



Ministry Of Trade Tourism and Industry

Quality Infrastructure and Standards Programme –QUISP

STUDY REPORT ON

THE ASSESSMENT OF THE CAPACITY NEEDS OF SMCA SERVICE PROVIDERS IN UGANDA TO SUPPORT PRIORITY PRODUCT VALUE CHAINS



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This consultancy report was prepared by a consultancy firm, Ayaah Enterprises Ltd. The consulting team consisted of Mr. Julius Oboth (Team Leader), Dr. Stephen Robert Isabalija and Mr. Geoffrey Onen.

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LIST OF ABBREVIATIONS

BIPM	International Bureau of Weights and Measures
CCP	Codex Contact Point
CDO	Cotton Development Organization
CIPM	International Committee of Weights and Measures
COMESA	Common Market for Eastern and Southern Africa
DDA	Dairy Development Authority
DFR	Department of Forest Resources
DGAL	Directorate of Government Analytical laboratories
DRC	Democratic Republic of Congo
DWD	Directorate of Water Development
EAS	East African Standards
EASC	East African Standards Committee
EC	European Commission
ECD	Electron Capture Detector
E-cert	Electronic Certification
EU	European Union
FID	Flame Ionization Detector
FPD	Flame Phosphorus Detector
GAP	Good Agricultural Practices
GDP	Gross Domestic Product
GDiP	Good Distribution Practices
GHP	Good Hygiene Practices
GLP	Good Laboratory Practices
GMOs	Genetically Modified Organisms
GMP	Good Manufacturing Practices
GVP	Good Veterinary Practices
HACCP	Hazard Analysis and Critical Control Point
HPLC	High Performance Liquid Chromatography
IAF	International Accreditation Forum
IEC	International Electro-technical Commission
ILAC	International Laboratory Accreditation Cooperation
IPPC	International Plant Protection Convention
ISO	International Organization for Standardization
ITC	International Trade Centre
ITU	International Telecommunications Union
LIMS	Laboratory Information Management System
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MDAs	Ministries, Departments and Agencies
MPS	Milieu Programme Sierteelt
MRLs	Maximum Residue Levels
MTIC	Ministry Of Trade, Industry and Cooperatives
MWE	Ministry of Water and Environment
NAADS	National Agricultural Advisory Services
NAFP	National Accreditation Focal Point
NARO	National Agricultural Research Organization
NDA	National Drug Authority

NDP	National Development Plan
NEMA	National Environment Management Authority
NES	National Export Strategy
NQI	National Quality Infrastructure
NSQP	National Standards and Quality Policy
NTBs	Non-Tariff Barriers
NTEs	Non-Traditional Exports
NWSC	National Water and Sewerage Cooperation
OIE	World Organization for Animal Health (Office International for Epizootics)
OIML	International Organization of Legal Metrology
PSFU	Private Sector Foundation Uganda
PVoC	Pre-Export Verification of Conformity
Q-Mark	Quality Mark
QUISP	Quality Infrastructure and Standards Programme
SADC	Southern African Development Community
SMCA	Standards, Metrology, Conformity Assessment and Accreditation
SPS	Sanitary and Phytosanitary
TBT	Technical Barriers to Trade
TEs	Traditional Exports
TORs	Terms of Reference
UBOS	Uganda Bureau of Statistics
UCDA	Uganda Coffee Development Authority
UEPB	Uganda Export Promotion Board
Ugocert	Uganda Organic Certification
UIA	Uganda Investment Authority
UK	United Kingdom
UMA	Uganda Manufacturers Association
UNBS	Uganda National Bureau of Standards
USA	United States of America
UTB	Uganda Tourist Board
UTCL	Uganda Tea Cooperation limited
UTDAL	Uganda Tea Development Agency Limited
UWA	Uganda Wildlife Authority
VC	Value Chain
VCA	Value Chain Analysis
WTO	World Trade Organization

EXECUTIVE SUMMARY

An initial baseline study commissioned by the Ministry of Trade, Industry and Cooperatives (MTIC) established that Standards, Metrology, Conformity Assessment and Accreditation (SMCA) service providers in Uganda are constrained by mainly the lack of accreditation, proper equipment and competent personnel required to offer these services at an internationally recognized competitive level. The study however, did not focus on identifying the SMCA needs of the priority product value chains of strategic socio-economic interest to the Ugandan economy and mapping them for a rationalized SMCA support.

This current study therefore was meant to compliment the above baseline study with specific focus on:

- (i) A more detailed producer needs assessment based on the national identified priority value chains in each market segment i.e. domestic, regional and international markets;
- (ii) Undertaking a value chain mapping and SMCA capacity gap analysis on each of the value chains;
- (iii) Assessing the capacity of the SMCA service providers and identifying gaps for an efficient framework for rationalizing and providing support to the SMCA capacity development in each of the above identified value chains.

In conducting this study, a combination of approaches and methodologies were used including the review of policy documents, enabling laws, regulations and related studies; collection of information and consultative processes with different stakeholders that included the policy makers and standards implementers, quality regulators, producers, SMCA service providers, and sectoral associations as well as product specific associations (refer to list of persons contacted in Annex 4).

Specifically the following activities were undertaken during the study:

- Identification of product value chains for the study based on agreed criteria that included the socio-economic contribution of the product to Uganda. At least 34 products were identified as defined in Uganda's domestic, regional and international markets.
- Assessment of the SMCA requirements of producers of the identified products in Uganda in accessing each of the market segments.
- Identification of SMCA service providers in both public and private sectors in Uganda and assessment of their respective capacity in meeting the market/producer needs.
- Mapping and identification of the gaps in SMCA service providers needed to support and enhance Ugandan producers' competitiveness in each market segment.
- Identification of priority areas of support for SMCA capacity gaps/needs that QUISP

and Uganda in general should focus on for improved SMCA service delivery.

This primary source of information was obtained by administering questionnaires to the key informants that included the producers, sectoral and commodity associations; and SMCA service providers (Refer to Appendix 2 for details in the questionnaire). The secondary information was got through literature review of the relevant documents to the subject matter. All the data and information gathered were used to identify the producers' needs and assess the capacity of SMCA service providers in meeting these needs to access the markets. The producers interviewed identified their SMCA requirements in accessing each of the market segments.

The following were the key findings:

- i. **Markets:** The Ugandan products were being traded in all the three market segments, that is, domestically, regionally and internationally. However, the Ugandan export market is characterized by export of primary products, and market orientation to low cost and less stringent market requirements such as COMESA.

Whereas it was relatively easy to access the domestic and regional markets, high end markets such as Europe has a comprehensive and demanding technical regulations regime for almost all products that could be detrimental to the health and safety of society and the environment. This is true for the products themselves, in addition to the packaging thereof. These economies demand the best from the suppliers, from conformity assessment service providers and from the authorities. In these economies the consumers are also becoming very demanding. In addition to the requirements of the authorities, consumers require products and services to meet additional requirements of private standards such as social accountability which is complied with through certification regimes for food safety and the environment. These include for example the BRC and GLOBALGAP certification, among others. These have to be complied with over and above the regulatory requirements detailed in the EU Directives in order to be able to access the market.

In order to increase exports to the major markets of the world, i.e. Europe, North America, Ugandan products will have to meet standards and technical regulations demanded by the consumers and the authorities. This requires an overall upgrading of the production value chain, the conformity assessment service providers and associated evolvement of regulatory practices in Uganda.

Amongst all, the major factor affecting the export sector of Uganda is lack of compliance with the requirements of the international market where the products can be sold relatively at higher price. There were major gaps identified in the SMCA services needed for Uganda's products to access international markets especially Europe (Refer to annex 1 & 2).

- ii. ***Standards and Quality Policy:*** The National Standards and Quality Policy (NSQP) have been approved and is anticipated that the process of drafting a legal framework to establish a national accreditation system will be initiated to enhance the competitiveness of the Ugandan products in the market segments.

In Uganda, most of the conformity assessment service providers were in the public sector with limited involvement of the private sector. However, more development and involvement of the private sector in SMCA services is critical to the competitiveness of these services to meet the market requirements. Therefore, there is need to put in place a mechanism that encourages investment by the private sector in provision of SMCA services, in line with the National Standards and quality policy that intends to promote private sector investments in the national quality infrastructure to ensure adequate provision of services in the SMCA areas.

- iii. ***Standards:*** There are some ongoing efforts to use priority value chain approach in the development of standards, however there are no, standards for some value chain inputs for example farm inputs like coffee seedlings, cut flower clones, cotton seeds, among others. There was also no national equivalency of private standards such as Global GAP, BRC, which are becoming a prerequisite for accessing premium markets for agricultural products.

UNBS represents Uganda as a member of ISO but is not yet actively involved in the technical committees of the international standardization organizations. The result is that Uganda is a "standards taker" without being able to even influence those international standards that would be important to Ugandan export industry, e.g. coffee, Cotton, Tea, fish, horticulture, among others. If the current situation is not changed, Ugandan industry will always be at a disadvantage and therefore uncompetitive globally.

- iv. ***Metrology:*** Metrology is the science of measurements and can be divided into *scientific* which covers general theoretical and practical problems concerning units of measurements, *industrial metrology* focuses on calibration procedures and intervals, control of measurement processes and management of measuring instruments in industry to ensure that they are in a state of compliance with requirements for their intended use. *Legal metrology* relates to mandatory enforcement weights and measures laws to ensure accurate measurements to facilitate trade and protection of the consumers. Metrology provides the technical means to ensure correct measurements by the implementation of a harmonized system of measurement, accurate measuring instruments complying with international standards, and validated methods and procedures.

The National Measurement Laboratories (NMLs) transfer values of the agreed international measurement standards to business, government and society through an

internationally agreed system of comparing the value of the national measurement standard against the international standard.

The study found that the national metrology laboratories in Uganda are based at the Uganda National Bureau of Standards (UNBS). *Industry metrology* was through calibration of measurements equipments responsible for ensuring that the national measurement standards are maintained at appropriate accuracy levels, traceable to international standards and address the needs of the industry. It was also responsible for ensuring that the national measurement standards were appropriately diffused into industry through the traceability chains. Whereas in Uganda, industrial metrology was under government, however, this practice varies from country to country and international best practices involve both the public and private sector in provision of these services.

The legal metrology department through the Weights and Measures Act was enforcing the traceability of measurements in trade through the inspections and verifications of measuring equipments.

The major international metrology organizations are the BIPM (for Scientific/Industrial Metrology) and the OIML (for Legal Metrology). However, Uganda's participation in these international bodies is currently limited. Funding is required to actively participate in the activities of international and regional metrology organizations without which national effectiveness in metrology would be seriously curtailed.

The industry metrology is currently accredited to mass. However, there was inadequate legislation for its operations and lack of calibration equipments in some areas such as temperature, pressure, volume and flow measurements, and in some instances UNBS cannot provide calibration services beyond a certain capacity. There was limitation in the accreditation status which needs to be upgraded beyond mass to cater for the emerging strategic sectors such as Oil and Gas.

Also, the National Legal Metrology system needs to be updated to meet the current and future needs of the society and economy.

- v. **Testing capacity:** The main Government Ministries and Agencies involved in conformity assessment structure (mainly inspection, testing, calibration and product certification) include the Ministry Trade Industry and Cooperatives (MTIC), Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), the Ministry of Health (MoH), the Ministry of Energy and Mineral Development (MEMD), UNBS, National Drug Authority (NDA), among others. The responsibilities and authorities among these organizations are fragmented, inadequately defined with some overlaps. In some cases, more than one government regulatory authorities could be involved in the inspection and certification of similar products. The capacities of these organizations in terms of human resources, facilities and infrastructures are not yet well developed to acquire the necessary international recognition and to support the global trade.

The mandatory testing and inspection services are provided by regulatory authorities for products that have Ugandan standards, technical regulations or regulated by the food, animal and plant health and related laws. The major import and export products that are regulated, inspected, tested and/or certified by regulatory authorities include the following: food products for Sanitary and Phytosanitary requirements; Electrotechnology equipments, chemical and engineering products; metrology (measurement) products, and information technology equipments.

In Uganda, currently there are few internationally accredited testing laboratories; no public accredited inspection, product certification or system certification body. As a result of this, the conformity assessment services produced by the regulatory authorities in Uganda may not be recognized or accepted by customers or the importing countries. Therefore, most of credible and accredited analytical and inspections services are conducted by foreign laboratories and inspection bodies through the importers or customers, irrespective of the analysis and inspection conducted by national regulatory authorities. The exporters, therefore, are obliged to depend mainly by the test and inspection results of the recipient/importing countries. This is a very expensive exercise, in addition to high financial risks when the products fail to meet requirements after they have already been exported. Consequently, the price that Ugandan products fetch on the export markets is often lower than what would have been the case if they could have been tested locally. Uganda is therefore failing its export commodity in that it cannot support them with recognized conformity assessment services.

For laboratories to be recognized as competent, they have to demonstrably meet the requirements of the international standard ISO/IEC 17025. This demonstration of competence is achieved through accreditation. The accreditation organizations on the other hand need to be members of the Multi-Lateral Recognition Arrangements (MLAs) of International Laboratory Accreditation Cooperation (ILAC) and International Accreditation Forum (IAF), the two premier international organizations in the field of accreditation.

The study found that without accreditation of local laboratories as well as certification bodies, their test reports and certificates will not be easily accepted in the markets abroad. The limited accreditation of laboratories, and inadequate capacities to test most of the priority products, is therefore a major challenge for Uganda as a country and for the individual organizations. The laboratories also face the challenge of lack of equipments; and where equipments exist, they need to be upgraded, maintained and consumables made available. There is also lack of formal coordination amongst the many laboratories in the public domain regarding the identification of centers of excellence. The result is that often more than one laboratory wishes to develop the capacity to provide similar test services, doubling and tripling the pressure on investment in equipment and facilities, manpower and accreditation costs.

- vi. ***Certification and inspection:*** Currently Chemiphar (U) Ltd is accredited to ISO 17020 as a private inspection body; UGOCert is accredited to 65 guide and International Federation of Organic Agriculture Movement (IFOAM) as a local certification body. There was no public inspection or certification body that was accredited to ISO 17020 or ISO 17065. In spite of this, there was limited national capacity to provide certification with respect to some category of exports.

There was no local accredited inspection and certification body for private standards such GLOBALGAP, BRC among others that are becoming prerequisite for market access in the premium high end markets. As a result, inspection and certification services were provided by recognized foreign organizations which increase the cost of doing business and therefore uncompetitiveness. Local certification was limited by inadequate infrastructure and human resource that was not certificated in accordance with international requirements.

Systems Certification: as a result of lack of local internationally accredited certification body in Uganda, industry requiring system certification have to invite foreign based organizations. Currently, only few companies have been certified to ISO 9001, ISO 14001, and HACCP. The chosen certification bodies were SABS (South Africa), IQNET, among others.

- vii. ***Accreditation:*** To satisfy the need for confidence in the conformity assessment service, organizations are established at international and national level to ensure that the act of traceability and testing is conducted in a proper manner. National Accreditation System provides the services at national level that establishes the truthfulness of measurement standards, certification and testing in industry and government. The verification is done by authoritative accreditation bodies that are impartial in relation to both the conformity assessors and their clients, and which normally operate in a non-profit distributing manner.

The study found that in Uganda, the National Accreditation systems was still in its infancy, with an Accreditation Focal Point in the Ministry of Trade, Industry and Cooperatives (MTIC) and whereas a national standards and quality policy was approved, there was no existing legal framework establishing a national accreditation system. As a result, the accreditation services were sourced from outside the country which was quite expensive compared to if these services were obtained locally. Moreover, the scope of accreditation was still limited to a few parameters.

In addition, the lack of a national accreditation body has resulted into local laboratories that participate in inter-laboratory testing to set it up with partners abroad, bringing new challenges such as getting samples speedily cleared through customs, and other related costs.

- vii. ***Enforcements of Technical Regulations:*** It is internationally accepted that markets can fail because of safety, health, consumer protection and environment reasons. Protection from these hazards must be provided by society and this can only be

affected through a regulatory framework. To implement this, the government sets mandatory chain of testing and certifications supported by measurement standard and traceability to apply. This whole system it is called technical regulations.

The study found that enforcement mechanism to the adherence of the technical regulations in the product value chains was weak and implementation of standards such as HACCP, GAP, and GHP was still a major challenge in some of the sectors.

- v. **Human resource:** The findings indicate that there were available human resources providing SMCA services that need to be strengthened to meet international recognition.
- vi. **Awareness:** Understanding of SMCA issues by all the stakeholders along the value chain is pertinent to the successful implementation of standards and quality issues. The study findings indicate that there were low levels of awareness on the SMCA requirements along the products value chain especially at the farm gate level.

Recommendations:

From the study findings, it is recommended that support be provided to the SMCA service providers to meet the identified producers' needs/gaps. The criteria that should be used to support the capacity gaps should include among others:

- i. The service provider(s) should be *involved in priority sectors as defined in Uganda* and products that have significant socio-economic contribution.
- ii. The service provider(s) should have *the mandate* as provided for by law to provide the services (e.g. SPS Competent Authority). If it is a private sector service provider, it should be in the process of accreditation to provide the services in their respective fields.
- iii. The service provider(s) should have *existing capacity* in form of some minimum infrastructure and equipment's including human resource/personnel to perform the functions. Existence of other major actors/donors' activities provides opportunities for synergies, niches, coordination and compliments Intervention.
- iv. The service provider(s) should be *working towards the attainment of total quality management system and accreditation*.

The focus of support should be:

- i. *Development of a legal framework* allowing for the establishment of a national accreditation system with a view to provide affordable services to enhance the international recognition of domestic SMCA service providers in Uganda.
- ii. *Establishment of National Accreditation Body (NAB)* which would be responsible to register and provide for recognition of conformity assessment services (testing and calibration laboratories, inspection and certification bodies). The body should exert all

efforts to meet requirements so as to be recognized by IAF and ILAC according to ISO 17011.

- iii. *Development and implementation of standards* to address specific demands product value chains and the market as indicated in Annex 2. The implementation could be phased out taking into consideration the resources available.
- iv. *Strengthening the current enforcement mechanisms* of technical regulations to ensure compliance to the requirements of the markets by providing the necessary resources.
- v. *Strengthening the current capacity of the testing laboratories* up to accreditation to ISO 17025 in order to attain international recognition of the services provided (refer to annex 2).
- vi. *Strengthening the current capacity of the industrial metrology* by upgrading the level of accreditation from mass to temperature, pressure, volume and flow measurements to cater for the emerging sectors. Also, establish a mechanism that allows the private sector to become service providers of industrial metrology.
- vii. *Upgrading the current status of SMCA service providers* through provision of equipment's and consumable which are lacking (Refer to Annex 2).
- viii. *Strengthening the human resource capacity* in SMCA service providers through technical training to upgrade their skills.
- ix. *Supporting the accreditation* to ISO 17020, ISO 17065 and to private standards, of inspection and certification bodies in both public and private sectors for international recognition of their services.
- x. *Supporting the development of information communication technology* infrastructure to support information management systems for efficient provision of services such as e-certification.
- xi. *Creation and Strengthening National Centers of Excellency* to provide coordinated SMCA services in the priority products.
- xii. *Supporting awareness on SMCA requirements* along the value chain and market access requirements.

Since it may not be possible to support interventions in all the 34 value chains identified by the study, it is recommended that a prioritization mechanism based on the agreed criteria such as Uganda's comparative advantage, and the current and future socio-economic contributions of product value chains, already existing SMCA interventions in the value chain that has addressed the main gaps and allowed market access (e.g. fish subsector), be used to select priority products for initial support in each of the main sectors. Based on this criterion, the following value chains are recommended for initial support:

- (i) Agriculture sector: Coffee, Livestock (beef), Fruits &Vegetables;
- (ii) Industry/Manufacturing sector: Oil & gas

(iii) Services sector: Tourism

RECOMMENDED PRIORITY PRODUCT VALUE CHAINS FOR THE INITIAL SUPPORT

The Coffee Subsector

Coffee is a major cash crop and foreign exchange earner for Uganda. It is predominately produced by small holder farmers in the rural areas of central, Elgon Mountain, western and West Nile parts of the country. It employs many people along the value chain. The main markets for Uganda coffee are the European Union, COMESA and other countries like China, Singapore, USA, Japan, Australia, Israel and the domestic market. Of all these markets, the EU has the most stringent TBT/SPS requirements.

From the study these were the principal stages of the coffee value chain which were identified with their SMCA requirements.

Pre-production: at this stage there were the different farm inputs used in coffee farms. The SMCA requirements identified were mainly standards for seedling, agrochemicals, and farm equipments. For legal metrology the requirements were inspection and verification of mass and volume; and industrial metrology calibration of farm equipments; and for testing the requirements were the testing of seeds, seedlings and agrochemicals.

The SMCA service providers found to be supporting the preproduction stage were mainly MAAIF (NARO, UCDA), UNBS, Government Chemist and Chemiphar laboratories.

The challenges identified at this stage were lack of standards for seedlings, lack of certified reference standards for testing of agrochemicals, lack of capacity to calibrate equipments by industrial metrology (UNBS), and most of the laboratories testing for farm inputs were not accredited, apart from Chemiphar that was found to be accredited to a limited scope.

Production: At the production stage of coffee in the farms, the major quality requirements were Good Agriculture Practice (GAP), Guideline for organic farming, Inspection and certification for compliance to SPS requirements, organic farming and other private standards. However it was noted whereas UGOCERT was accredited as a certifier for organic farming, the other service providers like MAAIF, UCDA and UNBS were not accredited to carry out inspection and certification which cannot be recognized by the high end markets, such EU.

Processing: The main processors identified were Kyagalanyi coffee Ltd, Great Lake Coffee Ltd, Uganda Coffee Federation, Zigoti Coffee Works Ltd, NUCAFE, Bugisu Cooperative Union, Okoro Cooperative Union and other small private companies. From the study the SMCA requirements identified were Good Manufacturing Practices (GMP), HACCP, Total Quality Management System and environmental standards and private standards. The service providers identified were MTIC, UCDA, and UNBS all were not accredited to carry out internationally accepted inspection and certification services for coffee.

Product: The harmonized EAC standards for ground roasted and instant coffee exists, however the provision for mycotoxins and pesticide residue levels base on the requirement for the EU market and the other markets were was not harmonized. The service providers at this stage of the value chain were MTIC, Government Chemist, MAAIF, UCDA, UNBS, which provide testing and inspection services. Among all these service providers none was internationally accredited certification or inspection body, testing or calibration laboratory for coffee and hence test and inspection results or certificates were not recognized internationally.

Recommendations

The study found gaps in following areas as far as coffee producers' needs were concerned that need to be supported:

- (i) Develop the standards for coffee seedling as planting material;
- (ii) Harmonize the requirement of pesticide residues and mycotoxin standards for roasted and instant coffee;

- (iii) The upgrading to accreditation the testing capacity of MAAIF, UCDA and UNBS to test agrochemicals by providing certified reference standards for agrochemicals consumable. These standard test methods for pesticide formulations and fertilizers requires the use of flame photometer, AAS, GC, HPLC and GC/MC;
- (iv) The upgrading and accrediting the UCDA, UNBS and Government Chemist, laboratory to ISO 17025 to carry out coffee subsector quality analytical activities for mycotoxins. The standard test method according to AOAC for mycotoxin requires the use of HPLC and certified reference material. It is therefore recommended that the HPLCs be serviced and certified mycotoxins reference materials be provided to UNBS, UCDA and Government Chemist;
- (v) Upgrading the current level of accreditation of industrial metrology from mass to volume, temperature and pressure to be able to provide services for the upgrading of the UNBS, UCDA and Government Chemist laboratories to be accredited for mycotoxin and agrochemical analysis.
- (vi) The Upgrading and accreditation of Legal Metrology inspection and verification services at UNBS to ISO 17020;
- (vii) The upgrading and accreditation of the coffee inspection services at UCDA to ISO 17020;
- (viii) The upgrading and accreditation of UCDA as certification body to ISO 17065;
- (ix) Increasing the number and trained inspectors at all levels of the value chain;
- (x) Provide the necessary equipments to the inspectors;
- (xi) Carrying out awareness throughout the value chain on SMCA market requirements,

Fruits and Vegetables

Because of its tropical location and good climate, Uganda grows a variety of fruits and vegetables. Fruits contribute a big share of the Uganda's non-traditional agricultural exports and to the foreign exchange earnings. Uganda has been producing fresh fruits and vegetable for European Union (EU), COMESA, EAC and domestic market. From this study, it was noted that the EU had the most stringent market requirements which required interventions at all the preproduction, production, processing and product stages of the value chain.

These were the SMCA requirements identified for fruits and vegetables at the value chain stages:

Pre-production: The study identified the most important standards at preproduction stage for fruits and vegetable to access the mentioned markets were mainly for inputs like seeds, seedlings, agrochemicals, and farm equipments. Most of the standards for seedlings and some agrochemicals were lacking, while for legal metrology and industrial metrology the requirements were inspection and verification of measuring equipments, and calibration of farm equipments. However, the capacity to carry out calibration of farm equipments was absent, for testing of seeds, seedlings and agrochemicals most of the testing facilities were not accredited apart from Chemiphar.

The SMCA service providers involved in supporting the pre-production stage of fruits and vegetable were: MAAIF, UCDA, UNBS, Government Chemist, NARO, Ugocert and Chemiphar.

Production: At the production stage the key standard identified were GAP, HACCP, Guideline for organic farming and equivalency to private standards, requirements for legal and industrial metrologies were verification and calibration of measuring equipments. The inspection and certification lacked of accredited inspectors and certifiers. The study found that there was no national GAP, few farmers are certified to HACCP and organic farming practices.

Processing: The study found that there was value addition in forms of drying some of the fruit pulps for export however, it was noted there was lack of guidelines on GAP, Good Manufacturing Practices (GMP), GHP, HACCP, packaging and grading during the processing of some the fruits hence leading to challenges of meeting market requirements. UNBS and MAAIF are the main SMCA service providers.

Product: From the study some standards for fresh fruits have been developed based on the requirement of codex, however most fruits and vegetable being exported lacked national equivalent standards and those which were available used do not meet the provision for pesticide residues in EU directive 396/2005. The testing of fruits and vegetables to meet the SPS and other

quality requirement is mainly carried out by MAAIF, Chemiphar, Government Chemist and UNBS. Apart from Chemiphar which was accredited to a limited scope for pesticide residue analysis all the above mentioned laboratories were not accredited and they lacked certified pesticide reference standards for pesticide residue analysis. It was found from the study, that the current scope of the industrial metrology accreditation to only mass cannot address the need for volume and temperature which are important when testing fruits and vegetable product.

The study indicate that the value chain stages were supported by the following service providers: Ministry of Agriculture, Animal Industry and Fisheries, responsible for policy guidance, inspection and certification, UNBS: standards testing, inspection and certification by giving the Q-mark, Government Analytical laboratory and Chemiphar for carrying out testing. Among all the SMCA services providers for fruits and vegetables, the study identified in gaps in accreditation which was lacking and limited in scope; limited capacity to carry out inspection and certification of because of lack of accreditation to ISO 17020 and ISO 17065; lack of accredited laboratory for fruits and vegetables and the absence of a national accreditation body resulting into high cost of accreditation.

