19	3,969	249,706,000	1,683,969,000	154,855,000	2,779,980,000	2,232,994,000	20	-	
	Jumla	**94**	**93**	**187**			**24,358**	**16,834**	**2,484**	**43,676**	**1,507,154,418**	**8,617,099,682**	**2,183,741,888**	**28,777,025,541**	**11,878,683,538**	**99**	**3**	
KAGERA	Biharamulo	8	10	18			1,899	977	75	2,951	50,013,000	934,446,000	5,199,000	9,698,476,000	1,232,372,000	15	12	3
	Karagwe	11	41	52			10,120	4,474	561	15,155	223,547,000	1,459,303,000	83,255,000	8,148,474,000	904,000,000	45	41	7
	Manispaa	41		41	1		1,539	2,344	207	4,090	175,294,000	605,206,000	26,610,000	2,124,068,000	1,429,993,000	26	10	15
	Ngara	10	12	22			1,871	716	353	2,940	37,090,000	36,415,000	82,651,000	728,125,000	264,334,000	10	10	12
	Muleba	10	52	62	1		8,127	5,904	214	14,245	239,398,000	298,356,000	154,742,000	827,745,000	254,659,000	24	12	38
	Bukoba	0	61	61			3,805	3,618	136	7,559	160,648,000	364,486,000	46,768,000	518,488,000	218,100,000	45	25	11
	Chato																	
	Missenyi	13	23	36			3,388	2,195	140	5,741	144,951,000	1,055,937,000	380,771,000	2,878,648,000	1,868,459,000	26	20	10
	Jumla	**93**	**199**	**292**			**30,749**	**19,047**	**1,686**	**52,681**	**1,030,941,000**	**4,754,149,000**	**779,996**	**24,924,024**	**6,400,517**	**191**	**130**	**96**
KIGOMA	Kibondo	13	26	39			2,353	1,678		4,031	79,303,875	331,500,368	6,679,890	1,850,178,000	1,401,184,968			
	Kasulu	6	38	44			3,493	2,408	236	6,137	152,006,505	403,697,627	14,264,904	3,433,589,354	1,543,347,101			
	Kigoma-Ujiji	55		55			2,500	3,979	4,249	10,728	87,150,000	995,578,000	338,972,724	1,160,179,200	746,435,790			
	Kigoma-V		45	45			3,160	2,233		5,393	5,538,700	391,719,066	20,281,208	2,951,971,200	1,615,017,238			
	Jumla	**74**	**109**	**183**			**11,506**	**10,298**	**4,485**	**26,289**	**323,999,080**	**2,122,495,061**	**380,198,726**	**9,395,917,754**	**5,305,985,097**			