Recommendations

- (i) Support the harmonization of national standards to codex, IPPC, and specific market requirement throughout the value chain.
- (ii) Develop and implement the national equivalent to Global GAP, Organic farming guideline and other private standards to ensure traceability;
- (iii) Train farmers on Good Agriculture Practices (GAP), organic farming, GMP, HACCP, Good Hygienic Practices;
- (iv) Support the upgrading and accreditation of the Laboratories of MAAIF, UNBS and Government Analytical laboratories to be accredited to test for Agrochemical and SPS requirements. The standard test method according to AOAC requires the use of GC, HPLC and GC/MS and certified reference materials for the analysis of pesticide residues in fruits and vegetable.
- (v) Upgrading the current level of accreditation of industrial metrology from mass to volume, temperature and pressure to be able to provide services for the upgrading of the MAAIF, UNBS, and Government Chemist laboratories to be accredited for pesticide residue analysis.
- (vi) Support a national pesticide residue monitoring plan for fruits and vegetables to support data generation for standards development.
- (vii) Upgrade the scope of accreditation of industrial metrology from mass to volume and temperature
- (viii) Support the upgrading and accreditation of inspectors, certifiers and auditors at MAAIF, UNBS and Ugocert to ISO 17020, ISO 17065; and to E-certification;
- (ix) Support the implementation of self-regulation in the fruits and vegetables subsector;

Beef sub sector

The livestock sector is one of Uganda's important growth sectors. It constitutes 17 per cent of the agricultural GDP and is a source of livelihood to about 4.5 million people in the country. Over the years there has been growing demand for beef products which has resulted into increase in interest in cattle keeping. Most of the beef are consumed by the local market and the rest are sent to export markets in the EAC and COMESA (Kenya, Tanzania, Rwanda, Southern Sudan, D.R. Congo, Burundi. Southern Sudan). Other potential export markets for Uganda beef products exist in the Middle East countries and European Union.

Based on the finding of this study the following stages of the beef value chain with their SMCA requirements was evaluated with the aim to identify areas of future intervention to enhance competitiveness.

Pre- production level: At this stage of the value chain, the most important farm inputs that impact on food safety standards for beef were antibiotics, acaricides, semen, Good Veterinary Practices (GVP). The findings indicate that the key SMCA service providers supporting the preproduction level were MAAIF and NDA, the standards for antibiotic and acaricides have been developed by NDA

based on OIE standards. At the same time, guidelines for semen quality have been developed by MAAIF. However, the study indicate that there was still limited capacity by NDA and MAAIF to test antibiotics, acaricides and semen for conformity to standards because of lack of equipments, certified reference standards for antibiotics, acaricides and capacity to test for the quality of semen by the veterinary diagnostic laboratory.

Production stage: It was found that the SMCA requirements were mainly SPS related (refer to annex 2 table 2.1). In addition, Good Veterinary Practices (GVP), Good Hygienic Practices (GHP), traceability system, HACCP, animal welfare and Good transportation guidelines were required. Challenges in detecting the presence of residues of veterinary drugs, acaricides and heavy metals and inadequate inspection system were noted and required the support. The service providers such as MAAIF, UNBS, and Government Chemist need to be supported to build capacity to monitor the residues and to inspect to meet SPS requirements.

Processing stage: At this level, there were few players like meat packers, Fresh Cuts Ltd, among others. According to the finding of this study, there were inadequacies in meeting the SMCA requirements like GVP, HACCP, and Animal welfare. There were also no modern abattoir which the requirements of the niche markets, most slaughter houses and butcheries which serve the domestic markets lack the basic requirements for GVP, GHP and HACCP.

Product stage: The findings at this level of the value chain to get into the different market segments were found to be the standards available based on the EAC harmonized standards for canned beef and meat grade specifications. However, there were no standards for frozen bovine boneless meat, fresh or chilled bovine bones meat. The main service providers at this stage were MAAIF, NDA, and Government Analytical laboratory. It was noted that whereas there were national standards for SPS, acaricides, and antibiotics based on WHO and FAO guidelines, there was still limited national capacity to test residues of antibiotics, acaricides and environmental contaminants in beef products.

Recommendations

Based on the above findings is recommended that the following interventions be supported to make Ugandan beef become competitive:

- (i) Preparation of simplified guides and standards that can be understood by stakeholders; and also reduce the cost of standards;
- (ii) Developing and implementing a veterinary drug residue analysis monitoring plan in meat subsector to support export market and domestic consumers' protection;
- (iii) Supporting the upgrading to accreditation of MAAIF, UNBS, and Government Chemist Laboratories to test for antibiotic, acaricides, heavy metals and environmental pollutant based on AOAC standard test methods by servicing and equipping them with GC ,HPLC, GC/MS, AAS and provide certified reference material for antibiotics, acaricides, and other reference materials.
- (iv) Supporting the upgrading of the industrial metrology laboratory accreditation status from mass to temperature, volume, pressure to support the calibration of the above equipments.
- (v) Training of inspectors and certifiers and upgrading up to accreditation to ISO 17020 and ISO 17065; and development of E-certification system;
- (vi) Strengthen the enforcement of the technical regulations along the value chains;
- (vii) Developing national Equivalence for Good Agricultural Practices, and GHP, HACCP standards for all the abattoirs;
- (viii) Developing animal feed standards;
- (ix) Promoting awareness among the entire stakeholder in the beef value chain on the SMCA requirements;
- (x) Development of standards for transporting animals, and animal products;
- (xi) Development of training courses for different professions in meat industry;
- (xii) Train farmers on Good Veterinary Practices;

- (xiii) Development and Implementation of the slaughter house standards;
- (xiv) Development and Implementation of hygiene standards for all abattoirs Butcheries;
- (xv) Supporting the accreditation of MAAIF, UNBS, Veterinary Diagnostic laboratory and Government Analytical Laboratory;
- (xvi) Promote the exchange of information on local and international standards;
- (xvii) Supporting the certification of the slaughter houses and butcheries to HACCP systems;

Oil & Gas

Oil and gas is a very important emerging subsector for the future of the economy of Uganda. The effort to promote the subsector has led to the intensified exploration work in the country. With the discoveries of commercial reserves, it is projected it will improve on the country foreign exchange earnings, create a lot of jobs through out the oil value chain and this will ultimately lead to poverty reduction.

From the study, it was discovered there was already on going efforts by the government of Uganda to build a national conformity assessment infrastructure for the subsector at the Ministry of Energy and Mineral Development (MEMD) and UNBS. In addition, MEMD, UNBS in collaboration with other stakeholders were developing standards, technical regulations and guidelines for the whole value of the subsector. However it was observed, building such SMCA infrastructure for the sector should be focused on the following oil and gas value chain stages:

Pre-production stage: at the exploration fields in the albertine basin in Uganda, pipelines, ridges, drilling equipments, welding equipments, pumps among others were the inputs identified. Other oil auxiliary services included seismic surveys, well drilling, and equipment supply. The SMCA considered as important were standards, technical regulations, guidelines and codes for inputs; environmental standards, quality management system standards, and occupational standards. The study indicated that National Environment Management Authority (NEMA) in collaboration with other stakeholders had already developed the appropriate environmental standards and guidelines to address the environmental concerns association with the exploration. The local capacity to test products at exploration stage was still limited because the country has not developed modern petroleum testing infrastructure.

Production Stage: The commercial extraction of oil and gas which is an important element in the production stage of the value chain was still not commissioned in the country. However, the appropriate intervention by government of Uganda and other stakeholders to support the SMCA needs of this stage of the oil and the value chain was in process.

Processing Stage: The findings noted that the processing of crude oil had not commenced in Uganda, pending the building of oil and gas refinery. The government and other stakeholders need to come up with required intervention to address all the SMCA requirements of this important stage of the value chain.

Product Stage: The study findings indicated that standards for oils and gas were available. There was ongoing calibration, inspection and verification of fuel pumps by industrial metrology and legal metrology; and limited testing by UNBS and MEMD of imported petroleum products by mainly using the presumptive biocode test technique to ensure traceability. There is also general inspection of the product by MEMD and UNBS. However, the inspection and certification service both at the MEMD, NEMA and UNBS are constrained by lack of experience, expertise and not accredited to inspect the subsector.

The existing industrial metrology capacity at UNBS was not yet developed to address the needs of all the stages of the value chain because of its limited scope of accreditation to only mass and yet the subsector requires accreditation to pressure, volume and temperature, among others.

Recommendations

Because of its potential importance to the economy in future, it is recommended that:

- (i) Additional technical regulations, standards, guidelines and codes to cater for all the stages of the oil and gas value chain are developed.
- (ii) The laboratories are upgraded to test for all required parameters for petroleum products including byproducts up to accreditation to ISO 17025. Most of the standard test methods according to ISO and ASTM for petroleum products require certified reference materials for aliphatic hydrocarbons, modern equipment like GC/MS, LC/MS;
- (iii) Train more inspectors of petroleum subsector and support their accreditation to ISO 17020;
- (iv) Upgrade of the current level of accreditation of industrial metrology laboratory at UNBS from mass to include pressure, temperature, volume and flow measurements to be able to calibrate the pressure in the pipelines, measure temperature during fractionation and determine volume accurately;

Tourism

Uganda is one of the best tourist destinations because it is gifted with abundance of wildlife and beautiful ecology which promotes tourism. The Uganda tourism sector contributes 8% of Uganda's GDP and is seen as one of the sectors with the potential and most promising growth prospects. The tourism sector is estimated to provide direct employment of approximately 21,000 and up to 240,000 jobs if informal employment is considered. Therefore, tourism has the potential to contribute highly to economic growth, employment and income generation, and poverty reduction in the country.

The study indicates that the entry point into the value chain for most tourists starts with either the international tour operators or the inbound tour operators at the airports, inland boarder points and local tour operators. At this stage of the value chain it was observed that the most important standards were total quality management system (ISO 9000 series), guidelines for tour operators and transporters including tour guides. Midstream in the value chain is the hotel stocks providing the accommodation for the tourist. The study found that the hotels in Uganda were so variable in quality. At the moment there are no harmonized national standards for classification systems for hotels and their accreditation.

Upstream in the value chain were the different national parks, ecotourism points, museum, cultural sites, in Uganda offering opportunities for game viewing and excursions. The study found that there were challenges of meeting SMCA requirements for example most were not operating total quality management standards and were not accredited to carry out inspection and certification. The Uganda Wild Life Authority, Uganda Tourist Board and the different tour associations were all not accredited.

Overall the study found that for Uganda tourism sector to compete effectively against other tourist destinations of the world, there was need for a comprehensive approach by the sector in addressing all the SMCA requirements along the value chain.

Recommendations

The study identified the following gaps that require support:

- I. Review of current tourism policy to incorporate proper coordination of SMCA requirements by the sector along the value chain;
- II. Develop national standards and guideline for grading hotels and any other Tourism Auxiliary Service Providers up to accreditation;
- III. Support the implementation of a quality management system such as ISO 9001 for the tourism sector up to accreditation;
- IV. Train more inspectors, certifiers up to accreditation to inspect and audit in accordance to ISO 9001 and ISO 14000;
- V. Create awareness on the SMCA requirements in the tourism sector throughout the value chain.

1. INTRODUCTION

1.1 Background to the Study

To develop the capacity for Uganda's products to comply with technical regulations, standards, safety and quality requirements while accessing domestic and export markets, there is a need for identification, analysis, rationalization and prioritization of quality infrastructure and institutional capacity gaps and resource needs thereof in the country. Such a needs assessment is critical to the process of developing capacities (regulatory, human, operational, technical (scientific, equipment),) without which activities and resources to strengthen the SMCA capacity in Uganda will be less than optimal.

Specifically, this capacity needs assessment provides a systematic and participatory process for identification and understanding the major capabilities and weaknesses of the existing product quality control and safety system, pinpointed areas for improvements and identified options for intervention. It will help in ensuring that any capacity development initiatives in this area are demand-driven requirements, and build on existing capabilities. The assessment of the country's SMCA (i.e. standards, metrology, conformity assessment and accreditation) capacity needs will enhance the ability of government agencies and private sector for planning, implementing and monitoring of timely interventions to promote the country's product competitiveness through strong quality and safety of products in various markets. Additionally, capacity needs assessment is beneficial in increasing awareness among different government institutions as well as the private sector about the multi-dimensional nature of product safety/quality, and complementarities and interdependencies of different stakeholders' roles in this area. It contributes to enhanced public-private sector cooperation and identification of areas for joint action and it supports efforts to attract additional resources to address the identified needs.

The policy framework in Uganda is cognizant of this fact and the National Development Plan (NDP) 2010/11-2014/15 provides for the establishment and implementation of Quality Infrastructure and Standards Programme" (QUISP) to harmonize and streamline the standardization and quality infrastructure in Uganda¹. The QUISP Programme, which became effective in March 2010, seeks to develop a market-driven holistic and coordinated institutional framework for the Ugandan Quality Infrastructure and Standards. One component of the QUISP relates to capacity development for service providers in the

¹ The NDP's objective (1) (page 336) under Standards and Quality Infrastructure provides for the use of standards and quality infrastructure to promote the competitiveness and safety of Uganda's products, processes and services across markets of interest. More specifically, strategy (1) under NDP's objective (1) (page 337) provides for developing and maintaining institutional capacity for development, analysis, implementation and dissemination of laws, regulations and standards in line with demonstrated priorities and anticipated needs of standardization.

Standards development, Metrology, Conformity Assessment and Accreditation (SMCA).

An initial baseline study² facilitated by the Ministry Trade, Industry and Cooperatives (MTIC) did establish that the SMCA service providers in Uganda including enforcement agencies, metrology laboratories, testing laboratories, and inspection bodies are constrained by mainly the lack of accreditation, proper equipment's and competent personnel required to offer these services at an internationally competitive level. This report is meant to compliment the above study by focusing on the SMCA needs of the priority product value chains of strategic socio-economic interest to the Ugandan economy and mapping them for a rationalized SMCA support.

1.2 Trade Sector in Uganda

The Government policy in Uganda since the early 1990s has aimed at enhancing the country's export earnings including thorough value addition as well as enhanced export growth, competitiveness and diversification (product composition as well as market destinations). As a result, there has been impressive progress in increasing the volume, value and diversity of the Uganda's exports. Of significance has been the expansion of products beyond traditional exports (coffee, tea, cotton and tobacco) to include non-traditional exports namely fish, flowers, fruits and vegetables, etc. Accordingly, the share of non-traditional exports has increased from just 14% in 1990 to over 72% in 2011³.

Notwithstanding this encouraging export growth and diversification trend, Uganda's exports remain highly concentrated in a few products. For example, only top-five product lines (all commodities) accounting for more than 55% of the country's total merchandise exports. Uganda is yet to make significant inroads in the direction of value addition particularly exports of manufactured products. Additionally, Uganda's trade deficit (at about US\$ 2 billion in 2011 has been growing over the last 10 years. To overcome such a growing trade deficit, concerted actions are needed to boost export earnings particularly through the enhanced export growth.

1.3 Trends in Trade Policy Landscape-Globally

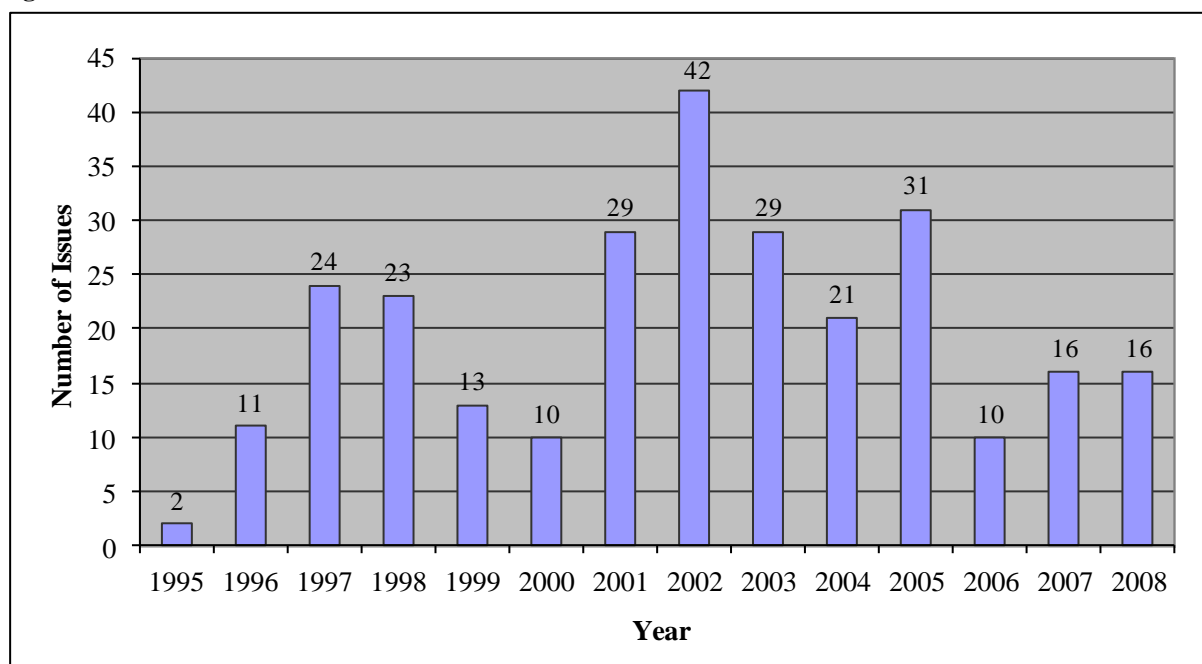
The global trade policy landscape has significantly changed over the last three decades. However, tariffs and tariff-related barriers (i.e. traditional trade policy tools to regulate trade) have declined significantly either through unilateral tariff policy reforms and/or regional and multilateral negotiations including those under the World Trade Organization (WTO). Consequently, other impediments to trade specifically non-tariff barriers (NTBs) are increasingly gaining significance. Significantly, they include market-entry requirements like standards, product safety and other quality-assurance related measures whose compliance is critical to market access.

² This study was done by Sunshine Projects Ltd, titled '*Review of Capacities of Lead Agencies involved in Standardization in Uganda*'.

³ Uganda Bureau of Statistics (1990 - 2011): Statistical Abstracts

The products of interest to developing countries are highly dependent on agriculture in term of its contribution to Gross Domestic Product (GDP), foreign exchange earnings, employment and income generation, etc. Specifically, there has been rising trend of standards-related trade concerns since mid-1990s. Figure 1 and Figure 2 respectively illustrate the extent to which Sanitary and Python-sanitary (SPS) measures⁴ (food safety, animal or plant health issues) and Technical Barriers to Trade (TBT) concerns respectively have evolved over the last two decades. According to World Trade Organization (WTO) (2009) report⁵, over 277 specific SPS trade concerns were raised between 1995 and the end of 2008 (Figure 1). About 28% of these trade concerns relate to food safety concerns, 27% relate to plant health, and 4 per cent concern other issues such as certification requirements or translation while 41% of these concerns raised relate to animal health and zoonosis. As indicated in Figure 2, TBT related trade concerns have also been on the rise since 1995 with over 61 specific trade concerns raised in 2010 alone⁶.

Figure 1 : SPS-related trade concerns

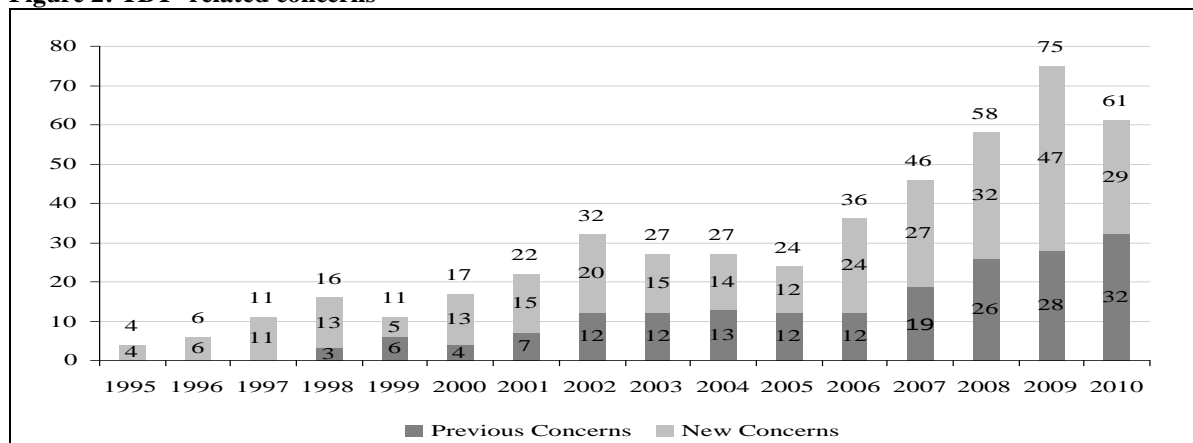


⁴ Measures applied to protect human, animal, and plant health or life from risk arising from the entry, establishment, or spread of a hazard (OIE).

⁵ WTO (2009) "Review of the operations of the implementation of the SPS Agreement" a Note by Secretariat Document G/SPS/GEN/887/Rev.1 of 6 February 2009.

⁶ WTO (2011) "Sixteenth Annual Review of the Implementation and Operation of the TBT Agreement" a Note by Secretariat Document G/TBT/29 of 6 March 2011

Figure 2: TBT- related concerns

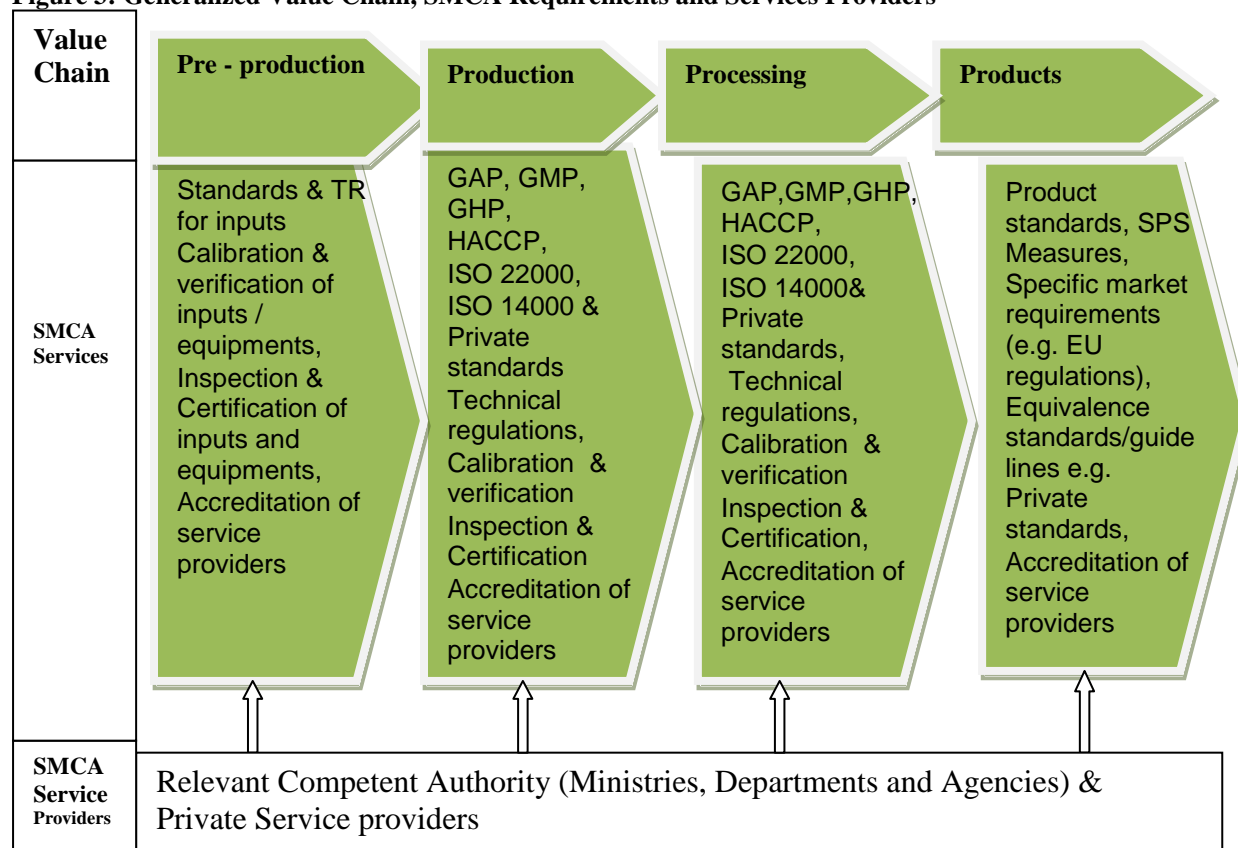


1.4 Linkages of Value chains and SMCA

1.4.1 Product Value Chains

Principally a product value chain describes the entire sequence of events from pre-production, production of a product, its transformation and eventually - to the end-user. Analysis of value chains helps in effectively and efficiently identifying and responding to SMCA needs and service providers at each value chain stage as illustrated below.

Figure 3: Generalized Value Chain, SMCA Requirements and Services Providers



Report on the Producers' SMCA Needs and Capacity Assessment of the SMCA Service providers

In a given market, suppliers and customers agree on the quality requirements a product or service need to comply with before a successful trade transaction can be initiated. Once such an agreement is reached, the purchaser needs to have the assurance that the product or service supplied will in fact meet the stated requirements. In more technical terms, the chain of evidence facilitating this exchange starts with standards, and is completed by evidence of compliance. But, the evidence of compliance (i.e. conformity assessment) will only be trusted if the technical capability of those services, is beyond reproach. Within the last century the output and services necessary to provide all of this have crystallized in the developed economies, and the institutions providing them can be considered to make up the quality infrastructure.

Table 1: Elements of National Quality Infrastructure and institutions

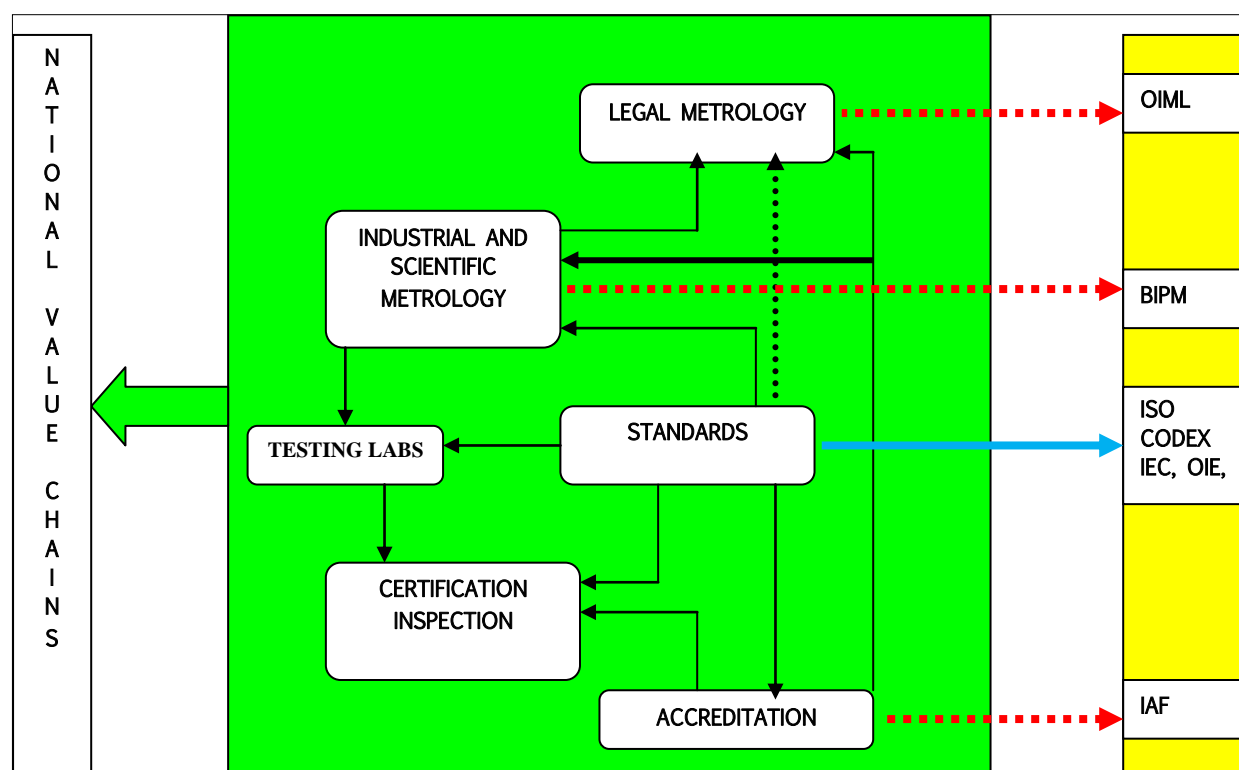
Elements (SMCA)	Description	Service providers
Standards	Formal documentation containing the requirements that a product, process or service should comply with. Standards are essentially voluntary in nature. It is only once they are called up for example in a contract that compliance becomes a binding requirement.	<ul style="list-style-type: none"> National Standards Body (UNBS) Sectoral Standards Development Organizations (SDO) i.e. Government Ministries, departments and agencies; e.g. MAAIF, MEMND, MoW, MOH, MoES, DDA, UCDA, UCC, NITA-U etc
Metrology	Technology or science of measurement. Metrology can be subdivided into: Scientific metrology: The organization and development of the highest level of measurement standards; Industrial metrology: The adequate functioning of measurement instruments used in industry, production and testing through calibrations; Legal metrology: The accuracy of measurements where these have an influence on the transparency of economical transactions, health and safety and trade;	<ul style="list-style-type: none"> UNBS: industrial Metrology Department UNBS: Legal Metrology Department)
Testing	The determination of product characteristics against the requirements of the standard. Testing can vary from a non-destructive evaluation (e.g. X-ray or pressure testing after which the product can still be used) to a total destructive analysis (e.g. Chemical, mechanical, physical, metallurgical tests where after the product can no longer be used) or any combination thereof.	<ul style="list-style-type: none"> Government Ministries, departments and agencies laboratories Private sector laboratories
Inspection	Examination of product design, product, service, process or plant, and determination of their conformity with specific requirements or, on the basis of professional judgment, general requirements.	<ul style="list-style-type: none"> Public Inspection bodies: i.e. Government Ministries, departments and agencies Private sector inspection bodies
Certification	The formal substantiation that a product, service, organization or individual meets the requirements of a standard.	<ul style="list-style-type: none"> Public sector certification bodies: i.e. Government Ministries, departments and agencies Private sector certification bodies
Accreditation	Activity of providing independent attestation as to the competency of an individual or organization to provide specified services (e.g. Testing, certification, inspection, etc.).	<ul style="list-style-type: none"> National Accreditation Organization/Body

These elements are all interrelated and to some extent all required to provide the purchaser, consumer or authorities with the appropriate confidence that the product,

process or service meets expectations.

It all starts with "Standards" as indicated in Figure 4. The standard contains the requirements for the product or service. The standard can be a national or international standard, it can even be a company specific standard. Once the product has been manufactured it has to be tested by the Testing Laboratory. The certification organization assesses the supplier and the products or service and issues a certificate stating compliance with the standard. Through Metrology the testing laboratory can ensure that its measuring equipment meets standards, and through Accreditation the technical competency of the laboratory and the certification body is assessed and assured. At the international level various organizations (e.g. ISO, ILAC, IAF, OIML, BIPM, etc.) have evolved over the years, the members of which are the national organizations.

Figure 4: Conformity Assessment Framework



1.5 Purpose of the Study

The purpose of the study was to examine factors that can be used to establish an efficient mechanism for rationalizing the criteria to be used to assist the leading SMCA service providers in Uganda to avail a well-balanced, essential and affordable standards and quality services meeting requirements in the domestic and export markets with a view of improving on the competitiveness of Uganda's products and services in those markets.

1.6 Objectives of the Study

The objectives of the study were:

- a) Establishment of an efficient mechanism of rationalizing the criteria to be used to assist the leading SMCA service providers in Uganda to improve on the competitiveness of market access of Ugandan priority products in the local, regional and international markets
- b) Well balanced, essential and affordable standards and quality services of international repute available in the domestic market.

In fulfilling the study objectives the consultant undertook the following;

- (i) Identified at least 10 value chains based on priority products or services as defined in Uganda in each market niche i.e. domestic, regional and international markets.
- (ii) Assessed the SMCA requirements of producers including manufacturers in Uganda in accessing each of the market niches;
- (iii) Undertook detailed capacity assessment of SMCA service providers in both public and private sectors in Uganda;
- (iv) Identified the gaps in SMCA service providers needed to support and enhance Ugandan producers' competitiveness in each market niche;
- (v) Identified critical areas of support for SMCA capacity gaps/need in Uganda for improved service delivery;
- (vi) Recommended rationalized capacity building of the existing SMCA services;

1.8 The scope of the study

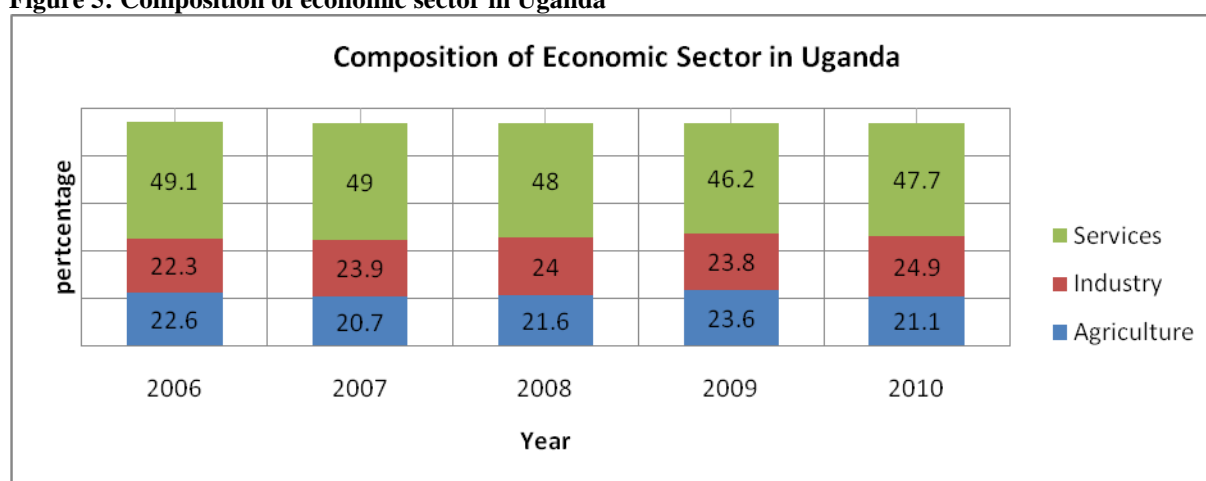
The study was limited to the current producers' SMCA needs in the identified priority areas in Uganda in terms of SMCA services to enhance their competitiveness in the domestic, regional and international markets. Excluded from the scope of this study, were issues related to: increasing the quantity, and improving the regularity, continuity of production, reducing the time needed to reach the customer, minimizing transactional cost and improving the capacity of actors to follow and assimilate technology and market development.

2. SITUATION ANALYSIS

2.1 Socio-economic significance Sectors in Uganda

Uganda's economy is divided into the following thematic sectors⁷ agriculture, industry and services. The agriculture sector is comprised of 21% of the economy and is composed of cash and crops, livestock, forestry and fishing. The industrial sector is 25% of the economy and is composed of mining and quarrying, manufacturing, electricity, water supply and construction. The services sector is 48% of the economy and is made up of wholesale and retail trade, repairs, hotels and restaurants, transport and communication, financial services, real estate, public administration, education and health.

Figure 5: Composition of economic sector in Uganda



Uganda has substantial natural resources, which include fertile soils, regular rainfall, small deposits of copper, gold, and other minerals, and oil. Agriculture is the most important sector of the economy, employing over 80% of the work force. Coffee accounts for the bulk of export revenues. Since 1986, the government has acted to rehabilitate and stabilize the economy by undertaking reforms. The policy changes were especially aimed at dampening inflation and boosting production and export earnings. Since 1990 economic reforms ushered in an era of solid economic growth based on continued investment in infrastructure, improved incentives for production and exports, lower inflation, and better domestic security. Uganda's GDP growth is still relatively strong due to past reforms and sound management. Oil revenues and taxes will become a larger source of government funding as oil comes on line in the next few years.

2.1.1 Export in Uganda

The Government policy in Uganda is focused to enhancing the country's export earnings

⁷Uganda Bureau of Statistics Abstract (2011)

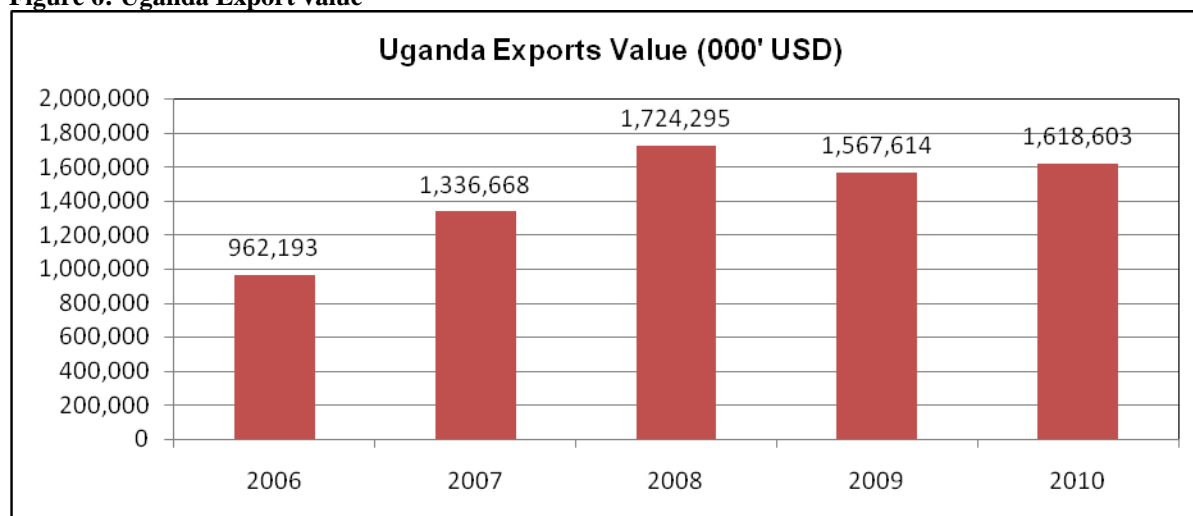
including through value addition, increased volumes, competitiveness and diversity (product composition as well as market destinations) of exports. However, the private sector, a key player in Uganda's economic growth, continues to face market access impediments including those relating to compliance with technical regulations and product quality related requirements in markets of interest. Compliance with technical regulations and standards is essential and has increasingly become critical element in consumer protection and facilitating trade within and between countries especially in the European markets.

Product competitiveness in domestic and exports markets is no longer price-based only but other factors including quality of products, required quantity and timeliness of delivery are increasingly gaining significance. Consequently, ensuring that Ugandan products and services comply with the required regulations and standards through appropriate production and other value adding processes would significantly increase the producers, processors, traders and consumers welfare thereby contributing to the government efforts to eradicate poverty through wealth creation and stimulate prosperity for all. Hence, there is a need to adequately develop the necessary capacity for standards; metrology, conformity assessment and accreditation (SMCA) in Uganda to enable actors along the value chain to comply with such requirements.

Since 1995, Uganda shifted its market destination of goods to the COMESA region such as Sudan, D.R. Congo, Kenya and Rwanda. There is a need to develop strategies to sustain the traditional markets and products even as the country opens up new markets and products.

The trend in export earnings from goods is shown in the graph below.

Figure 6: Uganda Export value



The structure of the Uganda export market is shown below.

Table 2: Exports by region

Export by region (000' US\$) 2006-2010					
Region	2006	2007	2008	2009	2010
COMESA	493,970	988,648	1,475,485	1,450,729	1,266,112
Other Africa	59,281	126,231	129,864	132,687	111,806
Europe	312,826	415,756	619,200	442,466	430,939
North America	16,442	23,777	19,835	38,494	23,836
Middle East	198,544	190,847	139,064	96,384	131,221
Asia	75,194	71,937	98,183	102,586	103,729
South America	899	2,472	305	876	2,023
Others	36,483	37,465	47,492	99,706	72,182
Total	1,193,639	1,857,133	2,529,428	2,363,928	2,141,848

Source: Uganda Bureau of Statistics

The table below shows exports by value and country of destination.

Table 3: Exports by country of destination

Exports by country of destination (000' US\$) 2006-2010					
Country	2006	2007	2008	2009	2010
D.R. Congo	125,273	256,580	323,445	300,233	327,063
Rwanda	55,571	122,413	192,141	170,226	182,227
Sudan	99,588	367,605	634,626	633,131	405,462
Kenya	184,884	204,205	271,893	276,730	284,369
Burundi	20,554	42,719	45,383	63,575	59,330
Egypt	4,154	2,800	2,504	2,079	1,045
Others	3,946	2,328	5,492	4,766	6,617
Total	493,970	998,650	1,475,484	1,450,740	1,102,108

Source: Uganda Bureau of Statistics

In 2010, all traditional exports recorded a significant increase in export receipts except cotton whose export revenue reduced to US\$ 19.9 million from US\$ 23.2 million in 2009. The quantity of cotton exported dropped from 17,888 tons in 2009 to 11,891 tons in 2010. Meanwhile, the contribution of Traditional Exports (TEs) to total formal exports earnings increased marginally from 26.8 percent in 2009 to 27.2 percent in 2010 on account of increased tea and tobacco export revenue.

Coffee remained the main foreign exchange earner for the country, although its share to total export earnings declined marginally from 17.9 percent in 2009 to 17.5 percent in 2010. Despite a significant decline in quantity exported from 181,324 tons in 2009 to 159,433 tons in 2010, the coffee export earnings increased from US\$ 280.2 million to 283.9 million on account of improved prices on the international market. During 2010, Tea and Tobacco attained the same market share of 4.2 percent of the total export earnings, with both crops recording a significant increase in export receipts estimated at US\$ 68.3 million and US\$ 68.7 million respectively.

The contribution of Non-Traditional Exports (NTEs) to the total export earnings declined slightly from 73.2 percent in 2009 to 72.8 percent in 2010. Fish and fish products remained the main foreign exchange earner in this category, with its contribution to total export earnings increasing to 7.9 in 2010 from 6.6 percent in 2009. The fish export revenue increased from US\$ 103.4 million in 2009 to 127.7 million in 2010 on account of increased quantities exported. The other NTEs that contributed significantly to the total export earnings in 2010 were cellular telephones with a share of 4.9 percent, petroleum products (4.5 percent), cement (4.4 percent), sugar and sugar confectionery (3.7 percent) as well as animal/vegetable fats and oils (3.4 percent).

2.1.2 Imports

In 2010, Petroleum and petroleum products took the highest import bill of US\$ 917.0 million followed by Road Vehicles (including air-cushion vehicles) with US \$ 418.8 million, then Telecommunications Instruments with US\$ 227.9 million and Iron and Steel value estimated at US 228.8 million.

The Asian continent remained the leading source of Uganda's imports in 2010. Its imports share stood at 34.2 percent in 2008, and then rose to 37.1 percent and 41.8 percent in 2009 and 2010 respectively. Uganda's main trading partners in the Asian continent were India, China, Japan and Malaysia whose market shares were estimated at 14.5 percent, 8.8 percent, 6.5 percent and 2.1 percent in 2010 respectively. The African continent ranked second with an import bill increasing from US \$957.8 million in 2009 to US\$ 992.9 million in 2010. The main trading partners included Kenya with a market share of 11.6 percent, followed by South Africa (5.3 percent) and Tanzania (1.3 percent). The imports from the EU regional bloc declined from US\$ 878.0 million in 2008 to US\$ 752.8 million in 2009 and then to US\$ 727.5 million in 2010. The market share for the EU bloc decreased from 17.3 percent in 2009 to 15.4 percent in 2010. The Middle East countries maintained a stable market share, in which United Arabs Emirates and Saudi Arabia took the lead with 8.3 percent and 5.1 percent respectively⁸. Although Kenya remained the main source of Uganda's informal imports, estimated at US \$ 37.5 million in 2010 compared to US\$43.3 million in 2009, it was among the countries that recorded a significant reduction in the informal imports bill together with DRC.

2.1.3 Direction of Trade in the Region

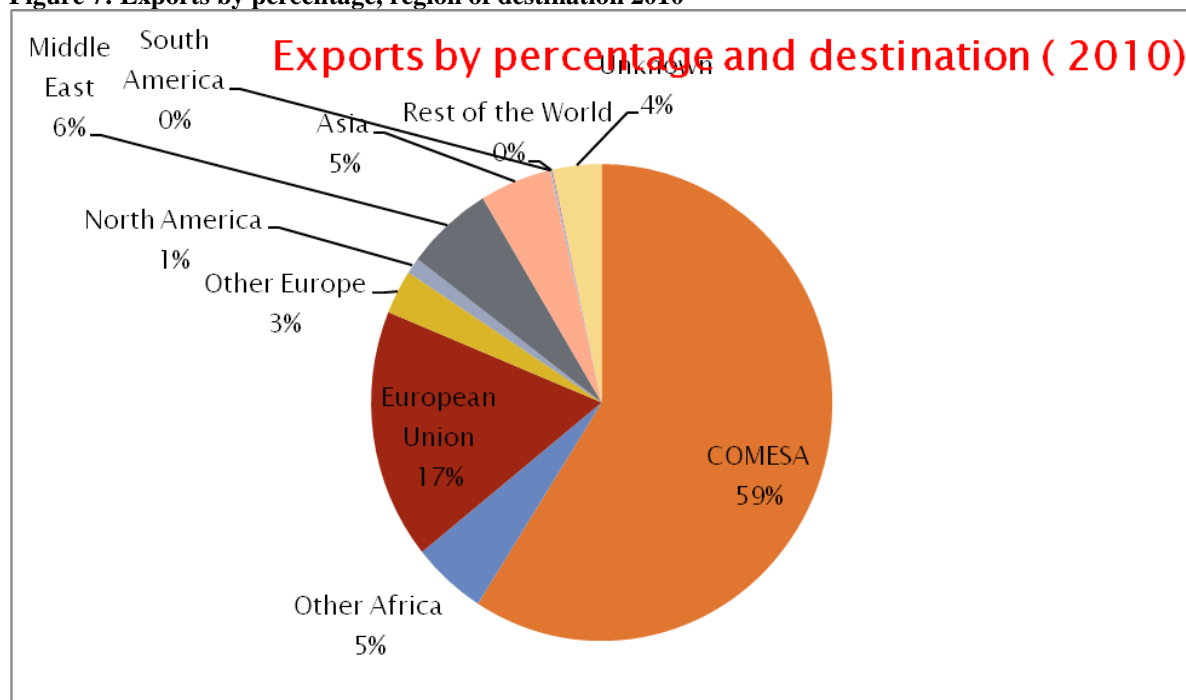
The Common Market for Eastern and Southern Africa (COMESA) and the European Union (EU) regional blocs remained the major destinations for Uganda's exports. Overall, the COMESA region took the largest market share (59.0 percent) in 2010 compared to 61.3 percent in 2009. The European Union market share slightly increased to 17.0 percent in

⁸ UBOS, Statistical Abstract 2011 – (Statistical Appendix Tables 4.3 D and 4.3 M)

2010 from 14.6 percent in 2009. Furthermore, the Middle East registered an increase in its market share in 2010 to 6.1 percent after a consecutive decline in the previous years. Although Sudan remained the main export destination among COMESA Member States, its market share fell drastically from 26.8 percent in 2009 to 18.9 percent in 2010. Conversely, DRC recorded a significant increase in her market share from 12.7 percent in 2009 to 15.2 percent in 2010. Similarly, both Kenya and Rwanda registered a slight increase in their market shares during the year 2010.

The other African countries outside COMESA region maintained a stable average market share from 2008 to 2010 (5.3 percent) with Tanzania taking the highest share of 4.2 percent in 2010. The total export value to the EU region increased slightly from US \$ 345.0 million in 2009 to US \$365.7 million in 2010 after an economic decline experienced in most parts of Europe. On the other hand, exports to Asia increased marginally to US \$ 103.7 million in 2010 from US \$ 102.6 million in 2009.

Figure 7: Exports by percentage, region of destination 2010



2.1.4 SMCA Compliance Requirements in the Market Segments

i) Domestic Market

Uganda has about 1,200 national standards of which 422 standards are compulsory and products have to meet the requirements. The compulsory standards are categorized into

food products, chemical engineering & other products, Metrology (measurement) products, electro-technology products, information technology & communications.

In additional, Sanitary and Phyto-sanitary (SPS) measures have to be complied with to protect human health through the protection and enhancement of health and safety of plants and animals.

ii) **Regional Market**

EAC: The EAC has harmonized over 1,200 standards in the region. In additional, there are harmonized SPS Measures to protect human, animal and plant health. There is also mutual recognition of the Quality mark on certified products from the partner states. East Africa Global GAP (E-GAP) is being rolled out for agricultural products. In order to access the markets in the EAC, one has to meet these requirements;

COMESA: In COMESA, standards are implemented through Protocols on Regional Harmonized Standards; COMESA Green Pass (equivalent certification to SPS and private standards (GG, BRC)' Market access is through adherence to these requirements.

iii) **High-end markets**

For the exporters, there are public and private standards and requirements, in particular, for products intending to access high-end markets. The requirements for processed agricultural and food products are focused on the implementation of processing facilities of quality and safety management systems such as the Hazard Analysis and Critical Control Point (HACCP)⁹ and Good Manufacturing Practices (GMP). Buyers of animal and plant products may be required to have Good Agricultural Practices (GAP) in place. Products are tested for residues of agrochemicals like pesticides and veterinary drugs. Animal and plant products should not carry pests and diseases that may be harmful to the importing country's ecosystem.

All of these compliance efforts need to be validated or proven. Importers require certification of the use of HACCP, GMP, GAP or other safety and quality systems; testing facilities have to accredited; national plant authorities have to certify the health of plant products; and a national Competent Authority has to attest to the safety of exported animal products.

Exports of plant and animal products to the United States generally demand a risk assessment which requires data on pests and diseases gathered from surveillance and monitoring. In cases where the country has no capacity to undertake surveillance and gather pertinent epidemiological data, it will not be allowed access to markets even if the private sector has the capacity for safe and quality products.

⁹ HACCP is a food safety management system for ensuring food safety that monitors critical points in the food chain by identifying specific hazards and measures for their mitigation (FAO Food Quality and Safety Systems Manual 1998).

Requirements specific to EU

For the export of animal products, the country, first of all, must be included in a list of countries allowed to export to EU. This means that the country has undergone inspection by EU's Food and Veterinary Office and found to have satisfied EU's animal and public health requirements. The exporting firm, then, must be included in a list of establishments approved by the exporting country's Competent Authority that has inspected the said firm on whether it fulfills EU requirements.

For food of plant and animal origin, the main requirement concerns the level of residues of agrochemicals, veterinary drugs, mycotoxins, heavy metals and environmental pollutants. The level of residue of a particular chemical in a specified plant and animal product should be below the maximum residue level (MRL) set by EU for that chemical/product combination. However, if there is no established EU-wide MRL but a country/national MRL, the product may be sold only in that country. If there is no EU or national MRL, the exporter or chemical firm needs to do a risk assessment to obtain import tolerance. Without risk assessment, this tolerance level is set to zero, making access to EU markets difficult. For food processing firms are required to be certified of HACCP plus other requirements of the private retail sector.

2.2 National Standards and Quality Policy

The national standards and quality policy is a very critical guiding principle in giving direction to the Uganda's national standards and quality infrastructure. In order to attain international standards and socio-economic development, a national quality infrastructure acts as drivers for easy access to the markets. The quality infrastructure comprises of standards and technical regulations, metrology, conformity assessment and accreditation. In order to improve Uganda's competitiveness in the domestic, regional and international markets through production, trade and consumption of quality goods and services, government developed the National Standards and Quality Policy.

This study is in-line with the following key strategic objectives of the policy of:

- Rationalizing, harmonizing and strengthening the standards Regulatory Framework.
- Developing and improving standardization and quality infrastructure.
- Strengthening human resource capacity in standardization.
- Improving conformity to national standards.
- Supporting both the public and private sector entities to comply with set standards.

It is anticipated that the implementation of this policy will lead to enhanced competitiveness of local industries, promote fair trade, and protect the health and safety of the consumers, including prevention of trade in sub-standard goods and to coordinate the provision of standardization services in Uganda.

2.3 Current Status of SMCA in Uganda

In Uganda, SMCA activities are carried out by both the public and private sectors. In addition to UNBS, there are other various Governments Ministries, Departments and Agencies that administer standards and technical regulations. These include Ministries responsible for: Agriculture, Animal Industry and Fisheries; Works and Transport; Information and Communication Technology; Energy and Mineral Development; Gender, Labour and Social Development; Internal Affairs; Health; Water and Environment; Education and Sports; and Local Government.

In addition there are sector and commodity based statutory agencies such as National Drug Authority (NDA), Uganda Coffee Development Authority (UCDA), Cotton Development Organization (CDO), Dairy Development Authority (DDA), Education Standards Agency (ESA), National Environment Management Authority (NEMA), Electricity Regulatory Authority (ERA), Uganda Communications Commission (UCC), Uganda Tourism Board (UTB), Uganda Wildlife Authority (UWA), Uganda National Roads Authority (UNRA), among others that carry out SMCA activities.

Inline the Government policy of liberalization of the economy, a number private sector organizations and firms offer SMCA services and some of these are accredited.

Besides there are a number of other policies, laws and regulations that address specific issues that are related to SMCA activities. These include: National Industrial Policy (2008); National Trade Policy (2008); National Health Policy (2009); National Tourism Policy (2003) and National Tourism Act of 2008; Food and Drugs Act, Cap 278; Uganda National Bureau of Standards Act, Cap 327; Weights and Measures Act, Cap 103; National Environment Act, Cap 153 and accompanying Regulations (1998); the Water Act, Cap 152; Electricity Act, Cap 145; Public Health Act, Cap 281; Fish Act, Cap 197; Local Governments Act, Cap 243; Petroleum Supply Act, 2003; Adulteration of produce Act, Cap 27 and enabling Regulations of 2003; Sale of Goods Act, Cap 82; EAC SQMT Act 2006; Hotels Act, Cap 90; Copy right Act, Cap 215; Insurance Act, Cap 213; Control of Agricultural Chemicals Act, Cap 29; and Customs and Excise Act, Cap 215.