MKOA	WILAYA	IDADI YA VYAMA			VYAMA VIPYA ANDIKISHWA/FUTWA		WANACHAMA				HISA	AKIBA	AMANA	MIKOPO (TSH)		Hai	Kaguliwa	Sinzia
KILIMANJARO	Hai	6	24	30			6,225	4,402	537	11,164	449,660,274	1,288,185,516	624,661,080	2,750,979,814	1,363,765,283			
	Siha		19	19			7,090	901	114	8,105	154,656,018	145,207,521	93,227,507	605,412,230				
	Rombo	3	21	24			3,349	3,219	1,033	7,601	165,013,215	1,441,324,066	278,379,009	3,167,081,324	1,970,422,192			
	Mwanga	4	17	21			3,490	2,500	201	6,191	118,835,558	425,482,484	69,900,158	2,289,023,293	440,332,935			
	Same	10	68	78			11,160	35,583	548	47,291	196,449,000	613,928,000	199,793,000	2,442,898,000	1460958646			
	Moshi (M)	58		58			3,038	8,513		11,551	736,585,951	3,501,026,339	96,569,637	9,434,580,744	5,756,705,854			
	Moshi (V)		56	56			19,861	8,861	1,536	30,258	173,535,670	1,288,000,000	1,193,303,002	3,398,830,615	1,183,060,778			
	Jumla	**81**	**205**	**286**			**54,213**	**63,979**	**3,969**	**122,161**	**1,994,735,686**	**8,703,153,926**	**2,555,833,393**	**24,008,806,020**	**12,175,245,688**			
MARA	Bunda	12	29	98			6,246	3,407	697	10,350	115,307,500	486,120,000	105,392,000	968,950,000	685,330,000			
	Musoma (M)	23		23			3,966	3,657	134	7,757	123,859,754	878,674,461	97,500	2,435,404,248	895,435,972			
	Musoma (V)		55	55			1,990	1,478	25	3,493	82,301,275	318,953,795	9,169,872	674,596,661	293,998,002			
	Serengeti	13	21	34			1,594	965	98	2,657	111,934,214	653,949,213	360,000	1,497,585,135	525,101,773			
	Tarime	12	27	39			4,756	2,739	198	7,693	153,989,361	793,992,730	17,202,716	1,091,525,268	290,270,326			
	Rorya		12	12			562	292	11	865	12,394	22,690		37,341	16,328			
	Jumla	**60**	**144**	**204**			**19,114**	**11,155**	**1,163**	**31,432**	**587,404,498**	**3,131,842,889**	**132,222,088**	**6,668,098,653**	**2,690,152,421**			
MANYARA	Babati (M)	18		18			947	694		1,641	125,635,061	700,787,620	60,326,052	1,656,438,970	663,802,464			
	Babati (V)	30		30			1,938	1,181		3,119	128,202,605	559,376,931	60,550,121	2,360,332,132	679,247,316			
	Kiteto	8	15	23			776	899		1,675	81,879,610	225,704,100	107,520,000	208,719,000	16,199,000			
	Simanjiro	7	8	15			649	538		1,187	85,890,000	95,635,000	570,000	250,080,000	133,794,500			
	Hanang	6	8	14			1,027	522		1,549	33,445,000	211,775,163	21,054,250	976,524,651	406,622,355			
	Mbulu		20	20			1,127	691		1,818	34,549,000	163,424,000	5,420,000	892,476,000	147,310,050			
	Jumla	**69**	**51**	**120**			**6,464**	**4,525**		**10,989**	**489,601,276**	**1,956,702,814**	**255,440,423**	**6,344,570,753**	**2,046,975,685**			
MWANZA	Geita																	
	Sengerema									17,541	171,804,000	224,344,000	22,781,000	2,761,100,000	519,925,000			
	Magu									5,355	264,202,900	562,941,200	562,941,200	1,219,867,000	881,701,000			
	Misungwi									6,184	435,700,000	900,200,400	466,700,900	2,560,800	860,400,600			
	Kwimba									4,683	94,105,239	194,410,347	4,738,000	370,909,886	333,330,336			
	Ukerewe									9,415	117,054,900	488,078,859	64,845,400	2,916,738,480	830,058,263			
	Ilemela									4,415	580,452,835	690,159,223	46,463,660	3,843,708,570	1,644,696,904			
	Nyamagana									12,749	1,107,024,000	2,212,246,200	268,230,839	9,426,408,572	6,401,858,144			
	Jumla									**60,342**	**4,316,587,891**	**5,272,310,229**	**1,007,171,733**	**20,541,293,308**	**8,904,735,347**			
RUVUMA	Songea (M)						7,215	5,829	1,002	14,046	317,104,873	1,555,755,916	620,849,059	8,051,157,650				
	Songea (V)						5,472	4,303	479	10,254	331,952,388	1,969,007,618	151,489,157	3,429,430,479				
	Namtumbo						7,161	2,505	868	10,534	79,744,158	292,238,073	107,645,679	946,512,188				
	Tunduru						1,654	305	77	2,036	72,240,999	524,258,378	12,688,208	814,148,577				
	Mbinga						6,030	4,278	369	10,677	344,003,237	2,363,767,244	186,561,403	7,259,830,132				
	Jumla						**28,135**	**17,620**	**2,795**	**4,855,000**	**1,152,124,655**	**6,743,562,821**	**1,085,618,505**	**20,536,079,026**				
SHY	Bariadi																	
	Bukombe																	
	Kahama	67		67			6,354	2,670	267	9,291	181,867,000	727,563,000	1,382,866,000	5,165,768,000	2,659,945,000			
	Kishapu	32		32			1,241	1,219		2,460	75,191,600	109,942,495	14,398,340	927,302,000	449,124,000			
	Maswa																	
	Meatu																	
	Shinyanga (V)	40		40			1,018	583	44	1,685	30,455,000	40,421,924	1,826,580	48,001,000	30,590,000			
	Shinyanga (M)	70		70			2,131	2,373	11	4,504	245,237,250	1,345,860,077	8,509,424	2,223,756,872	1,155,966,865			
	Jumla	**209**		**209**			**10,744**	**6,845**	**312**	**17,940**	**532,750,850**	**2,223,817,495**	**1,407,600,344**	**8,364,850,872**	**4,295,625,895**			