Table 4: SMCA Requirements along the Product Value Chains

SMCA Requirements along the Agriculture Sector Value Chain				
SMCA Market Requirements	Pre- Production	Production	Processing	Product
Standards/ Technical Regulations	Public & private standards for inputs; Technical Regulations for inputs	GAP, GHP, GMP, HACCP, ISO 22000, ISO 14000, ISO 9000 series	GMP, GHP, HACCP, ISO 22000, ISO 14000, ISO 9000 series	SPS Measures, Product standards, Specific market requirements (eg EU regulations), Equivalence standards/guidelines e.g Private standards, ISO 9000 series

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Metrology	Calibration, verification	Calibration, verification	Calibration, verification	Calibration, verification
Testing	Good Laboratory Practices, Accreditation to ISO 17025	Good Laboratory Practices, Accreditation to ISO 17025	Good Laboratory Practices, Accreditation to ISO 17025	Good Laboratory Practices, Accreditation to ISO 17025
Inspection and Certification	Accreditation to ISO 17020, ISO 17065	Accreditation to ISO 17020, ISO 17065	Accreditation to ISO 17020, ISO 17065	Accreditation to ISO 17020, ISO 17065

SMCA Requirements along the Manufacturing Sector Value Chain

SMCA Market Requirements	Pre- Production	Production	Processing	Product
Standards/ Technical Regulations	Standards & Technical Regulations for machineries, equipments & Raw materials	GMP, ISO 9000 series, ISO 14000	GMP, ISO 9000 series, ISO 14000	Product standards, Specific market requirements
Metrology	Calibration, verification of equipments	Calibration, verification of equipments	Calibration, verification of equipments	Calibration, verification of equipments
Testing	Good Laboratory Practices, Accreditation to ISO 17025	Good Laboratory Practices, Accreditation to ISO 17025	Good Laboratory Practices, Accreditation to ISO 17025	Good Laboratory Practices, Accreditation to ISO 17025
Inspection/ Certification	Accreditation to ISO 17020, ISO 17065	Accreditation to ISO 17020, ISO 17065	Accreditation to ISO 17020, ISO 17065	Accreditation to ISO 17020, ISO 17065

SMCA Requirements along the Services Sector Value Chain

SMCA Market Requirements	Pre- Processing	Processing	Product
Standards/ Technical Regulations	Standards and Technical Regulation for inputs	GMP, HACCP, GHP, ISO 22000, ISO 14000 , ISO 9000 Series	Product standards, Specific market requirements (e.g. EU regulations), Private standards
Metrology	Calibration & verification of equipments	Calibration & verification of equipments	Calibration & verification of equipments
Testing	Testing for conformance	Testing for conformance	Testing for conformance
Inspection/ Certification	Accreditation to ISO 17020 /17065	Accreditation to ISO 17020 /17065	Accreditation to I

3. APPROACH AND METHODOLOGY

3.1 Approach

A combination of approaches was used to collect and analyze data and information regarding the producer's needs in the identified priority value chain and the SMCA capacity in Uganda. Specifically, these included but not limited to the following:

- Collection of secondary data through literature review/ desk study;
- Collection of primary data through interviews and focused discussions, with key informers in both public and private stakeholder institutions. A guide questionnaire was developed and used for this purpose;
- Discussions and consultations with the Client's focal person (Coordinator);
- Analysis and evaluation of the data and information collected,
- Preparation of study draft reports;
- Validation of the study findings on capacity needs both through meetings with the Client and a stakeholders' workshop; and
- Writing and submission of the final report with stakeholders' comments incorporated.

3.3 Selection of Value Chains

3.3.1 Product Value Chains

Value chains analysis (VCA) is an approach of presenting the value that is created in a product as it goes into transformation from the initial stages into a final product for the end-user. Value Chains Analysis typically involves identifying and mapping the relationship of: activities performed at each stage, value added, relationships and the structure of players - involved. Consequently, value chains can be complex when they reflect multi-stage production systems with involvement of multiple stakeholders. Therefore, the analysis here was limited to the SMCA related aspects of the value chains in the identified products.

Determining the product/sector on which to perform a value chain analysis required balancing a number of factors. The criteria for choosing a subsector or product for the VCA took into account a number of parameters including those outlined in Box 1 whose assigned weight depended on specific objective and the scope of the analysis.

3.3.2 Market Analysis and Value Chain Mapping

The VCA undertaken required a good understanding of the country's priority products, SMCA capacities and position in domestic, regional and global trading environment using trends in production, demand, exports and imports, sectoral contributions to GDP as well

as general policy and trade policy regime. Additionally, limited consultations with end-users of product in questions were necessary while undertaking a VCA.

Elements considered in market access analysis

- i) National, regional and global market trends in terms of values, volumes, market growth (actual and potential), market share, etc.;
- ii) Key suppliers and key markets, i.e. linkages with global value chains hence requiring assessment of competitive advantages of each major producing country; and the share and potential of the various market segments;
- iii) Market niche possibilities; e.g. growth potential, export potential, etc
- iv) Sensitivity to quality, standards and technical regulations for achieving domestic, regional and international competitiveness (including certification, accreditation, etc);
- v) National, regional and international policy, i.e. whether the product or service is covered by preferential trade agreements between certain countries or different trading blocks
- vi) The relative size of domestic, regional and international market
- vii) The nature, state , and linkages of SMCA institutional and infrastructure for the product or sector in question

The value chain mapping enabled the depiction of activities, actors and relationships among segments of the chain, the interaction between producers and intermediaries. The value chain mapping varied according to the product or sector under the analysis. Consequently, information from market analysis was useful in carrying out value chain mapping.

3.4 Specific Methodology¹⁰ Used to Identify the Product Value Chains

3.4.1 Introduction

Value chain data were available and best computed on the basis of specific product. Consequently, the approach for VCA essentially required products/subsectors to be studied. However, the objective was not to focus on a single product but to understand the standards and quality-related competitiveness aspects from the perspective of trade. The methodology used included:

¹⁰The methodology used was adopted from the Guidelines of ISO for Setting National Standardization Strategies

- a) Consultations with government Ministries, Departments and Agencies (MDAs), producers, product/industry associations, SMCA service providers and users, and other relevant stakeholders.
- b) Comparing data from case studies with information from other sources to ensure a representatives value chain.
- c) Analysis of data and information to arrive at logical conclusions and recommendations.

3.4.2 Selection of product value chains

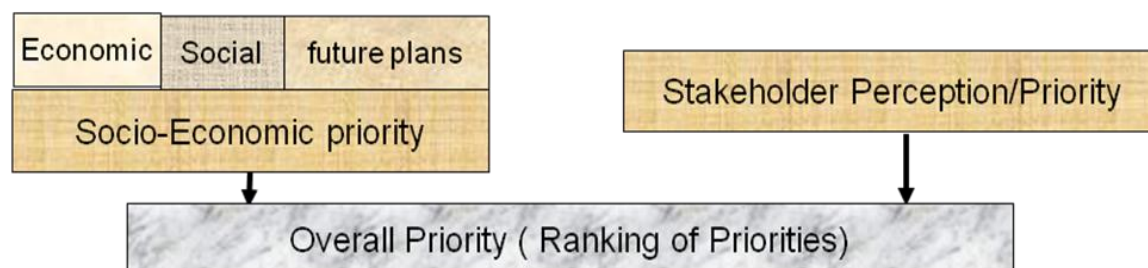
The study restricted its focus and emphasis on key public policy; public and private sector institutional and infrastructural factors underlying impediments to efficient and timely provision of SMCA services in Uganda. The emphasis of these aspects both helps in identifying critical areas with weaknesses and more importantly where to focus scarce resources in terms of interventions for enhanced trade growth, diversification and competitiveness.

3.4.2.1 Parameters Used for Selection of Product Value Chains

The selection of products value chains was based on the following 3 key parameters:

- i) *Economic importance of the sector which included:*
 - The economic weight of the sector in terms of its contribution to GDP;
 - Role of the sector in domestic, regional and international trade: in terms of national earnings;
- ii) *Social impact and importance which included:*
 - Impact on health and safety of the society
 - Role in employment
 - Environmental impact
- iii) Future needs in line with National Development Plans and Policies
 - Emerging sectors/issues

The scheme for overall priority assessment is therefore as represented below:



3.4.2.2 Priority Assessment

To assess socio-economic priority of a sub-sector/product, the different elements that contribute to its importance and urgency (such as economic and social importance and role in national development plans) were assessed.

The importance of the sub-sector/product, was then quantified for each element using a ranking system which facilitated the subsequent combination of the different elements as illustrated below:

- Rank 1 – very important and urgent
- Rank 2 – highly important
- Rank 3 – moderately important
- Rank 4 – of secondary importance
- Rank 5 – not important

a) Ranks for Economic Importance

Ranks were assigned to the important sectors based on industrial and trade statistics as follows:

- | | |
|--------|-----------------|
| Rank 1 | >10% of GDP |
| Rank 2 | 5 - 10% of GDP |
| Rank 3 | 1 - 5% of GDP |
| Rank 4 | 0.2 - 1% of GDP |
| Rank 5 | < 0.2% of GDPs |

b) Ranking for Social Importance

A Social importance ranking of 1-5 was used to assess n their national importance based on health, safety, environmental, employment or other problems.

- Rank 1 – very important and urgent
- Rank 2 – highly important
- Rank 3 – moderately important
- Rank 4 – of secondary importance
- Rank 5 – not important

c) Ranking for Future Needs

The following ranks were assigned:

- Rank 1 - Great importance in near future
- Rank 2 - Great importance, if conditions change
- Rank 3 - Some importance in medium term
- Rank 4 - Some importance in long term
- Rank 5 - No importance expected

d) Aggregating the various categories of ranks

The different element under 3.4.2.2 (a, b, c,) above were then combined and an overall socio-economic ranking based on average score were calculated in a matrix,

Based on the above quantitative ranking criteria, at least 10 priority product value chains were identified in each market segment for the study. Most of these products were found to be cross-cutting in the market segments.

3.5 Assessment of SMCA Capacity Needs of Producers

Based on the above criteria, 34 priority product value chains were identified in domestic, regional and international market, and selected for analysis. Specifically, sectors and/or products where Uganda has a comparative advantage were identified and prioritized.

The importance and contributions of imports that come into the country for domestic use were also considered.

A questionnaire was developed and used to collect data on the needs of the producers in terms of SMCA requirements i.e. standards; metrology and calibration; conformity assessment (testing, inspection, certification) and accreditation.

3.6 SMCA Service Providers Capacity Needs Analysis

An assessment of the application of the four core components of SMCA with respect to market segments of interest to Uganda was carried out. This specifically focused on:

- a. **Policy and legislation:** the current policy and legal framework for SMCA and whether they are in accordance with the principles of non-discrimination, avoidance of unnecessary trade restrictiveness, use of internationally harmonized measures, streamlining of conformity assessment procedures, and integration of competition.
- b. **Standards:** adequacy of the standards policy in place; the scope of the standards in place and their accessibility.
- c. **Conformity assessment:** the accreditation status of analytical and calibration laboratories; inspection and certification services; How the roles and activities of inspection and certification are organized; the separation of regulation and provision of commercial and demand driven inspection and certification services.
- d. **Information and communication:** awareness-raising.

3.7.1 Sources for the Identification of Key Economic Sectors

A review of the national and international economic data on Uganda's economic development and international trade was undertaken to determine the major economic sectors and product value chains in each of the three market segments under investigations i.e. domestic market; regional market and international market. The source of data and information used were from diverse sources and in particular the publications from the following agencies:

- i. **Uganda Bureau of Statistics (UBOS)** publishes, on an annual basis, national statistical abstracts containing national economic data needed to support evidence-based policy formulation and to monitor socio-economic development outcomes. Statistical Abstracts are the prime channel through which UBOS presents combined information derived from the latest surveys, censuses and administrative records

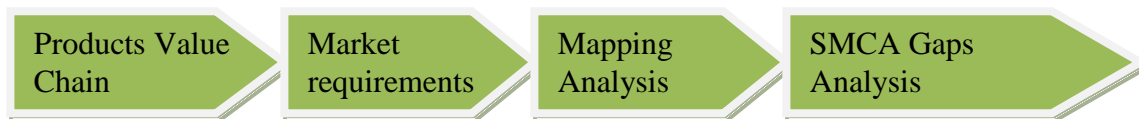
from Ministries, Departments and Agencies (MDAs) and from many other sources.

- ii. **International Trade Centre (ITC)** assists developing countries and economies in transition to take advantage of expanding trade opportunities in an increasingly complex global environment. ITC publishes international export data from various countries including Uganda.
- iii. **Reports from Government Ministries, Departments and Agencies (MDAs)** for example the MTIC, MAAIF, Uganda Export Promotion Board (UEPB), , ministry policy and strategic documents, as well as private sector including producers associations relating to trade and SMCA in Uganda.

The data and information from Ministries, departments and agencies (MDAs) and private sector were useful in determining the major economic sectors/products contributing to the Gross Domestic Product (GDP) in terms of exports to various markets; and those economic sectors that drive the domestic market and contribute to employment creation and income generation, etc. Trade related data were compared against the data from other sources for example the International Trade Centre (ITC) for purposes of validating the data on these products.

3.7.2 Preliminary Value Chain Analysis

For each of the identified products a value chain analysis and mapping was undertaken to identify the capacity needs regarding SMCA requirements; and Uganda's obligations in regional and international agreements based on the below conceptual framework.



3.8 Data Collection

Data collected were both qualitative and quantitative in nature and combined both primary data from the Key Informants and secondary data from the extensive literature reviews.

Other Data gathering approaches included review of reports, consultations, field visits and questionnaires were used to guide discussions throughout the meetings/interviews. With the identified key institutions, industry players, producers, private sector service providers including testing laboratories, firms providing metrology and calibration, inspections, certifications services, etc within the selected value chain.

Based on the outcome of the discussions and interviews, summary notes were developed and these constituted part of the data collected.

3.9 Data analysis

The data and information collected were progressively analyzed and appraised to identify the needs of the producers, existing capacities of SMCA service providers and gaps thereof within institutions and/or selected product value chains.

4. STUDY FINDINGS

4.1 Introduction

The findings of this study focused on identifying the SMCA needs of the priority product value chains of strategic socio-economic interest to the Ugandan economy and mapping them for a rationalized SMCA support as presented the objectives outlined in the terms of reference in appendix 1 of this report. . For each these activities undertaken relevant literatures were cited and the primary findings and discussion are also presented. The analysis brings out the needs of the different value chain actors, the SMCA service providers and the gaps in the services currently provided and the recommended areas of support.

4.2 Commodity Value Chains for the Study

The Commodity value chains identified from this study were i based on the socio-economic contribution and the national development goals of Uganda. The economic contribution included the economic weight of the sector in terms of its contribution to GDP; the role of the sector in domestic, regional and international trade: in terms of national earnings. The social impact and importance mainly comprised of the contribution of the sector in poverty eradication through in employment; environmental impact; effect on health and safety of the society; and the other key needs identified in the National Development Plans, and other emerging sectors/issues;

Based on the above criteria, 34 product valued chains were selected as detailed in the table 5.

Table 5: Identification of priority sectors for SMCA needs assessment

Sector/ Product Value Chain	Economic Importance		Social Importance	Future Role	Overall Ranking	Importance in the market segment
	GDP Contribution	Export Contribution	Social Contribution	Future Contribution	Average	
Agriculture						
1. Coffee	2	1	1	1	1.25	D, R, I
2. Cotton	2	3	1	1	1.75	D, R, I
3. Tea	2	3	1	1	1.75	D, R, I
4. Fish and Fish Products	1	2	1	1	1.25	D, R, I
5. Horticulture-Cut flowers	2	2	1	1	1.5	D, R, I
6. Dairy - Cattle (E)	1	3	1	1	1.5	D, R
7. Beef – Cattle (E)	1	3	1	1	1.5	D, R
8. Poultry (E)	1	3	1	1	1.5	D, R
9. Hides & Skins	2	3	1	2	2.0	
10. Maize	1	3	1	1	1.5	D, R
11. Rice (E)	2	2	1	1	1.5	D

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Sector/ Product Value Chain	Economic Importance		Social Importance	Future Role	Overall Ranking	Importance in the market segment
	GDP Contribution	Export Contribution	Social Contribution	Future Contribution	Average	
12. Bananas (E)	1	3	1	1	1.5	D, R, I
13. Hot Pepper & Chillies (E)	1	3	1	1	1.5	D, R, I
14. Avocados (E)	1	3	1	1	1.5	D, R, I
15. Passion fruits (E)	1	3	1	1	1.5	D, R, I
16. Beans (E)	1	4	1	1	1.75	D, R
17. Cassava	1	4	1	1	1.75	D, R
Industry and mining						
18. Oil & Gas (E)	1	2	1	1	1.25	D, R, I
19. Vegetable Fats and Oils & soap	1	3	2	1	1.75	D, R
20. Honey (E)	3	3	1	1	2	D, R, I
21. Sugar and sugar confectionary	1	3	3	1	2	D&E
22. Cement	1	3	2	2	2	D, R
23. Iron and Steel	1	3	3	1	2	D, R
24. Alcoholic drinks	1	3	1	3	2	D, R
Services Sector						
25. Education	1	3	1	1	1.5	D,R
26. Tourism (Hotels, restaurants, travel, guides,)	2	1	2	1	1.5	D, R, I
27. Electricity	2	3	1	1	1.75	D, R
28. Water	2	3	1	1	1.75	D, R
29. Construction	1	4	1	1	1.75	D
30. Transport	2	3	1	1	1.75	D, R
31. Trade (retail and wholesale)	1	3	3	1	2	D,R
Imports						
32. Drugs & Cosmetics	1	3	1	1	1.5	D
33. Vehicles	1	4	1	2	2	D
34. Electrical & electronics	1	4	2	1	2	D

Key:

E - Implies emerging sector

D- Domestic

R- Regional

I-International

Ranking

Rank 1 – very important and urgent
Rank 4 – secondary importance

Rank 2 – highly important Rank 3 – moderately important
Rank 5 – not important

4.3 SMCA Requirements of Producers in Uganda in Accessing the Markets

The consultants assessed the SMCA requirements of each of the identified commodity producers in Uganda in accessing local, regional and international markets. The findings are detailed below

4.3.1 Current status of SMCA for Coffee

Coffee is a major cash crop in Uganda it is predominately produced by small holder farmers on small acreage farms in the rural areas of the country. The income from coffee plays a major role in the livelihood of many poor and is the main source of foreign exchange for the country. Uganda Coffee Development Authority (UCDA) in the Ministry of Agriculture Animal Industry and Fisheries (MAAIF) is the government agency responsible for the sector. For Uganda coffee to have a competitive advantage in the export market they have to meet the technical regulations, international standards and other SMCA requirements of these markets.



Uganda Coffee Markets

The findings of the study indicate that Uganda coffee is exported¹¹ to European Union (EU): United Kingdom (UK), Netherlands, Spain, Italy, Denmark, Norway; and in the Regional to Sudan, Kenya, Rwanda and Egypt; others countries where Uganda coffee is exported include: China, Singapore, USA, Japan, Canada, Australia, Israel. Also, the coffee is also consumed domestically in Uganda.

Technical Regulations and Standards

The study identified the following Technical regulations and Standards as important to the market are: Codex¹², EU regulations:¹³ EC 396/2005, EC 178/2006, EC148/2008, Maximum

¹¹Uganda Export Promotions Board, Uganda Bureau of Statistics, Uganda Revenue Authority

¹²The Codex Alimentarius Commission (Codex) is the international food standards setting body recognised by the World Trade Agreements on Sanitary and Phytosanitary (SPS) and Technical Barriers to Trade (TBT) as being the reference point for food standards applied in international trade with the objectives of protecting the health of consumers and ensuring fair practices in the food trade.

Residue Limit (MRL), Directives 86/362/EC, 91/414/EC. At Regional and national levels, the following was found to be a requirement: EAC standards, COMESA Standards, national standards, HACCP and GMP. However, the findings indicate that there are no standards for coffee seedlings as planting material, roasted coffee and instant coffee.

Metrology

The findings of the study indicate that there was available regulatory framework for weights and measure law. The Industrial Metrology Laboratory at the Uganda National Bureau of Standards (UNBS) was accredited for mass measurement and therefore the calibration services for mass provided by the metrology laboratory were recognized internationally.

Testing

Whereas there is capacity to test coffee by the UCDA, the UNBS, Government Analytical Laboratory (GAL), and Chemipharm Laboratory, the study found out that the Laboratories of UCDA and GAL are not accredited which poses a challenge in meeting market requirements and acceptability of the test results.

Inspection & Certification

In the coffee value chain the requirements for quality and safety are certificate of conformity issued by UCDA and SPS Certificate by MAAIF. The study found limited compliance to EU regulation 834 (Organic) of exportation as organic Coffee. However, there is no national certification body which is accredited in Uganda to provide internationally recognized services and therefore the producers use foreign certification bodies which become expensive and increased cost of production, uncompetitiveness and may demotivate coffee exporters.

Accreditation

Accreditation is recognition of competence to provide the conformity assessment service. However, the study found that accreditation service was provided by international accreditation bodies, which is expensive to the users and increases the cost of doing business. To address this problem, the producers proposed that government through the Ministry of Trade Industry and Cooperatives (MTIC), should develop a national accreditation system to make services cost effective.

Recommendations and Proposed QUISP Support in the Coffee Value Chain

The study found gaps in following areas as far as coffee producers' SMCA needs were concerned that need to be supported to enhance competitiveness:

- i. The development of the standards for coffee seedling as planting material;
- ii. The development of the standards for roasted coffee and instant coffee;

¹³ Regulations are the most direct form of EU law - as soon as they are passed, they have binding legal force throughout every Member State, on a par with national laws. National governments do not have to take action themselves to implement EU regulations.

- iii. The development of the national equivalency to Global GAP and other private standards;
- iv. The testing capacity for agrochemicals in MAAIF be strengthened through provision of the necessary laboratory equipment's and consumables;
- v. The upgrading and accreditation of the UCDA laboratories to ISO 17025 to carry out internationally recognized quality analytical activities;
- vi. The upgrading and accreditation the coffee inspection services at UCDA to ISO 17020;
- vii. The upgrading and accreditation of UCDA as certification body to ISO 17065;
- viii. Increasing the number and train inspectors at all levels of inspection in the value chain.
- ix. Provide the necessary equipment and infrastructure including e-certification, to the inspectors to effectively perform their duties;
- x. Carrying out awareness throughout the value chain on SMCA market requirements;
- xi. Strengthen the capacity of industrial metrology at UNBS to effectively carry out calibration services;
- xii. Establish a national accreditation system by creation of a national accreditation body.

4.3.2 Current status of SMCA for Cotton

Cotton remains an important and strategic commodity in Uganda, it is firmly anchored in the farming system and supports over 2.5 million Ugandans and has a comparative and competitive advantage.

Cotton Development Organization (CDO), a statutory body established in 1994, regulates and promotes the cotton industry in Uganda. CDO is responsible for the classification of the crop and for preparation of classification statistics to internationally recognized standards.

Markets

Cotton from Uganda is exported to India, Switzerland, Rwanda, DR Congo, Kenya and the remaining volume is traded domestically and used in the value chain for production.

Technical Regulations and Standards

The study identified the following technical regulations and standards as important to the market by the producers: EU regulation¹⁴, EC 396/2005, EC 178/2006, EC148/2008, MRL Directives 86/362/EC, 91/414/EC, Japan agriculture Standards for Global Organic Textile Standards: At regional and domestic levels the standards are: EAC standard, COMESA Standards, national standards for garments and GMP.

Legal Metrology

There was available regulatory framework for weights and measure law. The Industrial metrology laboratory at the UNBS was accredited to mass measurement.

¹⁴ Regulations are the most direct form of EU law - as soon as they are passed, they have binding legal force throughout every Member State, on a par with national laws. National governments do not have to take action themselves to implement EU regulations.

Testing

The study found out that there was limited capacity to test cotton yarn by the CDO, MAAIF, UNBS and GAL. All the Laboratories are not accredited to test for cotton and therefore competent tests are required, producers have to send samples abroad for testing which is expensive.

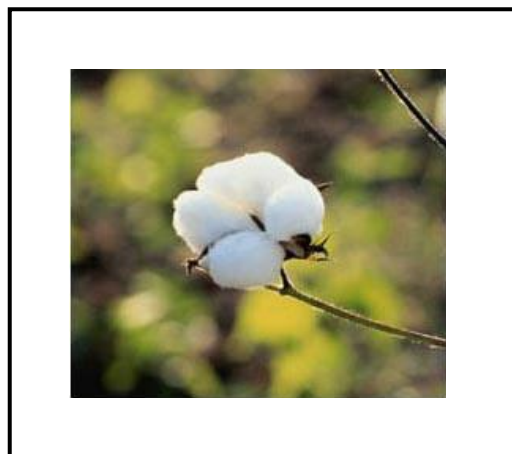
Inspection & Certification

The requirements are certificate of conformity issued by Uganda Cotton Development Authority and SPS Certificate by Ministry of Agriculture, Animal Industry and Fisheries) (MAAIF); Compliance to EU regulation 834 (Organic) and Japan standards if being exported as organic Cotton. The certification services provided by government regulatory authorities are not accredited.

Accreditation

Currently accreditation service is provided by international accreditation bodies which are expensive to the producers and the users.

A national standards and quality policy has been developed and approval by cabinet thereafter a legal frame work will be developed to allow the establishment of a national accreditation body.



Recommendations and Proposed QUISP Support in the Cotton Value Chain

The study identified the following gaps in the SMCA services that require support:

- i. Development of National Technical regulations on cotton;
- ii. Development of the national standards for cotton seedlings as planting material;
- iii. Development of standards for organic cotton;
- iv. Development of national standards for garments;
- v. Development of a national criteria/guideline for inspection for cotton;
- vi. Strengthening the testing capacity for farm inputs;
- vii. Strengthening and Accrediting Analytical laboratories to 17025 at CDO;
- viii. Accrediting the inspection services at CDO to ISO 17020;
- ix. Accrediting CDO as the certification body to ISO 17065;
- x. Increasing the number of inspectors at all levels of the value chain;
- xi. Carrying out awareness throughout the value chain on SMCA market requirements;
- xii. Strengthening the capacity of industrial metrology at UNBS to carry calibration services; and legal metrology to effectively inspect and verify measuring equipments;
- xiii. Develop national equivalency to private standards in the subsector;
- xiv. Establish a national accreditation body at MTIC.

4.3.3 Current status of SMCA for TEA

Uganda produces some of the highest quality tea in the world, the subsector employs over 60,000 small holder farmers and support the livelihoods of up to half a million people. Tea is mostly produced in the western part of Uganda. Uganda Tea Corporation Limited (UTCL) and Uganda Tea Development Agency Ltd (UTDAL) have been the leading tea producers and exporters. Uganda National Bureau of Standards and Ministry of Agriculture Animal Industry and Fisheries have been key in regulating standards and Phytosanitary quality requirement for tea.

Most Uganda's tea is sold through the Kenya auction house and are destined for the markets of United Kingdom, Arab Emirates, and Rwanda.

Technical regulations and standards

The study findings indicate that Uganda still lack national technical regulations on tea, and one of the biggest challenges facing the tea subsector in Uganda is lack of a tea Regulatory Authority or board and active tea research in the country. However, standards for black tea and tea trade glossary of terms have been developed. It was also noted that the sector has not harmonized the Codex Standard for tea, the ISO classification of grades by particle sizes and the standards for instant tea in solid form and for tea clones. Besides, the sector still faces the challenges of EU regulations for Maximum Residue Levels (MRLs), Organisms harmful to plants and plant products and contaminants in Foods.

Legal Metrology

The study indicates that there was available regulatory framework for weights and measures law. The industrial metrology laboratory at the Uganda National Bureau of Standards (UNBS) was accredited for mass measurement. and therefore the services provided are recognized internationally. Therefore, the tea subsector can use these services at UNBS for calibration of their equipments.

Testing

The study findings indicate that there were limited capacity to test Agrochemical inputs such as pesticide formulated products, fertilizers, and pesticide residues by both the Government Analytical laboratory, UNBS, Chemiphar and MAAIF, However it was noted that only the Chemiphar laboratory was accredited to test for pesticide residues.

Inspection and Certification

The Inspection and Certification of Uganda's tea destined for the different markets are carried out by UNBS and MAAIF. From the study it was confirmed that the Q Mark was a requirement for Uganda tea to access the regional market. However, access to EU market required certification by an accredited inspection body which capacity was lacking in Uganda. Therefore, the tea is subjected to another inspection in Kenya before auction, which was an additional cost to our farmers.

Recommendations and Proposed QUISP Support in the Tea Value Chain

The study findings identified SMCA capacity needs for the tea to access the markets competitively. There is need to provide support for the following interventions in the tea subsector;

- i. Develop a national technical regulation for tea and put in place a regulatory framework;
- ii. Harmonize the national standards for instant tea in solid form;
- iii. Develop standards for tea clones as planting material;
- iv. Support the upgrading and accreditation of MAAIF laboratory, Government Analytical laboratory and UNBS for pesticide residue analysis;
- v. Support the certification of all the tea being exported to the region with the Q Mark;
- vi. Increase the awareness on the SMCA requirements for accessing various markets;
- vii. Support the harmonization of tea standards by harmonizing with Codex and ISO and increasing effective participation in Codex activities;
- viii. Support the upgrading and accreditation of MAAIF as an inspection and certification body to ISO 17020 and ISO 17065 to gain international recognition;
- ix. Increasing the number and train inspectors at all levels in the value chain;
- x. Provide the necessary equipments including e-certification to the inspection services to be more effective;

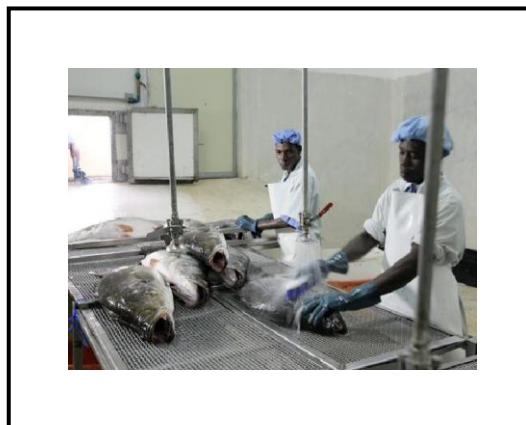
4.3.4 Current status of SMCA for FISH

Fish is one of the key foreign exchange earners for Uganda with a production capacity of 400 tons per month and annual earnings of approximately \$75.6M. Uganda's fish processing industry is mainly composed of private companies most of which are situated on the shores of Lake Victoria and the Nile Perch is the main catch for export. In recent years fish farming is gaining prominence. The main markets of Uganda's fish are European Union (EU), Japan, Hong Kong, Singapore, Australia, Dubai, Israel and the United States;

Technical regulation and standards

Compliance to International Quality Standards in the subsector is guaranteed by Uganda's Department of Fisheries Resources, Uganda National Bureau of Standards, Food Science and Technology Research Institute, National Environment and Management Authority and the Ministry of Health.

The study findings indicate that currently Uganda has harmonized its national standards for fish meals, Fresh fish handling and



processing (parts 1&2) with the East African Standards (EAS). The technical regulations and standards which have been identified as critical to the marketing of Uganda's fish in the international and regional markets are Codex, European Union (EU) regulations for: MRLs of pesticide residues in food, Contaminants in Food, Organic production and labeling. The study also indicates that there was ineffective participation in Codex activities and slow pace in the harmonization of national standards with Codex and there was no national equivalency for Global GAP for Aquaculture and other private standards.

Inspection

The subsector has an effective inspection system with well trained staff and has managed to get HACCP system for most of the factories exporting fish, though the sustainability of such a system require the training of more inspectors. However, the capacity to certify Uganda's fish as organic is still lacking.

Metrology

The study findings indicate that UNBS has some capacity to carry out calibration services which can be utilized by the subsector.

Testing

The study established that in Uganda, there was some available internationally recognized capacity to test fish destined for the different markets, in the National Fisheries laboratory at MAAIF, Uganda National Bureau of Standards, Government Analytical Laboratories, the Chemiphar laboratories; of which UNBS and Chemiphar are accredited. However, there are still challenges, with the high cost of analysis from the private laboratories.



Accreditation

The producers indicated that EU market required that analysis should be carried out by accredited laboratories. Chemiphar and UNBS are accredited; the Fisheries laboratories and Government Analytical Laboratory still lack accreditation.

Recommendations and Proposed QUISP Support in the Fish Value Chain

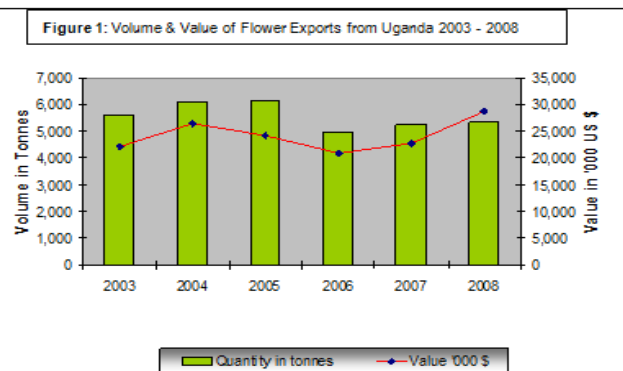
The producers identified gaps in the SMCA services that require attention to enhance the competitiveness of the subsector. They include:

- i. Supporting the upgrading and accreditation of the Fisheries laboratory and the Government Analytical Laboratory;
- ii. Supporting the development of standards for organic fish farming;
- iii. Developing a national equivalence GAP for Aqua culture;
- iv. Maintaining an effective sustainable HACCP based system for all the Fish processing plants;
- v. Training more inspectors on HACCP and ISO 17020;

- vi. Support the upgrading and accreditation of Department of Fisheries Resources as an Inspection Body to ISO 17065;
- vii. Support the development of the E-certification system in the subsector;
- viii. Provide incentives to private laboratories to reduce on the cost of testing.

4.3.5 Current status of SMCA for HORTICULTURE –CUT FLOWERS

The Floriculture subsector is one of Uganda's top ten foreign exchange earners contributing close to \$ 30 million in export revenue. The sector has grown from a single 2 hectares farm in 1992 to over 20 farms covering 190 hectares in Investment in the sector stands at over US \$ 54 million employing more than 6,000 people (UIA, 2009). The sector produces over 40 varieties mainly – Roses (70%), Chrysanthemum cuttings (25%) and potted plants (5%). The main flower growing areas in Uganda are in the central region around the Lake Victoria basin – in districts such as Mpigi, Mukono and Wakiso. Other flower growing areas are in South Western Uganda - Ntungamo District. Most of the export of Uganda's cut-flower is to the European Union (EU): Netherlands Belgium United Kingdom (UK) and the regional markets of DR Congo and South Africa



Standards

The finding of the study revealed that there is a harmonized East African Standard for Cut-flowers and Cut-foliage –Part 1: Fresh cut-flower specification. However the producer did requested for the development of a national GAP which is increasingly becoming international market access requirements.

Testing

The producers indicated that currently there is lack of capacity to handle the regular required tests especially for plant materials and at times samples are taken abroad which increases the cost of doing business



Certification and Inspections

The findings of the study reveal that most of the producers of flowers for export face the challenge of obtaining certification through a private standard scheme known as Milieu

Programma Sierteelt (MPS) guidelines. It was noted that there is no local capacity to provide the certification services and very expensive to get it from abroad. In addition to MPS-GAP, it was also noted by the flower producers that companies are required to meet the requirements of ISO 18001 standards and ISO 26000.

Recommendations and Proposed QUISP Support in the Cut flowers Value Chain

During the study, the producers identified SMCA capacity gaps that require support and they include:

- i. To develop a national GAP with EU equivalency to address the above multiple certification requirements;
- ii. Support to the subsector to develop a code of practice to ease the conformity assessment requirements;
- iii. Create awareness on the SMCA market requirements;

4.3.6 Current status of SMCA for THE LIVESTOCK SECTOR

The livestock sector is one of Uganda's important growth sectors contributing about US \$ 290 million to total GDP in 2008/09 up from US \$ 210 million in 2007/08. It constitutes 17 per cent of the agricultural GDP and is a source of livelihood to about 4.5 million people in the country. The sector is categorized into cattle, goats, pigs, sheep and poultry. The growing local and regional demand for meat and milk products has escalated the number of livestock in the country over the years to an estimated 68 million in 2008 compared with about 49 million livestock in 2002.

The 2008 national livestock census estimated the number of cattle at 11.4 million whereas the sheep, goats, pigs and poultry were estimated at 3.4 million, 8.5 million, 3.2 million and 27.5 million respectively (MAAIF, 2009). In economic value, cattle are considered the most important livestock although other animals such as goats, sheep, pigs and poultry are equally important. Uganda's cattle corridor extends from the south western, through central to the north eastern region.

Uganda's livestock export earnings have grown over the years from an estimated US \$ 5.75 million in 2004 to about US \$ 10.4 million in 2008. The Hides, skins and furskins are the major export earners followed by dairy products and bird eggs, meat, live animals and meat preparations. The major export markets for the products are Kenya, Tanzania, Rwanda, Southern Sudan, D.R. Congo and Burundi. Southern Sudan is the major destination for Uganda's meat products. Other potential export markets for livestock and



livestock products exist in the Middle East countries and the European Union.

Competitive strengths of Uganda's Livestock

- i. Ugandan beef industry is compliant with the Arabic norms of Halaal in the animal slaughtering process;
- ii. Tropical weather climate favours Livestock farming;
- iii. Adequate supply of trained & affordable human resources such as Veterinary doctors, agriculturalists, farm engineers and researchers.
- iv. Available market for livestock and its products in Uganda, within the EAC and the COMESA region comprising over 500 million people.
- v. Ankole cattle have low cholesterol levels (48.4mg-60.5mg/100mg of meat) and low fat (3.33%-6.48%) level which is a good health quality attribute.
- vi. Research & Development: Research in the sector is ably supported by the National Agricultural Research Organization (NARO) and the National Agriculture Advisory service (NAADS). Through research, technologies in the sector have been generated to improve productivity in animal health, pasture feed production, breeding and nutrition of livestock.

Regulatory framework of the livestock sector

The policies in the sector include the national delivery of veterinary services, national veterinary drug policy, national hides, skins and leather policy, animal breeding policy and the animal feeds policy among others. The laws and regulations include the Animal Diseases Act, importation of poultry and poultry products Act, Cattle Trading Act and Code of Meat Inspection Act. Uganda is reviewing some of the laws in view of its membership to regional trade groupings such as the East African Community, Common Market for East and Southern Africa and the World Trade Organization. The recently enacted Meat Industry development law was instituted to improve production, processing and marketing of meat and meat products.

4.3.7 Current status of SMCA for DAIRY PRODUCT

The livestock subsector in Uganda contributes 18% of the agriculture gross domestic product and between 7%-9% of the national gross domestic product (GDP). Of this the dairy sector is estimated to be contributing up to 45% and play an important role as a source of food, income and employment. Within the

livestock industry dairy continue to receive all the attention. The Dairy Development Authority (DDA) in MAAIF together with the Uganda National Bureau of Standards advice government on standards and coordinate the compliance with the subsector standards.



Most of the milk from Uganda is consumed domestically and within the EAC and DR Congo.

Regulations and standards

From the study it was found that some work has been done in developing standards in the subsector. The standards currently being used by the sub sector were the harmonized East African standards for UHT milk, sweetened milk; milk based baby food and the dairy milk ices and dairy ice creams. However, the standards for other milk products like butter, cheese, ghee and milk powder needed to be developed. Most producers were not very familiar with milk standards and this call for awareness. The other challenges sighted were the harmonization of national standards with codex because of the low participation in codex committee for dairy product.

Metrology

The study findings indicate that UNBS has some capacity to carry out calibration services which can be utilized by the subsector.

Testing

The study findings indicate that there was existing capacity to test for milk quality at the DDA, UNBS, the Government Analytical Laboratory and Chemiphar, however despite the capacity to test the dairy products, the study confirmed that the laboratories were constrained by the inability to test for residues of veterinary drugs, additives, tuberculosis, and broccella; most of the raw milk was not tested regularly at the collection centers because of limited testing capacities. This therefore calls for building capacity to test for these parameters.

Inspection and Certification

The study found that there was limited capacity to carry out certification of milk and milk products to the Q-Mark. Most of companies were working to achieve the Q- Mark, however most producers interviewed did express the challenge of meeting quality requirements at the farm gate levels.

Recommendations and Proposed QUISP Support in the Dairy Value Chain

The study identified the following needs in the SMCA services of the dairy subsector that need support. And they include:

- i. Develop national standards for Ghee, Cheese and butter
- ii. Train the dairy farmer, on ensuring good agricultural, hygienic and husbandry practices;
- iii. Train the Processors on Good Manufacturing Practices;
- iv. Support the building of capacity to test for residues of veterinary drugs, additives, tuberculosis and broccella;
- v. Train local auditors and certifiers to accreditation to ISO 17020, ISO 17065;
- vi. Support the development of the E-certification system in the subsector;

- iv. Upgrade laboratory in DDA up to accreditation to 17025
- v. Promote awareness on milk standards throughout the value chain.

4.3.8 Current status of SMCA for MEAT: BEEF AND POULTRY PRODUCTS

Beef products on the Uganda market include: meat cuts such as sirloin, fillet, topside, rump steak, t-bone steak, rib roast, silverside, eye roast and shin-on bone; Coarse ground products like, meat burgers, minced meat, barbeque sausages, merguez, and fine emulsified products like fresh beef sausages, frankfurters and meat loaf.

The study findings indicate that the main challenges that were facing the subsector were abattoirs and butchers that could be upgraded to meet international requirements. Animals were slaughtered near the place and time of consumption. Towns were supplied with meat by movement of animals to the towns, where they are slaughtered and quickly distributed to consumers. Nearly half the animals slaughtered in the country were slaughtered at family level. There was no infrastructure or meat quality assurance service in this category.

Slaughter at village markets: At every village market, which may be weekly or bi-weekly, there was meat offered for sale that was slaughtered on a slab for some markets and on the ground for other markets. There was limited infrastructure and no meat quality assurance service.

Town slaughter slabs: most of towns in the cattle corridor had slaughter slabs that served as places of slaughter for the supply of meat to town residents, restaurants and hotels. These concrete slabs were built on raised ground to enable the animal to be slaughtered on clean ground; most of these slabs had no facilities for slaughtering animals off ground, or other basic facilities.

Urban slaughter houses: these were found in all major towns and most of them have rudimentary slaughter facilities and butchery establishments however, most of these facilities are in dire need of rehabilitation. Abattoirs: There are two abattoirs in Uganda which slaughter and cut meat for the local market located in Kampala: Uganda Meat Industries and City Abattoir, Kampala.

Poultry: One of the major livestock kept in Uganda were chicken, turkey, guineas fowls, ducks, pigeons, geese and ostriches, of which chicken were the most kept poultry. The production systems were mainly two; commercial intensive where the birds were kept in confinement, and mostly found in urban centers, with exotic and cross breeds. The other was free range, mostly for local breeds in rural areas.

Technical Regulations and Standards

The current standards being used by the sub sector are Codex, harmonized East African Standards for Canned corned beef and Meat grades and meat cuts. The study established that there was need to develop and implement slaughter house standards and hygiene standards at butcherries, there was generally lack of awareness on Good Veterinary Practices at the farm gate level. It was established from the study there was still limited

exchange of information on local and international markets which leads to lack of scaling up on quality requirements.

Testing

The study findings indicate that there was testing capacity at the UNBS, MAAIF, DDA, Government Analytical laboratories, however there was still lack of capacity to test residues of veterinary drugs. In addition, all the laboratories were not accredited to the testing of residues of veterinary drugs.

Inspection and Certification

The study indicates that inspection was carried out by MAAIF, who ensure compliance to national legislation, however the study found that there was need to have all the inspectors involved in certification accredited and the slaughter houses and butcherries certified to HACCP.

Recommendations and Proposed QUISP Support in the Meat Value Chain

The producers of meat identified the following needs that require support:

- i. Preparation of simplified guides and standards that can be understood by stakeholders; and also reduce the cost of standards;
- ii. Undertaking veterinary residue analysis in meat to support export market and domestic consumers' protection;
- iii. Training of inspectors and certification bodies and upgrading up to accreditation; and development of E-certification system;
- iv. Development of national equivalence for Good Agricultural Practices;
- v. Development and implementation of Animal feed standards;
- vi. Development of standards for transporting animals, and animal products;
- vii. Development of training courses for different professions in meat industry;
- viii. Train farmer on Good Veterinary Practices;
- ix. Development and Implementation of the slaughter house standards;
- x. Development and Implementation of hygiene standards for all Butcherries;
- xi. Supporting the accreditation of UNBS, MAAIF, DDA and Government Analytical Laboratories;
- xii. Promote the exchange of information on local and international meat standards;
- xiii. Supporting the certification of the slaughter houses and butcherries to HACCP systems;

4.3.9 Current status of SMCA for HIDES AND SKINS

Uganda is estimated to have a large population of livestock of 12.1 million cattle and 3.6 million sheep and 13.2 million goats (UBOS Statistic Abstract 2011) which is the main source of hides and skins. Uganda's hides are naturally of high quality, texture and heavy substance and these makes them suitable for the production of shoes uppers and

upholstery. The private sector players are Leather Industries of Uganda. Skyfat Tannery, Jumbo Tannery, Novelta Tannery and the Uganda Fish Skin tannery. Most of the hides and skin are exported to Turkey and the far East market of Hong Cong, and China.

Technical regulations and Standards

Whereas the study was able to establish that there were the following codes: raw hides and skins-part-1: by staking, Part 2: by drying and Part 3: by pickling, there were challenges faced by the producers that include, lack of grading standards for raw hides and skins, environmental standards on cleaner production, wet blue processing, lack of awareness on the total quality management throughout the value chain. There was a need to review and update the current regulatory frame work for the subsector.

Inspection and certification

From the study it was established that inspection was carried out by MAAIF and at the same time some form of self-regulation was carried by the association. Whereas this was the practice, there was the challenge of having few inspectors who were knowledgeable about the quality requirements and ensuring proper animal husbandry, flaying and preservation of hides and skins.

Metrology

The study findings indicate that UNBS has some capacity to carry out calibration services which can be utilized by the subsector

Testing

Testing of hides leather and skins was carried out at UNBS, other tests were out sourced from Kenya which makes it very expensive for the producers and hence there was need to strengthen the capacity of the UNBS to test all the parameter recommended for hides and skins by the market.

Recommendations and Proposed QUISP Support in the Hides & Skin Chain

The study findings identified the following needs that need to be supported:

- i. Develop a national policy for Hides, skins and leather;
- ii. Develop the standards for grading of hides and skins which should be harmonized for the whole East African Region and COMESA;
- iii. Develop the standards and guideline for cleaner production of hides and skins;
- iv. Train all the framers at the farm gate level on ensuring proper animal husbandry, flaying and preservation techniques;
- v. Strengthen UNBS capacity to test hides and skin;
- vi. Undertake a human resource development of inspectors through the value chain;

4.3.10 Current status of SMCA for GRAINS AND CEREALS: MAIZE, RICE, etc

Grains and cereals are very important crops in Uganda. They are one of the most highly cultivated crops. Maize is one of the grains that is widely consumed by the population in Uganda. Other than food, maize has had a wide range of other uses -including processing of livestock and poultry feeds and making of local brew. Also, the crop is the number-one source of income for most farmers in eastern, northern and north-western Uganda (Ferris et al, 2006). Most maize from Uganda is consumed locally and also exported to Kenya, Rwanda, Burundi and Sudan.



Rice has become an important cash crop in Uganda with estimated harvest area of about 113,000 hectares and a total production of 154,000 metric tons. Consumption of rice is increasing in Uganda and this is attributed to changes in consumption patterns, increasing population and urbanization. Total domestic consumption is estimated at 200,000 metric tons. With a domestic production of 154,000 metric tons, Uganda has a rice deficit of about 50 metric tons, which is met through rice imports mostly from Asia. Most of the rice produced is traded domestically and within the EAC and COMESA.

Technical Regulations and Standards

The study findings indicate that the subsector was using the East Africa harmonized standards such as: milled whole maize meal and maize products specification, Maize grain specification, Maize gluten specification, maize bran as animal feed and maize seeds for planting specification; and EAS specification for milled rice. However, the standards for farm major inputs for rice production such as rice seeds, herbicides, pesticides and fertilizers based on new safer chemicals and codex standards needed to be supported. The producers were of the view standard for rice should be disseminated throughout the value chain. Also despite the availability of standards Uganda has not developed a national GAP and the participation and harmonization of standards with codex was still a major challenge.

Inspection and certification

The producers acknowledged that inspection was done by MAAIF and UNBS. However, effective monitoring of the quality of farm inputs at the farm gate level was still a major challenge to the sub sector. Efforts by the MAAIF Crop Protection Department were handy but this has been constrained by lack of equipments.

Testing

Testing of grains and cereals for minimum quality requirements were carried out by the Uganda National Bureau of Standards, Government Analytical Laboratories and Chemiphar; the testing of Mycotoxin was still limited to aflatoxins, there was urgent need

to develop capacity to test fumonisins and other mycotoxins. There was no capacity to monitor and test for genetically modified cereals and grains.

Metrology

The service of the calibration have been limited to the weighing scales, however the study discovered that the calibration of farm equipment's was still a challenge.

Accreditation

There was need to upgrade and accredit the laboratory services to improve on the competitiveness of the subsector especially in the international markets.

Recommendations and Proposed QUISP Support in the Grains and Cereals Value Chain

- i. Develop a national GAP to address the issues of farm gate requirements;
- ii. Harmonize national standards to codex;
- iii. Develop the national capacity to test Fumonisin and other Mycotoxin at the MAAIF, Government Analytical laboratory and UNBS;
- iv. Develop the national capacity to test GMO at MAAIF, the Government Analytical Laboratories and UNBS;
- v. Develop the capacity of MAAIF to monitor the quality of farm inputs such as fertilizers and pesticide formulations;
- vi. Training more farms on good drying and storage of maize at the farm gate level;
- vii. Strengthen the inspection systems at MAAIF and UNBS and upgrade it to E-certification;
- viii. Build the national capacity of the industrial metrology at UNBS to carry out calibration of farm equipment's.

4.3.11 Current status of SMCA for Fresh Fruits and Vegetables

Uganda is gifted with a wide variety of succulent, tropical fruits because of its tropical location. Fruits contribute to a big share of the Uganda's non-traditional agricultural exports and to the foreign exchange earnings. The major fruits produced include: Passion fruit, Papaya, Jackfruit, Citrus, Pineapple, Mango, Avocado, Apple banana, Bogoya, Chili pepper (Cavendish), Watermelon, Guava, Grape, Strawberry, Melon and Tree tomato. The main market of Uganda's fresh fruits and vegetable are: European Union (EU), COMESA, EAC and domestic.

Technical Regulations and Standards

The standards available to the sector were: Codex, Kenya GAP, harmonized East African standards for citrus fruits and avocado. Whereas there was every effort to develop

standards such as EAC-GAP, Uganda Global GAP National Interpretation Guidelines, statutory health standards for fruits in all the markets was still a major stumbling block. In general the study found that for example they were not well understood by growers and exporters. Also the EU list of recommended plant protection agents have not often been well communicated to the producers; there was also a need for the registration of safer new agrochemicals and major improvements in chemical application techniques, water quality and pack house hygiene. As more attention has got to be given to the presence of private standards which are an emerging bottleneck for most producers of fresh fruits and vegetable.

Testing

There was existing capacity in the MAAIF, Government Analytical Laboratory, UNBS and Chemiphar, for Agrochemical and plant pathogens, however acceptability of these results depends on the accreditation status of each this laboratories. The only accredited laboratory was Chemiphar for pesticide residue but was sighted as being very expensive by the producers.

Inspection and Certification

Inspection and certification of Fresh fruits and vegetable were carried out by the MAAIF though the current number of inspectors to cover the whole value chain was still a limitation and most of the local certification service providers were not accredited. Building of local capacity to certify Uganda's fresh fruits and vegetable was still a big challenge because of the cost incurred when external certification bodies were used.

Recommendations and Proposed QUISP Support in the Fresh Fruits and Vegetables Chain

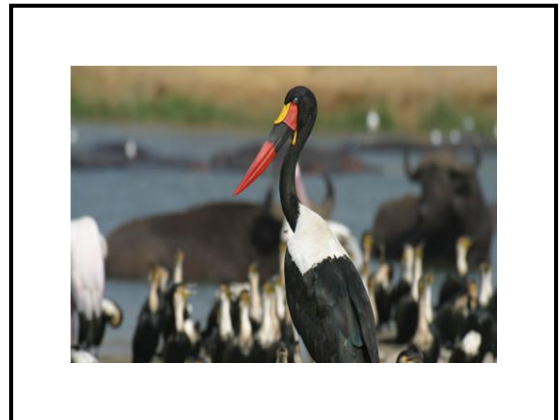
- i. Develop and implement the national equivalent to Global GAP, Kenya-GAP, E-GAP;
- ii. Train farmer on Good Agriculture Practices (GAP), organic farming, Good Hygienic practices and HACCP;
- iii. Support the upgrading and accreditation of the Laboratories in MAAIF, UNBS and Government Analytical Laboratories to be accredited to test for Agrochemicals, grading and plant pathogen;
- iv. Support the upgrading and accreditation of inspectors and auditors from MAAIF, UNBS, UGOCERT to ISO 17020, ISO 17065; and E-certification;
- v. Support the implementation of self-regulation in the fruits and vegetables subsector;

4.3.12 Current Status of SMCA for TOURISM

Uganda is blessed with a unique tourism package combining variety of wildlife tourism, rafting, mountaineering, bird watching and the unique cultural community. The Uganda Tourism Act, (2008) provides for licensing, regulating and controlling of the tourism sector; to give effect to the implementation of the tourism policy of government; to reconstitute the Uganda Tourism Board to make it private driven.

Uganda Tourist Board (UTB) is a statutory organization established by the Uganda Tourist Board Act. The Board's mandate is to promote and popularize Uganda as a viable holiday destination both locally and internationally in order to: increase the contribution of tourism earnings and GDP; improve Uganda's competitiveness as an international tourism destination; and increase Uganda's share of Africa's and World tourism market.

The Uganda Wildlife Authority (UWA) is a semi-autonomous government agency in the Ministry of Tourism that conserves and manages Uganda's wildlife for the people of Uganda and the whole world. The agency was established in 1996 after the merger of the Uganda National Parks and the Game Department, and the enactment of the Uganda Wildlife Statute, which became an Act in 2000. UWA is mandated to ensure sustainable management of wildlife resources and supervise wildlife activities in Uganda both within and outside the protected areas. With 10 national parks and 12 wildlife reserves under its jurisdiction, UWA's role in managing the country's tourism industry and attracting investors to the sector has been a significant one. It also manages five community wildlife management areas and 13 wildlife sanctuaries. The challenges facing the management and conservation of wildlife and biodiversity in Uganda are many, and they include poaching, competition in the regional tourism market, human wildlife conflict, wildlife crimes and the standards.