MKOA	WILAYA	IDADI YA VYAMA			VYAMA VIPYA ANDIKISHWA/FUTWA		WANACHAMA				HISA	AKIBA	AMANA	MIKOPO (TSH)		Hai	Kaguliwa	Sinzia
SINGIDA	Singida (M)	22		22			714	640		1,354	30,000,000	99,337,012		331,954,963	208,927,783			
	Singida (V)		57	57			2,535	4,334	88	6,957	152,720,550	306,053,420	10,729,000	724,840,000	438,800,800			
	Manyoni	7	14	21			1,718	1,163	83	2,964	23,778,100	355,950,842	22,765,520	1,037,375,747	440,655,460			
	Iramba	10	17	27			3,936	3,595	196	7,727	71,238,750	300,513,333	10,475,548	244,921,681	66,348,000			
	Jumla	**39**	**88**	**127**			**8,903**	**9,732**	**367**	**19,002**	**277,737,350**	**1,061,854,607**	**43,970,068**	**2,339,092,391**	**1,154,732,043**			
TABORA	Urambo						2,274	1,062		3,353	49,302,000	15,284,000	3,700,000					
	Sikonge						1,085	387		1,472	21,690,000	168,954,813	15,709,000	1,770,524,871	445,152,871		1	
	Manispaa						1,719	963			106,044,860	722,686,981		3,161,327,759				
	Uyui																	
	Nzega						2,018	844	144	2,914	58,625	135,185	48,064	518,210	334,011			
	Igunga																	
	Jumla																	
TANGA	Jiji Tanga			47			4,922	4,079	291	9,292	366,353,027	3,049,134,622	57,364,547	14,246,650,872	3,733,983,300			
	Pangani			21			912	628		1,540	63,937,000	216,893,900	8,622,450	481,324,751	38,380,000			
	Korogwe (M)			20			2,005	1,002	58	3,065	307,220,050	885,121,438	100,726,263	5,140,230,855	1,396,992,438			
	Korogwe-(W)			23			1,458	1,438	127	3,023	112,678,957	369,618,475	52,342,356	2,069,610,215	442,227,822			
	Muheza			22			1,525	916	62	2,503	121,794,000	675,613,000	29,747,000	3,562,903,000	640,456,000			
	Kilindi			16			1,750	547	6	2,303	63,187,000	182,863,000		1,965,066,000	854,710,584			
	Handeni			28			1,468	1,172		2,640	109,684,000	458,448,154	10,429,000	2,598,702,300	502,780,014			
	Mkinga			11			942	441	99	1,482	32,849,700	169,652,466	1,446,500	903,325,786	400,255,001			
	Lushoto			40			2,595	2,386	39	5,020	139,236,800	724,996,318	26,426,551	3,681,206,156	1,571,915,174			
	Jumla			**228**			**17,577**	**12,609**	**682**	**30,868**	**1,316,940,534**	**6,732,341,373**	**300,123,167**	**34,649,019,935**	**9,581,700,333**			
LINDI	Lindi Mjini	21		21			1,395	735		2,130	56,841,175							
	Nachingwea	9	19	28			1,858	675		2,533	140,638,000							
	Lindi vijijini	1	25	26			2,810	2,502	367	5,679	151,742,276							
	Kilwa	9	19	28			4,045	2,126		6,171	52,919,643							
	Liwale	3	9	12			2,202	942		3,144	203,272,000							
	Ruangwa	3	1	4			640	251	2	893	20,113,600							
	Jumla	**46**	**73**	**119**			**12,950**	**7,231**	**369**	**20,550**	**625,526,694**							
MTWARA	Mtwara manisp	32		32			1477	812		2,289	78,382,215	1,245,654,213	46,695,494	2,081,532,390	1,696,824,800	16	5	16
	Mtwara vijijini	3	21	24			1111	555	22	1,697	85,760,000	773,490,760	70,328,660	3,000,661,231	1,297,940,864	8	1	16
	Masasi	9		9			1526	2142	356	4,024	26,764,295	327,488,170	10,286,059	219,500,000	757,141,419	6	6	3
	Tandahimba	2	38	40			2988	1516		4,504	74,628,003	349,705,765	5,955,100	1,741,420,350	1,068,476,625	9	2	31
	Newala	5	18	23			2269	993	255	3,517	219,271,731	708,889,535	116,470,731	2,049,423,203	999,803,313	7	5	16
	Nanyumbu	1	4	5			582	270	99	951	20,770,654	60,347,000	1,400,000	636,401,000	393,451,155	4		1
	Jumla	**52**	**91**	**143**			**10,975**	**6,989**	**801**	**18,773**	**678,775,328**	**3,887,653,217**	**390,562,112**	**12,456,437,702**	**7,367,000,428**	**57**	**19**	**84**
RUKWA	Sumbawanga M	32		32			1,459	1,532	28	3,019	90,666	408,727		1,835,085	691,400			
	Sumbawanga V	17		17			1,577	1,518	50	3,102	109,004	531,962	12,997,971	2,354,435	428,412			
	Nkasi	18					1,956	1,298	18	3,272	54,070	206,428	8,675					
	Mpanda M	9		9			578	552	1,130	26,832	21,887	1,757	44,250	393,211	35,841			
	Mpanda V						1,117	289	1,406	44,250	151,494	2,670	26,832	555,123	129,792			
	Jumla	**76**		**58**			**6,687**	**5,189**	**2,632**	**80,475**	**427,121**	**1,151,544**	**13,077,728**	**5,137,854**	**1,285,445**			