The Key Private Sector Players in the Tourism Sector involved in the tourism industry can be classified into four broad categories:

- i. *Hotel and accommodation services:* Currently over 90% of all accommodation services in the country are owned by private investors;
- ii. *Tour and Travel Operators:* There is currently over 140 tour and travel operators in the country, including international names such as Abercrombie and Kent, Afri-tours and Travel and Volcanoes.
- iii. *Tourism Auxiliary Service Providers:* This category includes producers of promotional materials for example Uganda Tourist Board, organizers of international and internal travel markets and trade fairs. Local craft shops have also sprung up, selling items from the various cultural groups of the country.
- iv. *Airlines and overland transport service providers.*

The Uganda tourism sector contributes 8% of Uganda's GDP and is seen as one of the sectors with the potential and most promising growth prospects. The tourism sector is estimated to provide direct employment of approximately 21,000 and up to 240,000 jobs if informal employment is considered. Therefore, tourism has the potential to contribute

highly to economic growth, employment and income generation, and poverty reduction in the country.

Regulations and Standards

UTB and UWA are some of the regulators in the sector. Not much has been done as far as developing standards for the subsector though it is guided by a legal framework of the Ministry of Tourism. For the sector to compete effectively with the neighboring tourism destinations, Uganda needs to develop and implement quality management standards for the industry together with the standards and guidelines for grading of hotels and other tour facilities.

Inspection and certification

Currently wildlife movement permits are issued by the MAAIF, and this process needs to be accredited. Overall certification is at its minimal in the country.

Recommendations and Proposed QUISP Support in the Tourism Value Chain

The study identified the following gaps that require support:

- i. Develop standards and guidelines for hotels and any other Tourism Auxiliary Service Providers;
- ii. Support the upgrading and accreditation of the Tourism Auxiliary Service Providers;
- iii. Develop and implement a quality management system for the tourism subsector up to accreditation;
- iv. Train more inspectors to help guide the sector to meet the quality requirements;
- v. Create awareness on the SMCA requirements in the tourism subsector.

4.3.13 Current Status of SMCA for OIL AND GAS

Currently oil and gas is imported, however, it is an emerging subsector for the future of the economy of Uganda. The effort to promote the sector has led to the intensified exploration work in the Albertine Graben and other parts of the country which are underlain by sedimentary rocks, which have the potential for generating and accumulating petroleum deposits. With this potential it is projected that it will improve on the country foreign exchange earnings and create a lot of jobs which will ultimately lead to poverty reduction.

Standards and Technical Regulation

Given the potential there has been on-going effort to develop standards for sector by the Uganda National Bureau of Standard and the Ministry of Energy and Mineral Development (MEMD). It is anticipated in future as the sector begins production other standards need for the products and byproducts of petroleum refinery will be required.

Testing

There is limited capacity to test for imported petroleum products at UNBS though this capacity has got to be upgraded in future to cater for the overall needs of the sector. The

current manpower and equipment's in the laboratory is inadequate, and cannot support the subsector during production.

Metrology

The country has the capacity to carry out industrial metrology, however this capacity is seriously constrained by the inability to calibrate equipment's for the oil subsector especially when production commences, hence this calls for equipping and upgrading the current industrial metrology laboratory up accreditation beyond the current status of only mass.

Recommendations and Proposed QUISP Support in the Oil & Gas Value Chain

- i. The current UNBS petroleum laboratory needs upgrading to cater for all the tests require for petroleum products including byproducts;
- ii. Upgrade of the current status of the metrology laboratory at UNBS;
- iii. Train more analysts in the testing of petroleum products.

4.3.13 Current Status of SMCA for Drugs and Cosmetics

The pharmaceutical sector in Uganda has over the last 15 years evolved to have two large plants (Quality Chemicals and Abacus Parenterals Drug Limited), six medium and one small scale manufactures. Despite this trend the country still imports over 90% of its essential medicines and cosmetics and is also faced with the challenge of some substandard drugs because of the some porous borders. The National Drug Authority under the Ministry of Health is the regulatory agency in Uganda responsible for the regulation and quality of medicines and cosmetics value chain from the supply of inputs, production and distribution of output for Uganda.

Technical regulation and Standard

The study indicates that the National Drug Authority uses guidelines and standards developed by World Health Organization and Standards develop by the British and American Pharmacopeia. Currently Uganda has the regulatory framework for drugs and the standards for cosmetic products; however the influx of prohibited cosmetic containing hydroquinone and mercury, and counterfeit drugs is still a big challenge.

Testing

There is adequate capacity to test drug by the National Drug Authority laboratory and the Government analytical laboratory. However both laboratories are not yet accredited.

Certification and inspection

The National Drug Authority is mandated to carry out inspection and certification of pharmaceutical facilities and manning the entry points at the border, however the number

of inspectors was still inadequate. The inspection services are not yet modernized through the ICT infrastructure to provide for e-certification.

Metrology

The utilization of the service of the Uganda National Bureau of Standards Metrology department for calibration of the equipment's has been ongoing, however the study discovered that there was limitation on calibration of temperature and pressure equipment's in the laboratories, and factories.

Recommendations and Proposed QUISP Support in the Drugs and Cosmetics Chain

- i. Support the upgrading of the National Drug Authority laboratory to accreditation status and installation laboratory information management system;
- ii. Support the capacity of Government Analytical laboratory to test hydroquinone and mercury;
- iii. Support the upgrading of the UNBS Industrial Metrology Laboratory to calibrate pressure and temperature equipments in the laboratories and factories;
- iv. Recruit and train more inspectors to increase on the effectiveness of the of the services;
- v. Upgrade and accredit the inspection services including the development of E-certification infrastructure.

4.3.14 Water

The water sector is a very important sectors in Uganda, it directly impacts on the life of the people and overall productivity of the population. Water supply and sanitation are among the key issues emphasized under the National Development Program which is the key medium term government framework for ensuring rapid economic development and social transformation. The study found that the standards for package drinking water, drinking portable water and natural mineral water were developed based on codex and WHO guideline by the Uganda National Bureau of Standards, in collaboration with the Ministry of Water and Environment (MWE), Directorate of Water Development (DWD), National Water and Sewerage Cooperation (NWSC) and the private sector and harmonized among the East African member states The majority of the local companies packaging mineral water have attained the UNBS Q-Mark.

However the study observed that occasional water-borne diseases outbreaks and chemical pollutants are still a common threat to the health of population especially in slum areas, which requires a lot of vigilance and the strengthening of inspections and testing to monitor compliance with water standards .Some provision of the standards when it comes to labeling of natural mineral water is still a challenge for the industry.

Recommendations and Proposed QUISP Support in the water Chain

- i. Strengthen the capacity of Public health inspectors at the local government level to inspect water quality by recruiting more public health inspectors.
- ii. Strengthen the capacity of the laboratories at the National Water and Sewerage Cooperation, Ugandan National Bureau of Standards, Directorate of Water Development, Government Analytical Laboratory, Public Health laboratory to test for water quality.
- iii. Ensure the implementation of HACCP based approach in management of water supply meant for human consumption.
- iv. Provide tailor made training for industries to carry out self-regulation and monitoring.
- v. Increase awareness on water standards among the sector players.

4.3.15 Construction Sector

Liberalization of the economy of Uganda since 1990 has spurred development in a variety of sectors bringing with it an upswing in the building and construction industry with a growth of 5.7% annum¹⁵ for the last 10 years. From the study it was discovered that the success of the sectors was impacted upon by the use of high quality building materials like paints, cement, clay bricks, tiles, corrugated iron sheet, steel bars, steel doors etc. Whereas some standards have been developed and harmonized across the EAC, the standards for clay tiles, cement bricks, pavement bricks steel door among other have not been developed and yet they are extensively used by the building industry in Uganda. The study found that sector is also faced with the limited national capacity to test most of the parameters recommended in the standards for all the building materials mentioned above.

Recommendation

- i. The standards for the following construction materials should be developed: brick tiles, steel doors and windows, cement bricks, clay bricks, pavement bricks, etc
- ii. Strengthen the capacity of the Central Materials Laboratory in the Ministry of Works (MoW) and UNBS to test all the building materials to meet all the requirements in the standards.

4.3.16 Steel sector

The Ugandan steel industry has been growing at unprecedented rates because of the boom in the construction industry in the country and this has also lead to the growth of the steel and iron work. Currently the sector is donned with a few companies which have been operating steel mills in the country over the years, first based on imported billets and later predominantly using scrap iron.

¹⁵ Statistical Abstracts (UBOS),2010.

The study found that in Uganda the value chain for steel products produced locally mainly starts with the scraps. The standards for the products have been harmonized to the East African standard; however it was observed quality related issues have also not been effectively addressed to ensure that the standard and reliable products reach the end users. Limitation in testing capacity by both the central material laboratory and the Uganda National bureau of Standards Materials laboratory is still a major challenge.

Recommendation

- i. Strengthen the capacity of the Uganda National Bureau of Standards and the Central Material Laboratory to test steel and iron in accordance to the standards;
- ii. Support the upgrading and the accreditation of the UNBS material laboratory and Central Material Laboratory;
- iii. Strengthen the inspection capacity of UNBS and Ministry of Works to verify the quality of steel in the market;

4.3.17 Timber

In Uganda the forestry subsector constitute a very important resource to the economy. In 2005, Uganda had a total of 3.6 million hectares of forest land compared to 4.9 million hectares in 1990. This is a reduction of 36.1 percent over a period of 15 years. As a proportion, in 1990 forests covered 20.4 percent of the land area of the country. By 2005 the land under forests had reduced to 15.0 percent which is equivalent to 1.3 million hectares in the 15 years. The deforestation is mainly due to the conversion of forest land to other land use types such as agriculture and harvesting as timber, charcoal, among others.

The Uganda Forestry Authority (UFA) is the competent authority responsible for the regulation of the subsector. One of the most important products of forestry is timber used in the construction and poles used for electricity. Whereas the demand for quality timber for construction is on the rise in Uganda due to a boom in the building construction industry, the study found that little has been done as far as standards for timber products are concern when it comes to addressing the overall value chain. One of the specific standards identified as very important to the subsector were:

- i. Seedling national standards for all the species planted in Uganda
- ii. Standard Test Methods for Small Clear Specimens of Timber.
- iii. Timber-Classification into strength groups.
- iv. Characterization of visually classified, small-diameter laricio pine round timber
- v. Mechanical grading of Round timber beams.
- vi. Guidelines for assessing allowable properties to mechanically graded lumber from foreign species.
- vii. ISO 3133, 1975a, Wood – Determination of moisture content for physical and mechanical tests.
- viii. ISO 3133, 1975b, Wood – Determination of ultimate strength in static bending.

- ix. ISO 8905 1988(E), Sawn Timber – Test methods – Determination of ultimate strength in shearing parallel to grain.

Recommendation

The sector pointed out the following recommendation for support:

- i. There is need to allocate the various timber species on Uganda's market to the four timber classes, SG4, SG8, SG12 and SG16, for quality assurance in timber trade and utilization.
- ii. There is need for collaborative work involving, National Bureau of Standards, National Forestry Authority, University academia, Uganda Institution of Professional Engineers and other stakeholders to develop local timber standards.
- iii. Train dealer of timber products on the importance of standards in timber trade.

4.3.18 Vegetable oil

For a number of years Uganda has relied mainly on imported edible crude oil to meet the domestic demands, however in the last decade this has been changing. Through the vegetable project local production on both large and small scale have started to gained root. Whereas the Uganda National Bureau with the support of the Vegetable Oil Development Project under the Ministry of Agriculture, Animal Industry and Fisheries have developed standards for edible Sunflower oil ,groundnut oil, palm oil, olive oil and fortified oil to enhance the competitiveness of the final products on the market . Other standards still need to be developed for post-harvest handling, storage, hygiene and labeling. Guidelines for good manufacturing practices by small and medium-scale vegetable oil mills have been drafted and a vegetable oil processing quality control manual prepared. , Most small holder farmers have limited knowledge on quality and Good Agricultural Practices when it comes to the production of quality vegetable oil seed.

The study found that for the new emerging areas such as essential oils like citronella, lemon grass Shea butter do not have national standards,

Recommendations

- i. Because of declining soil fertility, farmer training should be provided in Good Agriculture Practices in particular the use of fertilizers and other agro-chemicals
- ii. Develop standards for most of the essential oils produced in Uganda
- iii. National standards and codes of practices should address the whole value chain

4.3.19 Electricity

The electricity is a significant input for both domestic use and the manufacturing sector in Uganda. Electricity as service, supports economic growth through promoting productivity, availing facilities, which improve the quality of life, and is an important input in the growth of the country. Currently the Uganda Electricity Regulatory Authority (ERA) is the main regulatory body responsible for the development and enforcement performance standards for the generation, transmission and distribution of electricity. The Authority regulates licensees' activities relating to generation, transmission, system operation, bulk

supply, distribution, sale, import and export of electricity so that those activities are shall enforce minimum service standards and consequently a licensee shall adopt service rules incorporating minimum service standards and file them with the Authority for approval.

The finding of the study revealed, overall priority has been given in the developing standards in the following area: general electricity terminology, electricity documentation, electricity tables, safety, fire hazard testing, electricity power stations, electromagnetic compatibility, magnetic materials, Insulating materials, insulating fluids, semiconductor materials superconductivity and conducting material electricity wires and cable, electrical accessories, switches, gears and control gears, lamps and related equipment's, rotating machines, transformers and rectors. At the same time the study found out the common complaints were challenges of uncalibrated meters which ERA has been addressing.

Recommendation

- i. There is need to improve on the calibration of electricity meters
- ii. The standards gaps identified in the areas above need to be developed

4.3.20 Motor Vehicles Imports

Uganda has over the years recorded tremendous growth in the number of vehicles registered as shown in the table below:

Table 6: Newly registered motor vehicles, 2006-2010¹⁶

Year	2006	2007	2008	2009	2010
Newly Registered	61,623	79,312	105,595	104,384	106,224

The study found that this an unprecedented influx of imported used vehicles is mostly originating from the Middle East, Japan and Europe. However, some of these vehicles are substandard and in dangerous mechanical conditions that can endanger the public and the environment. In addition, some of the imported vehicles are obtained illegally in the country of origin and shipped to Uganda without following proper procedures. The situation is compounded by the fact that second hand vehicles in most cases produce unpermissible levels of emissions that pollute the environment thereby adversely contributing to climate change. Pursuant of the Import Inspection and Clearance Regulations 2002, UNBS with effect from 1st November 2009 introduced PVoC for used vehicles destined to Uganda. This was however halted shortly after implementation. PVoC is a vehicle road-worthy inspection Scheme that focusses on detailing the condition, accessories, structural, functional and mechanical integrity of used vehicles destined for export prior to importation. The inspection in Uganda would be conducted in line with the requirements of the *Uganda Standard US 845: Code of Practice for Inspection and testing of Used Motor vehicles for road worthiness*. Certification would then be issued to the vehicles that are

¹⁶ Statistical Abstract, 2011

appraised as road worthy and a report attesting to the inspection and certification would be given to the importer.

To-date, Uganda has not been having any mechanism of determining road worthiness and authenticity of used vehicles imported into the country.

Recommendation Inspection and certification of imported used vehicles should be done at entry points to provide importers with professional and independent assessment of a vehicle's overall condition and get Value for money.

4.4 ASSESSMENT OF THE CAPACITIES OF THE SMCA SERVICE PROVIDERS

The products produced in a country target a market, which could be domestic or international. Tests and inspection reports, calibration and quality certificates, and other types of documents of compliance have to be issued by recognized competent institutions. In addition to public requirements, potential customers may have their own requirements in respect of product quality, packaging and delivery. The supplier needs to know customer requirements (standards) in the target market in order to be able to come up with competitive products. All these elements are necessary for the development of a successful business, and they must all be in place at the same time: thus, a National Quality Infrastructure has to be developed for the benefit of both supplier and consumer.

A national quality infrastructure, must at the very least ensure access to international standards and technical regulations, guarantee reliable measurements, and set up a system that will allow accreditation of their testing and certification facilities in such a way that the results of these bodies will be internationally accepted.

The study findings indicate that standards development, metrology, conformity assessment and accreditation (SMCA) activities in Uganda are carried out by both the public and private institutions. These include:

4.4.1 Ministry of Agriculture, Animal Industry and Fisheries

The Ministry of Agriculture, Animal Industry and Fisheries has various departments with specifically defined mandates, roles and responsibilities in relation to food safety and agricultural health. These include the following:

4.4.1.1 Livestock and Entomology & Animal Production and Marketing Departments

These departments are responsible for the development of policies and regulations on animal diseases, the development of veterinary inspection procedures, and the inspection and certification of imports and exports of animal products; formation of standards regarding the quality and safety of livestock and livestock products, handling and marketing. The Livestock and Entomology Department is also the designated competent authority for honey.

However, the study's findings indicate that the departments are constrained by lack of the necessary laboratory facilities and equipment's to executive its mandate effectively as a

regulator of the subsector to ensure the competitiveness of the livestock products. (Refer to Appendix 2.1).

It is recommended that support is provided to the departments to enhance the competitiveness of the livestock subsector where Uganda has a lot of potential. Specifically support is required for:

- The identified laboratory equipment and consumables
- The approval of the Honey and Apiary Products draft policy;
- Improved coordination with SMCA service providers e.g. signing MOUs with UNBS to delegate responsibilities for inspection of honey and premises
- Upgrading inspection infrastructure with requirements like tool kit (knife, saw and brush, Refractometers, smokers, sample bottles, sample box, personnel protective gears (harvesting suite, gumboots etc)
- Increasing inspectors at district levels to carry out on-farm inspections
- Modernising the departments with the necessary ICT infrastructure for inspection and certification (E-certification).

4.4.1.2 The Crop Protection Department

The department is responsible for formulating and enforcing regulations related to seeds, agro-chemicals and the management of Phytosanitary risks. It undertakes surveillance and diagnosis of crop pests and diseases and to work with other national and international agencies to control the outbreak of migratory plant pests and epidemic diseases. The Department carries out inspections of imports and exports of planting materials and plant based products, mostly checking for pests and diseases. The Department is the competent authority for SPS issues responsible for the inspection and regulation of crop commodities for local and international markets.

The Study findings indicate that the department is constrained by lack of laboratory equipment's, consumables, relevant training, certifications and accreditations to effectively perform its function as a competent authority on SPS issues (Refer to table 2.3).

It is recommended that support be provided for:

- The laboratory to be operational the necessary human resource, equipment's and consumables that include: Gas Chromatograph; HPLC, MS, multiple gas generators, detectors (FID, ECD, NPD/FTD, FPD), GCMS-QP-2010 Plus, Vacuum Manifold, Rotary Evaporator, Assorted Laboratory Glassware, Laboratory Chemicals, Weighing Analytical Balances, Fume – hoods, Autoclave, laminar flow hood, weighing scales, water bath, incubator (100M), fridge (30°C, 40°C);
- Field kits (dissecting kits, sample boxes, reagents (ethanol), preservative, tents, fact sheets, cameras, chairs, tables, and microscope).
- Rehabilitation of green house (needs nets, polythene).
- screen house
- Sample transportation
- The laboratory to attain Accreditation to 17025.
- The training of inspectors up to accreditation to 17020;
- Building the capacity of the department to be accredited to EN 45011 or ISO/IEC

17065;

- Support the creation of an accreditation body in MTIC to facilitate accreditation services at affordable services;
- Facilitation of UNBS to provide metrology and calibration services to the department

4.4.1.3 The Department of Fisheries Resources

The department is responsible for the inspection, certification, and control of fish and fish products consumed locally and abroad. It is responsible for enforcing fisheries regulation, including carrying out inspection of factory premises, processing lines, landing sites, fish transport and export points for adherence to safety and quality requirements, as well as maintaining a national fish inspection and quality control system. It is responsible for regulating and overseeing the emergent development of aquaculture in Uganda.

Whereas there is compliance to International Quality Standards in the sector as guaranteed by the Department of Fisheries Resources (DFR) in MAAIF, Uganda National Bureau of Standards, Food Science and Technology Research Institute, National Environment and Management Authority and the Ministry of Health, the study findings however indicate gaps (refer to table 2.2) that include lack of knowledge on the status of fish stocks in all water bodies on which to establish sustainable levels of fishing; inadequate facilities for seed multiplication and artificial propagation for restocking and stock enhancement; Inadequate capacity of BMUs in fisheries quality (hygiene) management; lack of awareness on SMCA requirements; inadequate enforcement of technical regulations e.g. Continued use of illegal gears and methods; poor data collection due to limited resources to cover a number of water bodies with many scattered small fish landing centers; lack of coordination between various stakeholders; Non-Government organizations and the competent authority (DFR); inadequate infrastructure for fish safety and quality assurance.

It is therefore recommended that support is provided to the department for:

- i) Accreditation of the laboratory to ISO 17025.
- ii) More technical personnel required;
- iii) Training required for the technical personnel in ISO 17020;
- iv) Building the capacity of the department to be accredited to EN 45011 or ISO/IEC 17065;
- v) Upgrade the existing certification system to electronic system (E-certification for the industry)
- vi) Introduce 17020 for the inspectorate and work toward its implementation;

4.4.2 Uganda Coffee Development Authority (UCDA)

The Uganda Coffee Development Authority (UCDA) has a statutory mandate to promote and oversee the development of the entire coffee industry through research, quality assurance, improved marketing, and providing for other matters connected therewith. Both internal and export marketing are regulated through The Coffee Regulations, 1994, a

statutory instrument (Supplement No. 30 of 1994) which stipulate the requirements which have to be met including: minimum standards of coffee, registration of players; inspection and quality control including issuance of quality certificates, grade analysis, mode of coffee export sales, among others. UCDA offers both inspection and testing services to the coffee sector. Testing is provided through two analytical laboratories.

However, the study found out that the Capacity of UCDA needs to be supported to enhance the competitiveness of the subsector include (refer to table 2.10): harmonization of coffee policies and standards in the East African Region; reviewing the coffee regulations; while at the analytical laboratory level there is need to provide additional staff; staff training and provision of equipment's with consumables, along with upgrading the management systems for accreditation to international standards (ISO17025). Inspection services require: more staffing to cover every segment of the value chain, developments standards operating procedures, training of staff to gain international recognition along with awareness creation within the sector on the importance of SMCA. Similarly more effort towards in fighting the coffee wilt disease is required.

It is therefore recommended that support is provided to UCDA for the following:

- i. Review and update the current coffee regulations (1994)
- ii. Harmonize the policy in the region
- iii. Develop and harmonize the coffee standards
- iv. Awareness creation on the SMCA requirements
- v. More effort in fighting the coffee wilt disease
- vi. Upgrade and accreditation of the laboratory to international standards (ISO17025)
- vii. Additional equipment's and consumables for the UCDA laboratory: e.g. Equipment's and sensory analysis for coffee, equipment's for chemical and biological analysis
- viii. Additional working space and human resource to carry out Inspection at the farm level
- ix. Training of staff to gain international recognition (ISO 17020, 17065)
- x. Development of standard operating procedure

4.4.3 Dairy Development Authority (DDA)

DDA was established by the Dairy Industry Act, 1998 and mandated to take up the regulatory and developmental functions of the Dairy Sector. The function of the agency is to register, license and regulate the activities in the Dairy Industry and advise Government on milk standards in liaison with the Uganda National Bureau of Standards. The study findings identified capacity gap that require support (refer to Table 2.12).

It is recommended that support is provided to DDA in the following areas in order to effectively fulfill its mandate:

- i. To calibrate the equipments
- ii. Validation and proficiency of tests
- iii. Training in ISO 17025

- iv. Acquiring more laboratory equipment
- v. Have the laboratory accredited to ISO 17025
- vi. Training in chemical analysis and microbiology
- vii. Training in the analysis of pesticide and drug residues
- viii. Training in Good Laboratory Practices (G.L.P.)
- ix. Equipment associated with chemical analysis of dairy products
- x. Procurement of HPLC or GC/MS for drug and pesticide residue analysis
- xi. Acquisition of validated laboratory information software
- xii. Standard Operating Procedures for equipment operation, calibration/verification and maintenance
- xiii. Quality Management Systems and Food inspection: HACCP, GMP, GAP, GHP
- xiv. Upgrading and accreditation of inspectors (ISO 17020) and certification body (ISO 17065)

4.4.4 Cotton Development Authority (CDO)

The Cotton Development Organization monitors the production, processing and marketing of Cotton in Uganda. The organization promotes the distribution of high quality cotton seed and generally facilitates the development of the cotton industry. The SMCA related functions include setting standards for Uganda seed cotton and lint against international standards; and inspecting ginneries to ensure compliance with registration requirements.

The following needs that require support were identified (refer to table 2.11):

It is recommended that support be provided for:

- i. Enforcing good agricultural practices: the use of proper picking practices (harvesting dry cotton, removing debris in the field, non-use of polyester bags for field handling and transport to gin, etc.) and proper storage (on clean floors at the farm, under low moisture levels at buying centers and gins) of the seed cotton prior to ginning.
- ii. Procurement of equipment's: increase the numbers of moisture meters, sampling devices and testing instruments;
- iii. Build Capacity to inspect across the value chain.

4.4.5 Uganda Organic Certification (Ugocert)

Uganda Organic Certification (UgoCert) is a private certification body and provides certification services in the area organic certification. The certification scope of UgoCert include: Organic crops and livestock production systems; Organic beekeeping system; Wild harvest of organic products; Processors of organic foods and agriculture products; Handling of organic foods such as packers, brokers, distributors, and wholesalers; Fishery Recertification to the Uganda Organic Standards (UOS). The elements of the UgoCert

certification system include: Standards; Inspection and Audit: Chain Custody Audit: Certificate, license and label, as a consequence UgoCert has developed a system for certification of production in accordance to the EU Regulation EEC 2092/91 and offers inspection services for the Utz Kapeh certification and is working towards accreditation to IOAS which will enable it offer Utz Kapeh certification. UgoCert is managing a one stop service centre in Uganda for international organic certification.

UgoCert also faces a number of challenges (highlighted in 2.4) that hinder effective delivery of Certification services including: No tools like GPS, absence of software for E-certification and web based data bases, inspectors are inadequately trained in a number of areas and standards such as ISO 9000, lead auditor course, sustainable fish inspection, ISO 9000 etc.

It is therefore recommended that support be given to Ugo-cert to acquire an up to date identified technology and the necessary training to inspect and certify Ugandan products more effectively and efficiently;

4.4.6 Chemiphar Laboratories

Chemiphar (U) Ltd is a private and independent international analytical laboratory operating in the East African Region and the Horn of Africa, with a base station in Kampala. It is part of the Chemiphar Group of Laboratories with its head office in Bruges, Belgium. Chemiphar (U) Ltd offers a large number of microbiological, chemical and physico-chemical analyses in the different sectors of food, water, beverages, environmental monitoring, pharmaceuticals and cosmetics, forensic, industrial and food toxicology, and agro-seeds analysis and certification. Chemiphar is also specialised in external sampling for microbiological and chemical analyses in the food and beverage industries, for monitoring of hygiene in establishments, for analysis of process, surface or waste waters and for agro-seeds industries. In a more comprehensive approach, Chemiphar offers consultancy services to food industries to improve the quality of its products or production processes by assisting in the set-up, monitoring and implementation of HACCP or hygiene control programmes, Good Hygiene Practices (GHP), Good Manufacturing Practices (GMP) and traceability.

Recommendations on Private laboratories

Develop a policy on incentive to private laboratories to help them compete with public laboratories which charge low testing fees through public-private partnership. For sustainability some of the private laboratories should be recognized as centers of excellence for the country for the testing of products of strategic interest to the country.

44.7 National Drug Authority

The Mandate of the National Drug Authority (NDA) as established under the National Drug Policy and Authority Act Cap 206 include: controlling the quality of drugs, encouraging research and development of herbal medicines and disseminating information to health professionals and the public; registration of drugs and to provide inspection and certification services within the Drug sector. As such NDA has established capacity to enable the inspection, certification and drug testing drugs as indicated in table 2.5

Currently NDA faces a number of SMCA technical challenges to enable it effectively deliver on her mandate and these include:

- **Legislation:** Act does not adequately and explicitly address areas like cosmetics, public health products, medical devices, vaccines, veterinary drugs yet these need to be regulated. Moreover, the penalties under the Act are not sufficiently deterrent and this has partly encouraged recurrent breach of the law.
- **Testing Capacity** is faced with limitations such as the absence of a wide area network (WAN), Laboratory Information Management System (LIMS), inadequate space for the laboratories, and absence of a laboratory management system based on NDQCL and ISO/IEC 17025 along with LIMS system for data analysis.
- **Certification and inspection** services of the NDA are constrained with absence of an operating system based on international standard ISO 17020, inappropriately trained inspectors, ill equipped inspection system especially rapid diagnostic field kits, and the absence of verification and port inspection software (E-cert)

RECOMMENDATIONS FOR POSSIBLE SUPPORT BY QUISP

It is therefore recommended that support be channelled towards bridging the identified capacity gaps to ensure effective service delivery especially:

- The streamlining and updating the legislation and harmonising the legislations in line with regional and international requirements to be able to address regional and global concerns;
- Provide support to NDA to get ISO/IEC accreditation to gain recognition by WHO address the needs
- Improve coordination and communication exchange among regulators to avoid duplication of services
- Upgrading and accreditation of the laboratory services including ISO 17025, ISO 17020, and ISO 17065;

4.4.8 Ministry of Works and Transport – Department of Construction Standards and Quality Management

The department is responsible for construction materials testing and research, reviewing engineering standards, providing technical support on construction and maintenance works; and carrying out site audits.

The study found out that there are two divisions in the department namely, the Central Materials Laboratory, and Quality Assurance Divisions, which are responsible for carrying out the following SMCA functions:

- i) Conducting technical and management audits on road and building construction maintenance project implemented by MDA's.
- ii) Auditing and monitoring the implementation of the Ministry's Quality Management (Business Excellence) System in all Departments. Developing and reviewing Engineering Standards, Manuals and Guidelines for the Ministry.
- iii) Testing and researching on construction materials and carry out quality control at construction sites to ensure compliance with specifications.
- iv) Carrying out Geo-technical investigations to establish soil ground conditions at construction sites that will be used during the design and specification processes.
- v) Carrying out road pavement evaluation to determine pavement conditions relevant for planning and designing maintenance and remedial measures.
- vi) Carrying out Structural evaluation on buildings to establish their structural residual integrity and functional performance.
- vii) Standards Researching on construction material aimed at promoting their usage by developing appropriate specification and guidelines;

SMCA Gaps

- i) No legislation establishing the laboratory thus limiting its ability to establish independent collaborations with other foreign and international agencies in the areas of materials testing. The absence of legislations is hindrance for the laboratory to participate in enforcement activities;
- ii) No Atomic Absorption Spectrophotometer (AAS) for the testing of steel

4.4.9 Ministry of Trade, Industry and Cooperatives

Under the Ministry of Trade, Industry and Cooperatives, there are two departments namely External Trade; and Industry and Technology; and one agency, the Uganda National Bureau of Standards (UNBS) with standards mandates and functions related to standardization.

The Department of External Trade handles WTO matters such as notifications under the SPS/TBT Agreements, while the **Department of Industry and Technology** coordinates the development of standardization policies and is the National Accreditation Focal Point (NAFP).

4.4.10 Uganda National Bureau of Standards

The UNBS mandate is provided through an Act of Parliament, Cap 327 that established it. The mandate of UNBS is to provide standardization services including standards development, testing of products, and enforcement of standards through certification and

inspection, calibration of scientific and industrial equipments (Metrology), training of stakeholders on standardization matters among others.

In addition, the UNBS administers the UNBS Act and the Weights & Measures Act. These two laws empower UNBS to regulate goods that are put on the market for sale (trade and commerce) and ensure that they conform to national standards and that there is fair trade through the verification of weights and measures. However, the enforcement capacity of the UNBS in terms of staff and logistics remain low.

UNBS is also the national inquiry point under the TBT Agreement and a Codex Contact Point.

4.4.10.1 Current capacity

Since its establishment in 1989, UNBS has a modest capacity in number areas including standards development, testing, metrology, certification, inspection, Training and Consultancy services in-line with the statutory mandate and these are as follows:

Standards Development:

A Uganda Standard is a document declared as such by the National Standards Council. It may either be a specification, a code of practice or specifies other aspects such as terms and definitions, symbols, sampling and test methods and quality systems. The work of preparing Uganda Standards is carried out through Technical Committees. A Technical Committee is established to deliberate on standards in a given field or area and consists of representatives of Consumers, Traders, Academicians, Manufacturers, Government and other stakeholders. Draft Uganda Standards adopted by the Technical Committee are widely circulated to stake holders and the general public for comments, which are reviewed before recommending them to the National Standards Council for declaration as National Standards.

The Department is also involved in the harmonisation of standards within the East African Community where more than 1500 standards have been harmonized to support regional trade and integration. The following Technical Committees were operational:

- i. UNBS/TC2: Food and Agriculture;
- ii. UNBS/TC3: Building and Construction;
- iii. UNBS/TC4: Mechanical Engineering & Metallurgy;
- iv. UNBS/TC5: Chemical & Environment;
- v. UNBS/TC6: Electro technology;
- vi. UNBS/TC7: Textiles, Apparels and Leather Products;
- vii. UNBS/TC8: Transport and Communications;
- viii. UNBS/TC9: Metrology, Chairperson;
- ix. UNBS/TC10: Management Systems and Services;
- x. UNBS/TC12: Furniture;
- xi. UNBS/TC13: Energy Management;
- xii. UNBS/TC14: Medical Devices;
- xiii. UNBS/TC15: Halal Integrity;

- xiv. UNBS/TC16: Petroleum;
- xv. UNBS/TC17: Applied Statistics,

Product Certification

UNBS operates a Product Quality Certification Scheme, as one of the services to the manufacturing sector. Under this scheme, UNBS certifies the quality of a product and grants the manufacturer a permit to affix the UNBS Quality Mark either on the product itself or on the packaging. This mark gives an assurance to the customer that the product conforms to Uganda Standards and is of good quality. The UNBS Certification Scheme is focused on product certification based on Uganda Product Standards and systems certification on standards such as ISO 9000, ISO 14000, OHSA, etc. Since the inception of the certification services, UNBS has so far granted over 396 certificates or licences to various products.

Benefits of the UNBS quality mark

1. Consumer protection – the quality mark helps consumers and purchasers to identify quality products on the market
2. Winning consumer confidence products resulting into increased market share and Consumer's ability to identify the products that conform to national standards thereby making quick decisions to buy quality products
3. The product is presented with a better image in both national and international markets resulting into:

Winning Consumer confidence in the certified products resulting into:

- Easy acceptance and promotion of new products in the market.
 - Promoting the image and reputation of the manufacturer favour of quality products.
 - Safeguarding against unfair competition from inferior products on the market.
 - Easy Identification of the products since they bear the Quality Mark.
4. Through mutual recognition schemes, countries recognize each other's products that are certified, thus easing entry into regional and foreign markets.
 5. Government and International bodies and NGOs are relying more on UNBS Certified products for their purchases.
 6. The Certification Scheme includes technical audit of product quality and process quality control procedures.



Market Surveillance

The UNBS is mandated to enforce standards in protection of the public against harmful, dangerous and substandard products and there is a legal obligation for anybody not to manufacture, sell, distribute or hold for the purpose of selling any product that does not meet compulsory Uganda standards.

UNBS has overtime been receiving complaints from members of the public and the business community as well as consumer organisations regarding goods and commodities that are substandard. Some of these commodities can be hazardous to the people and their property and even the environment. Uganda National Bureau of Standards put in place measures to curb the proliferation of these substandard products that can endanger public health and safety. One of the measures put in place to curb these products from the market was to launch a surveillance exercise code-named Market Surveillance.

Product Testing

Domestic and imported products are tested for conformity to Uganda Standards and other specifications. These were carried out by the appropriate UNBS laboratories: Chemistry, microbiology, mechanical, building materials and electrical laboratories.

Microbiology laboratory

UNBS is mandated with ensuring that and regulating the quality of foods and other consumable (edible) products such as water, fruit juices etc. Micro-organisms that are routinely checked in the microbiology laboratory include organisms of public health significance such as Salmonella and Vibrio cholerae. Other tests carried out include Total palte count (TPC), Total coliforms, faecal coliforms, Escherichia coli, Yeast and moulds count and Staphylococcus aureus. The laboratory tests a range of both fresh and processed foods. These include water , fruit juices, fish, milk and milk products, pickles, meat and meat products, cereals products, canned foods and dried food's.

Chemistry laboratory

The chemistry laboratory provides services that help prevent contaminated and adulterated foods products from entering the market . The services provided also enhance the quality of the various products manufactured in Uganda, by providing the industries with advice, information and test results on the quality of their products.

Chemical analysis involves the analysis of the chemical composition of both edible and non-edible products.

Electrical Laboratories

The Electrical Laboratories are divided into two major sections: the industrial metrology and testing sections.

The Electrical Testing laboratory carries out analysis of electrical products and appliances to assess their quality as per Uganda and International Standard Specifications. Some of the electrical products analysed in the laboratory include: Electrical wires, Cables, Conductors, Incandescent lamps, Dry cells; and Solar products.

Building Materials Testing Laboratory

The Building Materials Testing Laboratory is one of four laboratories under the Testing Division. The laboratory carries out various tests on different building materials and other engineering materials to evaluate their quality.

The laboratory carries these tests to:

- Safeguard the interest of both the consumer and producer,
- Assure the quality of goods purchased,
- Improve on the overall economy of the country through industrialisation.

Some of the materials and products tested include: Cement and lime, Plain and corrugated iron sheets (galvanised and pre-painted), Reinforcement steel bars and structural steel, Burnt clay bricks, concrete blocks and pre-cast paving blocks, Manhole covers, Garden implements (hoes & pangas), Wires and wire products, Sands and aggregates, Paper and paper products, Roofing tiles, Damp proof course, Product particle size analysis, Window stays and fasteners, Door locks, Foam mattresses, Hurricane lanterns, Aluminium saucepans (sufurias, etc).

It is only the Microbiology and Chemicals Testing Laboratories that have attained international accreditation based on international Standard ISO 17025.

Metrology

Metrology covers two areas i.e. Industrial Metrology and Legal Metrology. Under industrial Metrology the scope of calibration covered include: mass, thermometry, Flow, dimension, Pressure and Volume. On the other hand UNBS through legal metrology department administers the Weights and Measures Act which is the law governing the use of measurements systems in trade. The current scope of Weights and Measures activities include: bulk measures (road tankers and bulk meters); pre-package control; weighing equipment; fuel dispensers (pumps).

Imports Inspection and Clearance Scheme

UNBS also provides inspection services in area of pre-delivery inspection, industry and market surveillance, import inspection. Globally the responsibility of demonstrating conformity to standards and regulations is with the suppliers using schemes as such Pre-Export Verification of Conformity (PVoC). However, government intervention within

imports is carried out in circumstances where national competitiveness of value chain is undermined or eroded by way of cheap substandard products.

4.4.10.2 SMCA Capacity Gaps for UNBS

Despite the existing of the above highlighted capacities for SMCA services at UNBS, there were a number of gaps that require urgent intervention to enable UNBS fulfil its mandate. Capacity gaps for UNBS include inadequate manpower who were also not appropriately trained, inadequate capacity in a number of areas including standards development, product testing, industrial metrology (calibration), legal metrology, inspection, certification and awareness raising, among others; limited scope of accreditation for industrial metrology, chemistry and microbiology laboratories and no accredited laboratories in the area of legal metrology, electrical and materials testing, inadequate inspection and certification services which are yet to be recognised internationally to ISO 17020 & ISO 17065.

4.4.10.3 Recommendations to address the SMCA gaps at UNBS

Recommendations to address the SMCA gaps at UNBS to improve on its effectiveness

- *Legislation and regulations-*
 - (i) Support the finalisation of the on-going amendment to UNBS Act including revamping the Weights and Measures Act to bring it in line with the international requirements and stakeholders' expectations
 - (ii) Support the establishment or reviewing of regulations in a number of areas including certification, market surveillance, testing laboratories, industrial metrology and legal metrology.
- *Testing and Calibration equipment:*
 - (i) Provide additional support to equip laboratories with the necessary equipment as identified in *Tables: 2.6, 2.7, 2.8, and 2.9.*
 - (ii) Support further accreditation of laboratories to expand the scope of the industrial metrology, microbiology and chemistry laboratory;
 - (iii) Support the upgrading of the materials, electrical and metrology laboratories to attain accreditation;
 - (iv) Support the upgrading of UNBS certification and inspection services to e-certification and to attain international recognition through accreditation to ISO 17020, 17065, 9000 among others;
 - (v) Support standards development by providing the necessary facilities, personnel and equipments,

4.4.11 Directorate of Government Analytical Laboratory

The Government Analytical Laboratory mandate is to provide specialized advisory and analytical services to government departments responsible for administration of Justice and support to Statutory Bodies (NEMA, UNBS, URA, NDA) and to the private sector. The main thrust of its statutory function:

Forensic Science Services as an aid in assuring national security, trans-border activities, law and order; Statutory testing for enforcement of public health, product quality requirements and environmental standards and regulation and advisory and investigative services. The gaps in the directorate were identified and are detailed in table 2.13.

5. RECOMMENDATIONS AND CONCLUSIONS

From the study, the views of the producers and the SMCA service providers were analyzed and collate in the recommendations below:

5.1 Public-Private Sector Participation in SMCA Service Provision

In Uganda, most of the conformity assessment service providers were in the public sector with limited involvement of the private sector. However, more development and involvement of the private sector in SMCA services is critical to the competitiveness of these services to meet the market requirements. Therefore, there is need to put in place a mechanism that encourages investment by the private sector in provision of SMCA services, in line with the National Standards and quality policy that intends to promote private sector investments in the national quality infrastructure to ensure adequate provision of services in the SMCA areas.

5.2 Standards and Technical Regulations

5.2.1 Develop A National Technical Regulatory Framework

Ministry of Trade, Industry and Cooperative, through UNBS has declared more than 300 standards for compulsory application in Uganda. The compulsory standards, commonly known as technical regulations under WTO, cover diverse fields including: agriculture, food, chemicals, construction, transport among others and there is no agreed upon approach by the various stakeholders on best approach to achieve the intended objectives of the declared technical regulations. Furthermore the existing technical regulations are not in compliance with international benchmarks in that they only cover technical specifications but not conformity assessment requirements; legal sanctions among others.

A National Technical regulatory framework is recommended with a view to provide a harmonized approach on matters related to implementation and enforcement of compulsory standards.

5.2.2 International standardization

To support national standardization infrastructure to meet international benchmarks, Government should support membership and participation in international standards, measurements, and accreditation bodies such as:

- Codex Alimentarius Commission (CAC) for food safety;
- International Plant Protection Commission (IPPC) for phytosanitary requirements;
- International world Health Organization for Animals (IOE) for animal diseases/zoonotic diseases;
- International Standards Organization (ISO) for general standards activities;
- International Accreditation Forum (IAF) responsible for accreditation bodies;
- International Electrotechnical Commission (IEC) for electrical and electronics;
- International Laboratory Accreditation Cooperation (ILAC) responsible for laboratories;
- International Bureau for Weights and Measure (BIPM) for industrial metrology;
- International Organization for Legal Metrology (OIML) for legal metrology;

5.3 Metrology

Put in place a national legislation to support the activities of industrial/scientific metrology to support calibration activities in Uganda. In addition, the Weights and Measures law should be revamped and updated to be in line with the current national, regional and international needs so that Uganda's economy can get integrated within the international trade. The metrology laboratories should be upgraded up to accreditation beyond mass to temperature, pressure, volume and flow measurements to cater for the emerging sectors. Also, establish a mechanism that allows the private sector to become service providers of industrial metrology.

5.4 Testing

Testing plays a vital role within the national quality infrastructure especially during the assessment of compliance of products to standards in terms of quality and safety. Uganda has a number of general and specialized testing laboratories which have more or less the same challenges including funding, repair and maintenance of equipments, and absence of national accreditation services among others. To address these challenges support should therefore be directed towards upgrading and accreditation of the laboratories to ISO 17025 for international recognition of their services to improve the competitiveness of the identified strategic products.

5.4.1 Procurement entities should evolve strategy on equipment supply, repair and maintenance.

Most of the laboratories indicated that they had a challenge of after sales services as most suppliers are located abroad, and moreover during supply and installation such companies do not train local technicians in maintenance. Together with lack of spare parts, most equipment life span was limited to about 2 years and were disposed off. This approach is not sustainable. To address problem, procurement entities should have clauses in the supply contract to provide for repair and maintenance at least for a given period.

5.4.2 Support the Introductions and Implementation of Good Laboratory Practices (GLPs) based on ISO 17025

Prior to accreditation of laboratories, all existing laboratories involved in supporting conformity assessment services especially in priority products should be assisted to implement ISO/IEC 17025 as a minimum requirement to providing such services to trade and industry.

5.4.3 Establish and Designate National Centres of Excellency

Establish and designate national centers of Excellences for testing products of strategic importance to Uganda. This may be by creating a central national laboratory or by earmarking specialized laboratories based on their competency in analysis of the priority product.

5.4.4 Support rationalization and harmonization of legislation to govern establishment, operations and funding of laboratories

Most of the laboratories within the public sector have been established either under policy pronouncements or through reference to specific Acts of Parliament. This has led to duplication and hindrance to rational use of available resources in supporting these laboratories as a consequence affecting their efficiency in delivery of service, especially to the business community. On other hand investment in commercial testing services by the private sector continue to be hampered due to lack clear policy and regulations on establishment and management of commercial laboratories. Therefore the challenge of funding for public sector on one hand and recognition of the private commercial laboratories on the other hand need the careful consideration through policy pronouncement and legislation to provide for public-private partnerships. Support should be provided for rationalization and the harmonization of legislation which does not only regulate the testing sector but also facilitate the process of designating centres of excellence, provide funding, regulating activities of laboratories, and delivering national accreditation services to facilitate the competitiveness of the Uganda products.

5.5 Inspection and certification

5.5.1 Build competence of inspectors and auditors to meet international requirements

There are a number of technically qualified inspectors within the various SMCA service providing agencies. However, their competence needs to be upgraded through further training and registration based on international standards such as ISO 17020. This will provide international credibility to the certification of exports from Uganda and their competitiveness. Similarly, local capacity of system auditors towards standards like ISO 22000, ISO 9000, HACCP need to be strengthened through further training and registration to the International Registration of Certified Auditors (IRCA).

5.5.2 Support the upgrading of the certification processes

In the identified priority sectors manual certificates are being issued. The international market has moved towards electronic certificates, which are easy to transmit and archive. It is therefore recommended that support be provided for:

- The competent authorities to be upgraded from manual to e-certification system.
- The enforcement mechanisms be strengthened throughout the value chain.
- Building capacities in inspection and Certification bodies to attain accreditation to standards such as ISO 17065.

5.6 Accreditation

Following the approval of the National Standards and Quality Policy, it is recommended that:

- The Ministry of Trade, Industry and Cooperatives (MTIC) be supported to expedite the development of a legal framework establishing a national accreditation system.

- In the short to medium term, support is provided to supplement acquisition of such services from outside the country.

5.7 Awareness Promotion

The study findings generally revealed limited awareness on SMCA and hence it is recommended that:

- Support be directed towards promoting knowledge transfer on standards, metrology, testing, inspection, certification and accreditation among the stakeholders.
- Utilization of SMCA services be promoted among the public and producers to enhance standards implementation and application within the country.

5.8 Conclusion

The study identified the priority products of strategic interest to Uganda, their value chains and their SMCA needs. In addition the capacities of the SMCA service providers in both public and private sectors were assessed with the objective of identifying critical gaps which impede on the competitiveness of Uganda defined priority products. The study findings indicate that if the SMCA capacity gaps are addressed and their services are upgraded to international recognition, the competitiveness of Uganda's products will be enhanced in all the market segments.

Annex 1: Producers' SMCA Requirements

No	Commodity	Markets	Value Stage	SMCA Market Requirements					SMCA Service Provider	SMCA Capacity	Capacity Gaps
				Standards/ Regulations	Metrology	Testing	Inspection & Certification	Accreditation			
1	Coffee	EU: UK, Netherlands, Spain, Italy, Denmark, Norway, Regional: Sudan, Kenya, Rwanda, Egypt Others: China, Singapore, USA, Japan, Canada, Australia, Israel. Domestic/ local market	Pre-production <ul style="list-style-type: none"> Seeds Agro-chemicals Farm equipments 	EU regulation EC 396/2005 EC 178/2006 EC148/2008 MRL Directives 86/362/EC 91/414/EC EAC standard COMESA Standards Domestic standards	National Regulations; Accreditation	Accreditation National Regulations	EC regulation EC 834/2008 (Organic) Accreditation National Regulation Certificate of conformity	Is a requirement	MAAIF UCDA Chemiphar UNBS Government Chemist NARO	EA S 65.080)–fertilizer; EAS 65.100 – Pesticide and Agrochemicals EAS 65.060 – Agricultural machines, implements and equipments	Seed standards not available Testing for Agrochemicals ; Limited capacity for inspection, Accredited labs Calibration of the equipments; Limited capacity to test seeds; Lack awareness on the SMCA requirement
			Production	EU regulation\ EAC standard COMESA Standards Domestic standards	National Regulations Accreditation	Accreditation National Regulations	Accreditation National Regulation	Is a requirement	MAIF UCDA	Regulatory framework	Lack awareness on the SMCA requirement
			Processing	HACCP GMP EU regulation\ EAC standard COMESA Standards Domestic standards	National Regulations Accreditation	Accreditation National Regulations	Accreditation National Regulation	Is a requirement	MAIF UCDA UNBS	Regulatory framework	Lack awareness on the SMCA requirement
			Products	Codex EU regulation\ EU regulation EC 396/2005 EC 178/2006 EC148/2008 MRL Directives 86/362/EC 91/414/EC EAC standard	National Regulations Accreditation	Accreditation National Regulation	Certificate of conformity Mycotoxin Pesticide residue Packaging Labeling Grading SPS requirement	Is a requirement	UCDA MAIF UNBS Government Chemist	Grading standards; Mycotoxins	No National Coffee Standard for roasted coffee and Instant coffee; Limited testing capacity; Lack of a national accreditation body; Limited inspection and certification capacity; Limited capacity metrology and calibration;

Report on the Producers' SMCA Needs and Capacity Assessment of the SMCA Service providers

No	Commodity	Markets	Value Stage	SMCA Market Requirements					SMCA Service Provider	SMCA Capacity	Capacity Gaps
				Standards/ Regulations	Metrology	Testing	Inspection & Certification	Accreditation			
				COMESA Standards, Domestic standards, fumigation requirements			Minimum quality requirements				Lack awareness on the SMCA requirement; Challenges of environmental and social standards i.e GAP
2	Cotton	International India Switzerland Rwanda Regional DR Congo Kenya Domestic	Pre-production	EU regulation EC 396/2005 EC 178/2006 EC148/2008 MRL Directives 86/362/EC 91/414/EC EAC standard COMESA Standards Domestic standards	National Regulations; Accreditation	Accreditation National Regulations	EC regulation EC 834/2008 (Organic) Accreditation National Regulation ; Certificate of conformity	Is a requirement	MAIF CDO Chemiphar UNBS Government Chemist NARO	EAC S 65.080)– fertilizer; EAC S 65.100 – Pesticide and Agrochemicals EAC S 65.060 – Agricultural machines, implements and equipments	No standards for cotton seeds; Testing for Agrochemicals ; Limited capacity for inspection, Accredited labs for seeds Calibration of the equipments; Limited capacity to test seeds; Lack awareness on the SMCA requirement
			Production	EU regulation\ EAC standard COMESA Standards Domestic standards	National Regulations Accreditation	Accreditation National Regulations	Accreditation National Regulation	Is a requirement	MAIF CDO	Regulatory framework	Lack awareness on the SMCA requirement
			Processing		National Regulations Accreditation	Accreditation National Regulations	Accreditation National Regulation	Is a requirement	MAIF CDO UNBS	Regulatory framework	Lack awareness on the SMCA requirement
			Products	Domestic and regional standards; Organic cotton: directive 96/74/EC EU regulation 83/2007; USDA national organic Programme; Japan agricultural	National Regulations Accreditation, Pesticide residues	Accreditation National Regulation	Accreditation National Regulation Certificate of conformity	Is a requirement	CDO MAIF UNBS Government Chemist	Grading standards;	No National Coffee Standard for roasted coffee and Instant coffee; Limited testing capacity; Lack of a national accreditation body; Limited inspection and certification capacity; Limited capacity metrology and calibration; Lack awareness on the SMCA requirement;

Report on the Producers' SMCA Needs and Capacity Assessment of the SMCA Service providers

No	Commodity	Markets	Value Stage	SMCA Market Requirements					SMCA Service Provider	SMCA Capacity	Capacity Gaps
				Standards/ Regulations	Metrology	Testing	Inspection & Certification	Accreditation			
				Standards Global Organic Textile Standards, GMO, grading, labeling, packaging							Challenges of environmental and social standards i.e GAP
3	Tea	International United Kingdom Arab Emirate Regional Kenya Rwanda	Pre-production <ul style="list-style-type: none"> Seeds Agro-chemicals Farm equipments 	Codex EU regulation EC 396/2005 EC 178/2006 EC148/2008 MRL Directives 86/362/EC 91/414/EC EAC standard COMESA Standards Domestic standards	National Regulations; Accreditation	Accreditation National Regulations	National Regulation Certificate of Conformity	Is a requirement for testing laboratories	MAIF Chemiphar UNBS Government Chemist NARO	EAC S 65.080)– fertilizer; EAC S 65.100 – Pesticide and Agrochemicals EAC S 65.060 – Agricultural machines, implements and equipments	No regulatory framework for Tea; Clone standards not available; No local inspection and certification body for the export markets; Limited Testing for Agrochemicals ; Limited capacity for inspection, Accredited labs for seeds Calibration of the equipments; Lack awareness on the SMCA requirement
		EU:GAP Regional: EAC and COMESA Standards; Domestic: National Standards	Production	EU regulation\ EAC standard f COMESA Standards Domestic standards	National Regulations Accreditation	Accreditation National Regulations	Accreditation National Regulation	Is a requirement	MAIF Private Sector Association – Uganda Tea Development Agency Ltd	Limited Self- regulation	No technical regulations; Lack awareness on the SMCA requirement
		HACCP GMP	Processing	EU regulation\ EAC standard COMESA Standards Domestic standards	National Regulations Accreditation	Accreditation National Regulations	Accreditation National Regulation	Is a requirement	MAIF UCDA UNBS	No Regulatory framework	Lack awareness on the SMCA requirement
		Certificate of conformity Mycotoxin Pesticide residue Packaging	Products	EU regulation\ EU regulation EC 396/2005 EC 178/2006 EC148/2008 MRL	National Regulations Accreditation	Accreditation National Regulation	Accreditation National Regulation Certificate of conformity	Is a requirement	UTDA, MAIF UNBS Government Chemist	National standards for Black Tea –US 292;2002 Instant Tea: US39: ISO 1993	No technical Regulations; Harmonization of of standard at regional and internal levels. Limited testing