MKOA	WILAYA	IDADI YA VYAMA			VYAMA VIPYA ANDIKISHWA/FUTWA		WANACHAMA				HISA	AKIBA	AMANA	MIKOPO (TSH)		Hai	Kaguliwa	Sinzia
MBEYA	Mbeya Jiji	71		71			7,509	6,158	177	13,844	1,080,280,000	6,345,897,663	1,024,656,047	9,917,350,324	8,168,007,200			
	Mbeya Vijijini	5	35	40			5,210	2,896	**180**	8,286	298,776,196	1,398,389,502	129,032,432	2,480,130,425	1,269,827,399			
	Rungwe	7	30	37			5,502	3,014	502	9,018	266,642,000	772,637,077	298,388,014	3,527,310,536	1,555,814,548			
	Kyela	8	24	32			2,986	1,622	82	4,690	212,939,000	307,436,000	22,721,000	2,812,760,000	1,333,477,000			
	Mbozi	9	30	39			4,329	2,502	502	7,333	291,293,617	504,988,000	6,195,500	3,184,000,000	2,196,960,000			
	Ileje	4	32	36			3,044	1,346		4,390	193,589,441	69,903,802	57,652,000	850,700,000	329,000,000			
	Chunya	6	22	28			1,265	1,279		2,544	75,558,920	209,914,036	16,440,000	169,560,000	117,560,000			
	Mbarali	6	23	29			3,750	2,210	291	6,215	285,040,000	957,013,867	105,897,934	4,988,067,489	2,439,922,990			
	Jumla	**116**	**196**	**312**			**33,595**	**21,027**	**1,734**	**56,356**	**2,704,119,174**	**10,566,179,947**	**1,660,955,927**	**27,929,878,774**	**17,410,569,137**			
PWANI	Kibaha Mji	55	6	61			2,764	2,171	-	4,935	308,735,864	2,395,423,802	101,612,010	3,922,023,237	1,163,159,786	49		
	Kibaha H/W	0	5	5			1,118	511	120	2,846	77,438,280	856,449,832	116,828,290	2,045,334,208	223,426,896	5		
	Mafia	10	15	25			700	850	-	1,550	30,315,000	110,450,000		130,600,000	54,300,000	13		
	Bagamoyo	12	91	99			3,534	2,602	10	6,594	18,600,150	359,587,616	2,722,000	1,851,274,514	1,613,114,109	39		
	Rufiji	0	22	22			645	305	35	950	16,795,000	123,412,443	622,800	390,152,659	135,080,812	11		
	Mkuranga	0	56	56			3,182	384	-	3,566	103,703,489	183,826,113	9,143,050	472,736,000	142,434,177	13		
	Kisarawe	7	18	25			918	809	26	1,753	89,298,500	482,976,857	4,193,235	952,802,484	888,283,648	9		
	Jumla	**84**	**213**	**293**			**12,861**	**7,632**	**191**	**22,194**	**644,886,283**	**4,512,126,663**	**235,121,385**	**9,764,923,102**	**4,219,799,428**	**139**		
MOROGORO	Morogoro M	104		104			4,613	4,028	16	8,657	586,624,000	2,390,170,000		3,586,500,000	1,873,710,000	99		5
	Morogoro V	2	13	15			2,757	2,397	245	5,399	321,301,000	1,959,587,000	879,557,000	3,174,971,000	2,469,670,000	15	2	
	Kilosa	7	50	57			5,612	3,915	286	9,813	657,769,000	668,740,000	194,766,000	14,147,457,000	6,225,527,000	41	45	16
	kilombero	15	75	90			8,932	5,354		14,385	434,492,000	1,143,704,000	154,737,000	5,856,567,000	2,935,972,000	50	7	40
	Ulanga	4	51	55			3,211	1,618		4,829	110,395,000	306,688,000	26,724,000	1,577,558,000	796,465,000	37	42	18
	Mvomero	19		19			4,722	2,809	229	7,760	522,503,000	2,181,940,000	474,853,000	17,121,148,000	4,683,385,000	19		
	Jumla	**152**	**189**	**340**			**29,847**	**20,220**	**776**	**50,843**	**2,633,084,000**	**8,650,829,000**	**1,730,637,000**	**45,464,201,000**	**18,984,729,000**	**261**	**96**	**79**

Appendix 2-2: Response to the Questionnaire from MLFD

Q1. How much is the production of major stock farm products in each region (trend in the last 5 years)? Major stock farm products are: meat (cattle, sheep, goat, poultry), egg, milk, raw skin (cattle, sheep, goat), Nile Perch, and Tilapia.

A1: Production Data of meat at National level

Unit: metric ton

Livestock Product	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Beef	225,178	243,943	262,606	289,835	299,581	309,353
Mutton/ Chevon	82,884	86,634	103,709	111,106	115,652	120,199
Pork	36,000	38,180	43,647	47,246	50,814	79,174
Chicken	78,168	80,916	93,534	84,524	87,408	54,360

Source: MLFD

A2: Fish Production (fish caught in Tanzania Mainland)

	FRESH WATER				MARINE WATER				TOTAL			
Years	No. of Fishers	No. of F/Crafts	Weight in M.TONS	Value in (000's T.shs)	No. of Fishers	No. of F/Crafts	Weight in M.TONS	Values in (000's T.shs)	No. of Fishers	No. of F/Crafts	Weight in M.TONS	Values in (000's T.shs)
2001	101,195	25,014	283,354	47,108,669	19,071	4,927	52,935	34,113,718	120,266	29,941	336,289	81,222,386
2002	119,856	31,849	273,856	54,771,300	19,071	4,927	49,675	33,372,136	138,927	36,776	323,531	88,143,436
2003	119,856	31,849	301,855	141,073,500	19,071	4,927	49,270	34,489,000	138,927	36,776	351,125	175,562,500
2004	115,001	32,172	312,040	147,743,000	19,071	4,927	50,470	40,376,000	134,072	37,099	362,510	188,119,000
2005	115,001	32,172	320,566	256,452,800	29,754	7,190	54,969	82,452,900	144,755	39,362	375,535	338,905,700
2006	126,790	44,362	292,519	248,640,904	29,754	7,190	48,591	37,077,637	156,544	51,552	341,552	285,718,540
2007	126,790	44,362	284,347	252,525,197	36,247	7,342	43,499	39,239,352	163,037	51,704	327,845	291,764,549
2008	133,791	44,832	281,691	319,639,171	36,247	7,342	43,130	51,756,216	170,038	52,174	324,821	371,395,387
2009	135,769	45,234	288,058	342,492,879	36,321	7,664	47,616	67,930,600	172,090	52,898	335,674	410,423,479
2010	141,206	47,635	294,474	684,844,019	36,321	7,664	52,683	89,639,934	177,527	55,299	347,157	774,483,953
2011	141,206	47,635	290,474	1,031,883,681	36,321	7,664	50,592	166,954,953	177,527	55,299	341,066	1,198,838,634
2012	146,420	49,321	314,944	1,129,349,925	36,321	7,664	50,079	177,781,799	182,741	56,985	365,023	1,307,131,724
2013	147,020	49,721	322,314	1,277,776,634	36,321	7,664	52,846	195,529,127	183,431	57,385	375,160	1,473,305,761

Source: MLFD

A3: Aquaculture Production

Item	Numbers		Production(Tons.)
	Farmers	Fish ponds	
Freshwater ponds			
Nile Tilapia	17,725.0	20,235.0	2,131.4
Freshwater Trout	1.0	10.0	3.0
Marine water ponds			
Milk fish	1,306.0	246.0	221.4
Prawns	51.0	37.0	320.0
Muddy crabs	188.0	1,740.0	0.9
Total	19,223.0	22,268.0	2,676.7

Source: MLFD

Q2. How much is the consumption of stock farm product in each region (trend in the last 5 years)?

Major stock farm products are: meat (cattle, sheep, goat, poultry), egg, milk, raw skin (cattle, sheep, goat), Nile Perch, and Tilapia.

A: Consumption Data of meat at National level (annual per capita consumption)

Consumption Per Person	**2008**	**2009**	**2010**	**2011**
Meat (Kgs)	11	11	12	12
Eggs (No.)	64	64	75	75
Milk (Lts)	41	41	43	43

Source: MLFD

Q3. How much is the import amount of major stock farm product (trend in the last 5 years)?

A1: Import data of livestock products at national level

Unit: Kg

Product	**2008**	**2009**	**2010**	**2011**
Meat (Beef)	629,589	21,470	67,448	222,598
Meat (Sheep)	98,842	126,625	147,781	82,934
Meat (Goat)	2,082,891	29,775	19,737	38,663
Meat (Swine)	445,811	761,117	1,802,728	726,162
Meat (Poultry)	3,420	122,146	74,116	796,323
Eggs	125,252	374,396	487,983	1,200,801
Milk and milk product	7,213,176	8,550,057	8,159,736	10,616,725

A2: Fish Import from 2009-2013

YEAR	WEIGHT IN KGS	CIF V A L U E		ROYALTY IN TSHS
		VALUE IN US $	VALUE IN TSHS	
2009	1,054,246	173,576,726	219,406,192,435	321,130,132
2010	1,919,770	1,229,344	1,668,374,629	657,934,406
2011	2,659,435	0	0	978,402,385
2012	4,885,689	3,512,976	5,507,054,266	1,681,166,953
2013	6,642,398	5,718,246	9,027,183,853	2,649,611,644
TOTAL	17,161,538	184,037,292	235,608,805,183	6,288,245,520

Source: MLFD

Q4. How much is the export amount of major stock farm product (trend in the last 5 years)?

A1: Export data of livestock products at national level

Unit: Kg

Product	**2008**	**2009**	**2010**	**2011**
Meat (Beef)	112,370	22,800	15,000	0
Meat (Sheep)	25,842	114,416	0	0
Meat (Goat)	42,811	84,660	6,557	6,544
Meat (Swine)	4,820	12,200	0	560
Meat (Poultry)	250	20	0	1,200
Eggs	265	8,300	359	2,017
Milk and milk product	1,987,575	151,380	368,015	78,322

Source: MLFD

A2: Trend of Export of fish and fishery products from 2001-2013

Year	Weight in kgs	Aquarium fish in pieces	Value in US $	Value in T.Shs.	Royality in T.Shs.
2001	41,640,248	80,577	95,435,102	82,982,764,242	5,244,333,672
2002	32,662,878	28,301	105,779,931	99,294,249,903	5,957,654,995
2003	42,352,738	24,500	129,605,815	132,862,401,374	7,789,955,963
2004	46,011,033	15,784	112,761,195	121,922,686,607	7,190,356,743
2005	57,289,084	21,025	141,597,362	162,619,492,949	9,142,768,084
2006	44,495,623	21,741	138,120,145	170,184,661,003	6,236,615,179
2007	57,795,514	25,502	173,272,670	213,211,258,838	7,589,576,914
2008	51,426,207	33,066	174,409,214	205,054,092,453	6,629,846,700
2009	41,148,261	53,188	161,053,646	207,447,119,888	6,410,191,232
2010	39,771,834	40,552	187,427,054	263,131,442,028	5,876,103,557
2011	37,996,433	61,215	152,973,357	233,714,590,011	6,153,278,023
2012	41,394,268	45,550	163,299,366	254,901,017,111	6,819,926,007
2013	38,573,606	44,260	147,659,779	234,884,628,956	6,117,769,194

Source: MLFD

Data request: List of Livestock Training Agencies and their training courses

1. LITA Campuses

LITA comprises of 6 campuses and 2 centres located in various Regions in Tanzania.

No.	Campus	Location	Course offered
1	TENGERU	ARUSHA	CAHP, DAHP
2	MPWAPWA	DODOMA	CAHP, DAHP
3	MOROGORO	MOROGORO	CAHP, DAHP, DRMTC
4	MADABA	SONGEA	CAHP, DAHP
5	BUHURI	TANGA	CAHP, DAHP
6	TEMEKE	DAR ES SALAAM	DVLT, CVLT
7	MABUKI UNIT	MWANZA	CAHP
8	KIKULULA UNIT	KAGERA	CAHP

2. Course offered by LITA

The 6 LITA campuses offer long courses of two years at Certificate and Diploma levels. Courses offered are as follows:

- Diploma in Veterinary Laboratory Technology (DVLT)
- Diploma in Animal Health (DAH);
- Diploma in Animal Production (DAP);
- Diploma in Range Management and Tsetse Control (DRMTC),
- Diploma in Animal Health and Production (DAHP),
- Certificate in Animal Health and Production (CAHP)
- Certificate in Veterinary Laboratory Technology (CVLT)

In addition, various specialized courses are offered depending on demand and the following are the courses that are offered:

- Milk production
- Poultry production
- Dairy cattle husbandry
- Rural milk processing
- Beef cattle husbandry and range improvement.
- Dairy goat husbandry
- Hides and skin management
- Pasture production
- Entrepreneurship
- Pig Production

Appendix 3-1: Status of SACCOS as of May 2014

Table A3-1: Status of SACCOS (as of May 2014)

No.	Region	NUMBER OF SACCOS				MEMBERSHIP				SHARES (TZS)	SAVINGS (TZS)	DEPOSITS (TZS)	LOANS (TZS)	
		URBAN	RURAL	NEW	TOTAL	MALE	FEMALE	INSTITU/GROUPS	TOTAL				ISSUED (TZS)	OUTSTANDING (TZS)
1	ARUSHA	137	170	6	313	19,262	30,008	251	49,521	2,477,000,000	23,087,000	920,000,000	102,562,000	28,173,000
2	DSM				649	89,729	98,036	1,436	189,201	9,325,582,100	100,787,835,471	3,781,465,000	247,396,847,444	22,435,795,599
3	DODOMA	60	110		170	21,515	14,450	1,369	37,334	2,103,338,554	3,928,846,669	1,086,819,183	23,169,148,416	8,705,375,077
4	IRINGA	63	62		125	17,715	12,813	1,505	32,033	1,132,868,862	6,340,231,952	1,585,185,511	20,427,191,811	9,292,029,029
5	KAGERA	93	199		292	30,749	19,047	1,686	51,482	1,030,941,000	4,754,149,000	779,996	24,924,024	6,400,517
6	KIGOMA													
7	K'NJARO													
8	LINDI	46	73		119	12,950	7,231	369	20,550	625,526,694				
9	MANYARA													
10	MARA													
11	MBEYA	116	196		312	33,595	21,027	1,734	56,356	2,704,119,174	10,566,179,947	1,660,955,927	27,929,878,774	17,410,569,137
12	M'GORO	152	189		341	29,847	20,220	776	50,843	2,633,084,000	8,650,829,000	1,730,637,000	45,464,201,000	18,984,729,000
13	MTWARA	52	91		143	10,975	6,989	801	18,765	678,775,328	3,887,653,217	390,562,112	12,456,437,702	7,367,000,428
14	MWANZA									4,316,587,891	5,272,310,229	1,007,171,733	20,541,293,308	8,904,735,347
15	PWANI	84	213		297	12,861	7,632	191	20,684	644,886,283	4,512,126,663	235,121,385	9,764,923,102	4,219,799,428
16	RUKWA	76			76	6,687	5,189	2,632	14,508	427,121	1,151,544	13,077,728	5,137,854	1,285,445
17	RUVUMA					28,135	17,620	2,795	48,550	1,152,124,655	6,743,562,821	1,085,618,505	20,536,079,026	
18	S'YANGA	209			209	10,744	6,845	312	17,901	532,750,850	2,223,817,495	1,407,600,344	8,364,850,872	4,295,625,895
19	SINGIDA													
20	TABORA													
21	TANGA					17,577	12,609	682	30,868	1,316,940,534	6,732,341,373	300,123,167	34,649,019,935	9,581,700,333
	TOTAL													

Source: MAFC

Appendix 6-1: Details of Key Institutions

(1) ATC

Table A6-1: Annual Intake of ATC (2009/10-2013/14)

Course	2009/10	2010/11	2011/12	2012/13	2013/14
Civil and Irrigation Engineering (Bachelor of Engineering)	-	25	26	24	30
Automotive Engineering (OD)	26	35	29	33	27
Auto-electric & Electronic Engineering (OD)	-	-	33	33	31
Civil Engineering (OD)	31	48	71	70	85
Civil and Irrigation Engineering (OD)	-		41	52	36
Electrical Engineering (OD)	34	47	43	54	49
Electronic and Telecommunication Engineering (OD)	29	43	78	60	52
Electrical and Biomedical Engineering (OD)	-	-		-	25
Mechanical Engineering (OD)	24	39	34	44	40
Transportation Engineering (OD)	29	35	32	37	31
Laboratory Science and Technology (OD)	23	63	64	61	59
Information Technology (OD)	-	-	-	12	3
Computer Science (OD)	-	-	-	14	9
Lapidary & Jewellery Technology (Basic Certificate)	-	-	-	16	14
Total	196	335	451	510	491

Source: ATC

(2) DIT

Table A6-2: Enrolment Trend of DIT (2009/10 to 2013/14)

Course		2009/10	2010/11	2011/12	2012/13	2013/14
Ordinary Diploma (NTA 4-6)	Civil Engineering	245	289	342	363	412
	Mining Engineering	87	98	111	118	142
	Computer Engineering	181	192	219	236	226
	Information Technology	-	-	-	68	91
	Electrical Engineering	178	189	235	224	257
	Biomedical Equipment Engineering	-	-	23	52	93
	Electronics and Telecommunication Engineering	283	313	314	337	330
	Science and Laboratory Technology	111	148	162	196	199
	Mechanical Engineering	143	206	217	261	248
	Renewable Energy Technology	-	-	-	-	47
	Communication Systems Technology	-	-	-	-	22
	Multimedia and Film Technology	-	-	-	-	20
	Total	1,228	1,435	1,623	1,855	2,087
Bachelor of Engineering (NTA 7-8)	Civil Engineering	235	247	253	294	350
	Computer Engineering	56	96	153	199	230
	Electrical Engineering	150	189	224	258	280
	Electronics and Telecommunication Engineering	113	148	168	205	261
	Mechanical Engineering	88	93	95	105	138
	Laboratory Sciences	-	-	-	-	23
	Total	642	773	893	1,061	1,282

Source: DIT

(3) MUST

Table A6-3: Enrolment Trend of MUST (2009/10 to 2012/13)

Course		2009/10	2010/11	2011/12	2012/13
Ordinary Diploma (NTA 4-6)	Ordinary Diploma in Architecture	100	126	166	218
	Ordinary Diploma in Civil Engineering	267	330	410	536
	Ordinary Diploma in Computer Engineering		190	232	207
	Ordinary Diploma in Electrical Engineering	269	287	391	443
	Ordinary Diploma in Mechanical Engineering	183	224	278	296
	Ordinary Diploma in Laboratory Science and Technology	-	43	165	268
	Ordinary Diploma of Science and Business Administration	-	39	120	242
	Ordinary Diploma in Food science and Technology	-	-	-	-
	Ordinary Diploma in Laboratory Science and Technology	-	-	-	-
	Ordinary Diploma in Mechatronics Engineering	-	-	-	-
	Ordinary Diploma in Mining Engineering	-	-	-	-
	Ordinary Diploma in Telecommunication Engineering	-	-	-	-
	Total	819	1,239	1,762	2,210
Advanced Diploma/ Bachelor's Degree (NTA 7-8)	Architecture	18	30	46	73
	Civil Engineering		197	212	234
	Computer Engineering	124		82	
	Electrical Engineering	35	63	63	154
	Mechanical Engineering	36	63	-	67
	Laboratory Science and Technology	-	-	-	-
	Science and Business Administration	25	65	-	113
	Food science and Technology	-	-	-	-
	Laboratory Science and Technology	-	-	-	-
	Mechatronics Engineering	-	-	-	-
	Mining Engineering	-	-	-	-
	Telecommunication Engineering	-	-	-	-
	Total	238	418	403	641

Source: MUST

Appendix 6-2: In-service Training Programmes of Key Institutions

Institute	Name of Training	Duration
TIRDO	Welding and metal fabrication	5 days - 2 weeks
TIRDO	Nondestructive testing	5 days
TIRDO	Casting/Foundry Technology	5 days
TEMDO	Modern Supervisory Skills	2 days
TEMDO	Occupational Safety, Health & the Environment	4 days
TEMDO	Auto CAD (Introduction & Intermediate Level)	10 days
TEMDO	Plant Maintenance (for managers, engineers and technicians)	4 days
ATC	Auto electrics wiring	-
ATC	Auto CAD	-
ATC	Auto electronics maintenance and repair	-
ATC	Construction management	-
ATC	Welding and fabrication techniques	-
DIT	Auto CAD	4 weeks (evening class)
DIT	Modern Welding	6 weeks (evening class)
DIT	Electrical Installation	4 weeks (evening class)
DIT	Industrial Maintenance	2 weeks
DIT	Laboratory safety and risk Assessment	2 weeks
MUST	Programmable Logic Controller (PLC) Stage I	5 days
MUST	Maintenance, planning and scheduling	1 day
MUST	Preventive maintenance of mechanical & electrical equipments	2 weeks
CTI	Tax Training	2 days
CTI	Strategic Marketing Training	2 days
TCCIA	Packaging, traceability, bar codes and rules of origin	2 days
TCCIA	Entrepreneurship Training	2days
TCCIA	Non-tariff Barriers to trade	1day
TCCIA	EAC Market Access	1day
TCCIA	Intellectual Property Rights & Business Competitiveness	2 days
TCCIA	Practical Project Management	5 days

Source: The Study Team