Report on the Producers' SMCA Needs and Capacity Assessment of the SMCA Service providers

No	Commodity	Markets	Value Stage	SMCA Market Requirements					SMCA Service Provider	SMCA Capacity	Capacity Gaps
				Standards/ Regulations	Metrology	Testing	Inspection & Certification	Accreditation			
		Labeling Grading SPS requirement Minimum quality requirements, private standards		Directives 86/362/EC 91/414/EC EAC standard COMESA Standards Domestic standards, private standards,							capacity; Lack of a national accreditation body; Limited inspection and certification capacity; Limited capacity metrology and calibration; Lack awareness on the SMCA requirement; Challenges of environmental and social standards i.e GAP
4	Fish	European Union: U. K. Spain Others: Israel United Arab Emirate Lebanon Canada U.S.A Hong Kong Malaysia Vietnam Cyprus Regional: Kenya Sudan Rwanda DR Congo Tanzania	Pre-production <ul style="list-style-type: none"> Veterinary drugs; fish meals; Nets; Hooks; Fish storage, landing sites Production Processing Products	Codex; GAP aquaculture ; EU regulation EC 396/2005 EC 178/2006 EC148/2008 MRL Directives 86/362/EC 91/414/EC EAC standard COMESA Standards Domestic standards	Accreditation National Regulations;	Accreditation National Regulations	Certificate of Conformity National Regulation	Is a requirement for EU market	MAAIF Chemiphar UNBS Government Chemist NARO	Regulatory framework Accredited laboratory (Chemiphar, UNBS – Microbiology; <i>EAS 97:1999, Fish-meal — Specification</i> EAS 62-1 :2000, Fresh fish handling and processing EAS 62-2 :2000, Fresh fish handling and processing (product)	Accreditation of Fisheries laboratory, Govt Chemist (Pesticide Residue Lab); Inadequate capacity in inspection and certification; Development of National GAP for aquaculture; Lack awareness on the SMCA requirement
5	Horticulture – Cut flowers	EU: Netherlands, UK, Belgium Regional: DR Congo, South Africa,	Pre-production <ul style="list-style-type: none"> Seeds & Clones Agro-chemicals Farm equipments 	Global GAP, MPS, Regional standards; National regulations and standards	National Regulations; Accreditation	Accreditation National Regulations	External Auditors MPS/Global GAP.	Is a requirement	MAAIF	Regulatory Framework: National Regulation	Accreditation, National GAP

Report on the Producers' SMCA Needs and Capacity Assessment of the SMCA Service providers

No	Commodity	Markets	Value Stage	SMCA Market Requirements					SMCA Service Provider	SMCA Capacity	Capacity Gaps
				Standards/ Regulations	Metrology	Testing	Inspection & Certification	Accreditation			
			Production		National Regulations Accreditation	Accreditation National Regulations	Certificate of conformity MPS-EECAS Global GAP	Is a requirement	MAAIF UFEA	Inspection and Certification	Domestication of MPS-EECAS Global GAP
			Processing		National Regulations Accreditation	Accreditation National Regulations		Is a requirement	MAAIF	MPS-EECAS Global GAP	No local accreditation body No local inspection and certification body
			Products		National Regulations Accreditation	Accreditation National Regulation		Is a requirement	MAAIF	EAS 286:2002, Cut flowers and Cut foliages-Specification MPS-EECAS Global GAP	Limited capacity to test Lack of awareness Calibration of equipments
6	Dairy Products	Regional: Burundi, DR Congo, Kenya, Rwanda, Sudan, Tanzania, Zambia, South Africa Domestic	Pre-production <ul style="list-style-type: none"> Feeds Vet Drugs Water Equipments Production Processing Products	Codex; GVP GAP EU regulation\ EAC standard Domestic standards	National Regulations; Accreditation	Accreditation National Regulations	Quality Management Systems, Risk analysis, Food inspection,	Is a requirement	MAIF UCDA Chemiphar UNBS Government Chemist NARO	Regulatory framework; Limited Testing capacity; limited inspection capacity; EAS 450:2007 Milk & Milk Products: detection of salmonella species; EAS 452-1 2007: milk and milk products enumeration of E. Coli Part1 & EAS 452-2 2007 Part 2. Colony part technique at 44°C using membrane; EAS 453: 2007 : butter, fermented milk & fresh cheese EAS 454: 2007 milk and milk products: sampling guidance; EAS 27:2007: UHT milk specifications EAS 49: 2007 dried whole mil and skinned milk powder specifications; EAS 67: 2007: raw cow milk specifications; EAS 69: 2007 pasteurized milk specifications;	Accreditation to 17025 Calibration of the equipments; Limited capacity to test anti-biotic Inter-laboratory proficient testing; <i>laboratory equipment HPLC or GC/MS for drug and pesticide residue analysis;</i> <i>Food inspection, HACCP, GMP, GAP, GHP</i> Lack awareness on the SMCA requirement
							Accreditation	Is a requirement	MAAIF DDA		
							National Regulation GVP, HACCP, GMP, GAP, GHP	Is a requirement	MAAIF DDA		
							Accreditation National Regulation Certificate of conformity	Is a requirement	DDA MAAIF UNBS Government Chemist		

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No	Commodity	Markets	Value Stage	SMCA Market Requirements					SMCA Service Provider	SMCA Capacity	Capacity Gaps
				Standards/Regulations	Metrology	Testing	Inspection & Certification	Accreditation			
										EAS 70: 2007 dairy milk ices and dairy ice cream; EAS 78: 2000 milk based baby food; EAS 87: 2007sweetened condensed milk; And standards for testing methods;	
7	Beef –	Regional: Egypt, Sudan, Burundi, DR Congo Domestic/local;	Pre-production	Codex; GVP GAP EU regulation\ EAC standard Domestic standards	National Regulations; Accreditation	Accreditation National Regulations	Certificate of conformity National regulations	Accreditation required	MAAIF Chemiphar UNBS Government Chemist NARO	Currently implementing Codex standards 88; EAS 26:2000 Canned corned beef – specifications EAS 84-1: 2000 meat grades and meat cut specifications; ISO 17025.Quality Manual and Documentation available.	Lack of implementation of slaughter facility standards; Accreditation to 17025 Calibration of the equipments; Limited capacity to test anti-biotic <i>laboratory equipment HPLC or GC/MS for drug and pesticide residue analysis;</i> <i>Training in HACCP, GMP, GAP, GHP</i> Lack awareness on the SMCA requirement Laboratory consumables (CFT, VNT, IFAT, HI) Replacement, Repair and maintenance of some equipments (hot ovens, incubators, filters, freezers, fridges) Surveillance and laboratory kits (ELISA,
			• Feeds								
			• Vet Drugs								
			• Water								
			• equipments								
			Production								
			Processing								
			Products								

Report on the Producers' SMCA Needs and Capacity Assessment of the SMCA Service providers

No	Commodity	Markets	Value Stage	SMCA Market Requirements					SMCA Service Provider	SMCA Capacity	Capacity Gaps
				Standards/Regulations	Metrology	Testing	Inspection & Certification	Accreditation			
											IFA, PCR, AGID, RT-PCR)
8	Poultry	Regional: Rwanda, Sudan, Burundi, DR Congo Domestic/local;	Pre-production <ul style="list-style-type: none"> • Feeds • Vet Drugs • Water • equipments 	Codex; GVP GAP HACCP EU regulation\ EAC standard Domestic standards	National Regulations; Accreditation	Accreditation is required National Regulations	Certificate of conformity Q Mark National regulations	Accreditation required	MAAIF Chemiphar UNBS Government Chemist NARO	Currently implementing ISO 17025.Quality Manual and Documentation plan available.	<p>Developing urgent standards for the poultry industry (bird, feed, veterinary vaccines)</p> <p>Put in place technical regulations to govern the poultry processing industry</p> <p>Establish a mechanism for approving food grade chemicals and fumigation activities</p> <p>Lack of implementation of slaughter facility standards; Limitation in certification(Q mark and S Mark))</p> <p>Accreditation to 17025</p> <p>Calibration of the equipments;</p> <p>Limited capacity to test anti-biotic</p> <p><i>laboratory equipment HPLC or GC/MS for drug and pesticide residue analysis;</i></p> <p><i>Training in HACCP, GMP, GAP, GHP</i></p> <p>Lack awareness on the SMCA requirement</p>
			Production								
			Processing								
			Products								

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No	Commodity	Markets	Value Stage	SMCA Market Requirements					SMCA Service Provider	SMCA Capacity	Capacity Gaps
				Standards/ Regulations	Metrology	Testing	Inspection & Certification	Accreditation			
9	Hides and skins	China, Hong Cong, Turkey	<ul style="list-style-type: none">Processing		Calibration of the measurement equipment for leather	Grading tests Defect control Ash Content Wet blue content Chemicals content Tests of the DIN and SATRA of UK	Certificate of conformity	Is required	MAAIF	EAS 93-1:2000, Raw hides and skins - Code of practice - Part 1: By stack salting EAS 193-2:2000, Raw hides and skins - Code of practice - Part 2: By air-drying EASI93-3:2000, Raw hides and skins - Codes of practice for preservation - Part 3: By pickling	Standards for leather Raw hides and skin standards Grading standards for raw hides and skins Environmental Standards Calibration of the measurement equipment for leather Wet blue processing Review of current Regulatory framework
10	Maize	EAC: Kenya Burundi Rwanda COMESA Sudan Domestic	Pre-production	Codex GAP Grading Packaging Labeling	Calibrations of equipments	Mycotoxin testing	Certificate of conformity Q Mark	Is required	MAAIF UNBS NARO MAK	EAS 44:2000, Milled whole maize-meal and maize products – Specification	Calibration of farm equipments
						Moisture				EAS 2:2005, Maize (grains) – Specification	Limited capacity to test Mycotoxins
			Production	GAP	Calibrations of equipments	Mycotoxin testing	Certificate of conformity	Is required	MAAIF UNBS NARO MAK	EAS 285:2002, Maize - Determination of moisture content (on milled and whole grains)	Lack awareness on the SMCA requirements
			Processing	GMP, HACCP		Moisture	Quality Mark			EAS 232:2001, Maize gluten feed – Specification	Limited capacity for inspection and certification
	Products	Grading, packaging, labeling, pesticide residues, mycotoxins, SPS requirements, GMO, fumigation requirements	Calibrations of equipments	pesticide residues, mycotoxins, moisture content, GMO,		EAS 20:2001, Maize bran as animal feed – Specification		Local certifying body			
									EAS 9:2000, Maize seeds for planting - Specification	Weak enforcement; Accreditation of service providers	
11	Rice	EAC:	Pre-production	Codex standards EAC	Calibration of farm equipments	Mycotoxin Heavy metals	Certificate of conformity Q mark	Is required	MAAIF UNBS Government	Codex Standard 198-1995 EAS 128:1999, Milled	Limited capacity to test Mycotoxin

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No	Commodity	Markets	Value Stage	SMCA Market Requirements					SMCA Service Provider	SMCA Capacity	Capacity Gaps
				Standards/ Regulations	Metrology	Testing	Inspection & Certification	Accreditation			
		COMESA Domestic	<ul style="list-style-type: none"> Grain Agro-chemicals Farm equipments 	GAP, GDiP, GMP	Calibration of balances		National regulations		Analytical Laboratory Makerere University	rice – Specification EAS 128:1999, Milled rice - Specification	Calibration of equipment Lack awareness on the SMCA Accreditation of service providers
			Production	GAP, GHP							
			Processing	GHP, GMP, HACCP							
			Products	GAP, GDiP, GHP							
12	Banana	EU United Kingdom COMESA EAC Domestic	Pre-production <ul style="list-style-type: none"> Suckers Agro-chemicals Farm equipments 	Codex, GAP EU regulation EAC standard COMESA Standards Domestic standards	Calibration of farm equipments Calibration of balances	Contaminants, pesticide residue, heavy metals	Certificate of conformity Q mark National regulations	Is required	MAAIF UNBS Government Analytical Laboratory Makerere University, UGO-cert, CERES, IMO, Africert	Draft National Standards; Draft GAP	National standards, No National equivalent to Global GAP, EAC Standard, Technical regulations, limited inspection and certification capacity limited testing capacity Accreditation of service providers
			Production	GAP							
			Processing	GMP, HACCP							
			Products	GAP							
13	Hot Pepper	EU United Kingdom COMESA EAC Domestic	Pre-production <ul style="list-style-type: none"> Seeds Agro-chemicals Farm equipments 	Codex standards EU regulation EC 396/2005 EC 178/2006 EC148/2008 MRL Directives ¹⁷ 86/362/EC 91/414/EC	National Regulations National Regulations; Accreditation	National Regulations; Accreditation Pesticide residue	EC regulation EC 834/2008 (Organic) Accreditation National Regulation ; Certificate of conformity Q mark	Is required	MAAIF CHEMIPHA UNBS Government Chemist	Limited GAP Capacity to test for minimum quality requirements, grading Q mark Capacity to test heavy metals, pesticide residue Limited capacity for organic certification	Harmonization of Codex Standards Awareness Training More inspectors Monitoring of pesticide residue Awareness on code of Hygienic practices Accreditation of service providers
			Production								
			Processing	EAC standard							
			Products	COMESA Standards Domestic							

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No	Commodity	Markets	Value Stage	SMCA Market Requirements					SMCA Service Provider	SMCA Capacity	Capacity Gaps
				Standards/ Regulations	Metrology	Testing	Inspection & Certification	Accreditation			
				standards GAP							
14	Avocado	EU United Kingdom COMESA EAC Domestic	Pre-production	Codex standards EU regulation EC 396/2005 EC 178/2006 EC148/2008 MRL Directives 86/362/EC 91/414/EC	National Regulations	National Regulations;	EC regulation EC 834/2008 (Organic) Accreditation	Is required	MAAIF CHEMIPHA UNBS Government Chemist	EAS19:2000, Avocados – Specifications Limited capacity for organic certification Fresh Fruits & vegetables - labeling of fresh fruits & Vegetables Fresh fruits & Vegetables - packaging for transportation	Harmonization of Codex Standards Awareness Training More inspectors Monitoring of pesticide residue Awareness on code of Hygienic practices Accreditation of service providers
			• Seeds								
			• Agro-chemicals								
			• Farm equipments			Pesticide residue Heavy metals	National Regulation ; Certificate of conformity Q mark				
			Production								
			Processing								
			Products	EAC standard COMESA Standards Domestic standards GAP							
15	Passion Fruits	EU United Kingdom COMESA EAC Domestic	Pre-production	Codex standards EU regulation EC 396/2005 EC 178/2006 EC148/2008 MRL Directives 86/362/EC 91/414/EC	National Regulations	National Regulations;	EC regulation EC 834/2008 (Organic) Accreditation	Is required	MAAIF CHEMIPHA UNBS Government Chemist	Fresh Fruits & vegetables - labeling of fresh fruits & Vegetables Fresh fruits & Vegetables - packaging for transportation	Harmonization of Codex Standards Awareness Training More inspectors Monitoring of pesticide residue Awareness on code of Hygienic practices Accreditation of service providers
			• Seeds								
			• Agro-chemicals								
			• Farm equipments			Pesticide residue Heavy metals	National Regulation ; Certificate of conformity Q mark				
			Production								
			Processing								
			Products	EAC standard COMESA Standards Domestic standards GAP							
16	Beans	COMESA: EAC Domestic	Pre-production	Codex standards, EAC standards, COMESA Standards	National Regulations	National Regulations;	National Regulation ; Certificate of conformity Q Mark S Mark	Is required	MAAIF CHEMIPHA UNBS Government Chemist	US 400 2002: EAS 46:2000, Dry beans for human consumption - Specification	Harmonization of Codex Standards Awareness Training More inspectors Monitoring of pesticide residue Awareness on code of Hygienic practices
			• Seeds								
			• Agro-chemicals								
			• Farm equipments			Pesticide residue Heavy metals					

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No	Commodity	Markets	Value Stage	SMCA Market Requirements					SMCA Service Provider	SMCA Capacity	Capacity Gaps
				Standards/ Regulations	Metrology	Testing	Inspection & Certification	Accreditation			
			Production								
			Processing								
			Products								
17	Cassava	EAC Domestic	Pre-production	Codex GAP Grading Packaging Labeling	Calibrations of equipments	Mycotoxin testing Moisture	Certificate of conformity Q Mark S Mark	Is required Is required	MAAIF UNBS NARO MAK Government Chemist	Codex standards DEAS 778:2012 Fresh bitter cassava - Specification EAS 738:2010 Fresh sweet cassava - Specification	Accreditation of service providers
			• Cuttings								
			• Agro-chemicals								
			• Farm equipments								
				GAP							
			Production	GMP, HACCP							
			Processing								
			Products								
18	Oil & Gas	National regional and International markets	Products	National regional and International standards and technical regulations	Calibration of equipment	Conformity testing	Certificate of conformity	Is required	UNBS, MEMD, NEMA, Government Chemist	National standards for products, limited metrology capacity, Focal point for accreditation, Limited testing capacity,	Accreditation of service providers
19	Vegetable Fats & Oils	Regional COMESA EAC DR Congo Burundi Sudan	Pre-production	Codex EU regulation EC 396/2005 EC 178/2006 EC148/2008 MRL Directives	National regulation Accreditation	National Regulations; Accreditation	Q Mark S Mark	Is required	MAAIF UNBS Government Chemist	EAS 321:2002, Edible fats and oils (general) – Specification EAS 320:2002, Code of hygiene for transportation of edible fats and oils in bulk EAS 304:2002, Edible corn oil- Specification EAS 297:2002, Edible soya bean oil- Specification EAS 298:2002, Edible cotton seed oil – Specification EAS 299:2002, Edible sunflower oil – Specification EAS 300:2002, Edible groundnut oil – Specification	Accreditation of service providers
			• Seeds								
			• Agro-chemicals								
			• Farm equipments	86/362/EC 91/414/EC							
				EAC standard COMESA Standards							

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No	Commodity	Markets	Value Stage	SMCA Market Requirements					SMCA Service Provider	SMCA Capacity	Capacity Gaps
				Standards/ Regulations	Metrology	Testing	Inspection & Certification	Accreditation			
										EAS 301:2002, Edible palm oil- Specification EAS 302:2002, Edible palm kernel oil- Specification EAS 14:2000, Margarine – Specification EAS 2212007, Butter – Specification EAS 333:2002, Edible sesame oil- Specification	
			Production								
			Processing								
			Products								
20	Honey	EU EAC COMESA Domestic	Pre-production - Hives - Colonies - Bees - Equipments - Protective gear	Codex EAC COMESA	National regulations Accreditation	Minimum quality requirement Pesticide residues PCH Heavy metals	Certificate of conformity Q Mark S Mark	Is required	MAAIF, UNBS, Chemiphar, Govt chemist	EAS 36:2000, Honey - Specification	Accreditation of service providers
			Production								
			Processing								
			Products								
21	Sugar	COMESA DR Congo Sudan EAC Burundi	Pre-production • cuttings • Agro-chemicals • Farm equipments Production Processing Products Products	Codex EAC COMESA National	National regulations Accreditation	Minimum quality requirement Pesticide residue Heavy metals PCB	Certificate of conformity Q Mark S Mark	Is required	MAAIF UNBS Government Chemist Chemiphar	EAS 5:2009, Refined white sugar - Specification EAS 16:2009, Plantation (mill) white sugar – Specification EAS 350:2004, Hard-boiled sugar confectionery – Specification EAS 17:2000, Sugar - Methods of chemical analysis EAS 8:2000, Raw sugar – Specification	Accreditation of service providers

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No	Commodity	Markets	Value Stage	SMCA Market Requirements					SMCA Service Provider	SMCA Capacity	Capacity Gaps
				Standards/ Regulations	Metrology	Testing	Inspection & Certification	Accreditation			
										EAS 5:2000, Refined white sugar - Specification	
22	Cement	COMESA DR Congo Sudan EAC Burundi	Pre-production Processing Production	National and Regional standards, GMP, ISO 14000, Total quality management, occupation standards	Calibration and verification	Conformity testing and accreditation	Quality mark, Accreditation to ISO 17020 and ISO 17065	Is a requirement	UNBS, MTIC, Govt Chemist, Ministry of Works, NEMA, Ministry of Environment	EAS 18-11:2001, Cement - Part 1: Composition, specification and conformity criteria for common cement EAS 18 ~:2001, Cement - Part 2: Conformity evaluation EAS 183:2001, Cement – Definitions	Some Labs not accredited, Inspectors and auditors not accredited;
23	Iron & Steel	COMESA DR Congo Sudan Burundi Domestic	Pre-production Production Processing Products	National and Regional standards, GMP, ISO 14000, Total quality management, occupation standards	Calibration and verification	Conformity testing and accreditation	Quality mark, Accreditation to ISO 17020 and ISO 17065	Is a requirement	UNBS, MTIC, Ministry of Works, NEMA, Ministry of Environment	National and regional (EAC) standards; Limited testing capacity; Limited inspection and certification; Focal point for accreditation	Some Labs not accredited, Inspectors and auditors not accredited
24	Alcoholic Drinks	COMESA DR Congo Sudan EAC Burundi Domestic	Pre-production Production Processing Products	National and Regional standards, GHP, HACCP GMP, ISO 14000, Total quality management, occupation standards	Calibration and verification	Conformity testing and accreditation	Quality mark, Accreditation to ISO 17020 and ISO 17065	Is a requirement	UNBS, MTIC, Govt Chemist, NEMA, Ministry of Environment	National and regional (EAC) standards; Limited testing capacity; Limited inspection and certification; Focal point for accreditation	Some Labs not accredited, Inspectors and auditors not accredited
25	Education	COMESA Sudan EAC Tanzania Kenya	Products	National Guidelines, ISO 9000 series	Calibration and verification of school equipments	Testing of school consumables	Accreditation to ISO 17020 and ISO 17065	Is a requirement	Ministry of Education & Sports, National Council for higher Education, Education Standards Agency, UNEB	Limited testing capacity; Limited inspection and certification; Focal point for accreditation	Inspectors and auditors not accredited

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No	Commodity	Markets	Value Stage	SMCA Market Requirements					SMCA Service Provider	SMCA Capacity	Capacity Gaps
				Standards/ Regulations	Metrology	Testing	Inspection & Certification	Accreditation			
26	Tourism	International, regional and Domestic	Products	National standards, ISO 9000 series, ISO 14000 HACCP	Inspection and verification of equipments	Conformity testing	accreditation	Is requirement	Ministry of Tourism, UTB, UWA, Sector associations	Limited inspection, auditing and certification capacities	Accreditation of service providers
27	Electricity	EAC Tanzania Kenya Rwanda Domestic	Products	National, regional and international standards and regulations	Inspection and verification of equipments	Conformity testing	accreditation	Is requirement	MEMD, ERA, UNBS,	Limited inspection, auditing and certification capacities	Accreditation of service providers
28	Water and Soft Drinks	COMESA EAC Domestic	Pre-production <ul style="list-style-type: none">	Codex EAC COMESA National;	National regulations Accreditation	Minimum chemical quality requirement Heavy metals PCB Pesticide residues	Certificate of conformity Q Mark Smack	Is required	Directorate of water development National water and sewerage corporation Inspection by KCCA UNBS Government Chemist Chemipa NEMKO	Shall comply general standard for bottled/ packaged drinking waters (other than natural mineral waters) codex stan 227-2001. Shall comply with the health related requirements of the most recent "Guidelines for Drinking Water Quality" published by the World Health Organization. This waters shall be collected, transported, stored, and if applicable treated, and packaged in accordance with the Recommended International Code of Practice – General Principles of Food Hygiene (CAC/RCP 1-1991) and in accordance with the Code of Hygienic Practice for Bottled/Packaged Drinking Waters (other	No accreditation body Limited capacity to test for PCB Few inspectors Limited awareness Limited competence to conduct some certification e.g ISO 18001:2007,1400:2007 Few service provider for metrology Limited capacity to calibrate pressure Weak enforcement of standards Limited participation in harmonization of international standards

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No	Commodity	Markets	Value Stage	SMCA Market Requirements					SMCA Service Provider	SMCA Capacity	Capacity Gaps
				Standards/ Regulations	Metrology	Testing	Inspection & Certification	Accreditation			
										<p>than Natural Mineral Waters) (CAC/RCP 48-2001).</p> <p>All food additives should comply with CODEX GENERAL STANDARD FOR FOOD ADDITIVES (CODEX STAN 192-1995, Rev. 7-2006)</p>	
			<div>Production</div> <div>Processing</div> <div>Products</div>							<p>Shall comply with Codex Standard for Natural Mineral waters codex stan 108-1981.</p> <p>The transport of natural mineral waters in bulk containers for packaging or for any other process before packaging is prohibited.</p> <p>Treatments permitted include separation from unstable constituents, such as compounds containing iron, manganese, sulphur or arsenic, by decantation and/or filtration, if necessary, accelerated by previous aeration.</p>	
29	Construction	COMESA EAC Domestic	Materials	National SMCA requirements					Ministry of Works, UNBS, Govt Chemist	Limited inspection, auditing and certification capacities	Accreditation of service providers
30	Transport	COMESA EAC Domestic		National SMCA requirements					Ministry of Works	Limited inspection, auditing and certification capacities	Accreditation of service providers

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No	Commodity	Markets	Value Stage	SMCA Market Requirements					SMCA Service Provider	SMCA Capacity	Capacity Gaps
		Standards/ Regulations		Metrology	Testing	Inspection & Certification	Accreditation				
IMPORTS											
1	Drugs & Cosmetics	COMESA EAC Domestic	Products	National SMCA requirements					NDA	Limited inspection, auditing and certification capacities	Accreditation of service providers
2	Vehicles	COMESA EAC Domestic	Products	National SMCA requirements					Ministry of Works	Limited inspection, auditing and certification capacities	Accreditation of service providers
3	Electricals & Electronics	COMESA EAC Domestic	Products	National SMCA requirements					UNBS	Limited inspection, auditing and certification capacities	Accreditation of service providers
4	Oil & Gas	COMESA Domestic	Products	National SMCA requirements					MEMD	Limited inspection, auditing and certification capacities	Accreditation of service providers
5	Rice	COMESA EAC Domestic	Products	National SMCA requirements					UNBS/ MAAIF	Limited inspection, auditing and certification capacities	Accreditation of service providers
6	Vegetable Oil	COMESA EAC Domestic	Products	National SMCA requirements					UNBS, MAAIF, Govt Chemist, Chemiphar	Limited inspection, auditing and certification capacities	Accreditation of service providers

ANNEX 2: SMCA CAPACITIES AND NEEDS OF THE SELECTED GOVERNMENT MINISTRY, DEPARTMENT, AGENCY (MDA) OR PRIVATE SECTOR ORGANISATIONS (PSO)

Table 2.1: Ministry of Agriculture, Animal Industry and Fisheries – Livestock Department (OIE list of tests for international Trade)

	PARAMETER			STATUS OF SMCA CAPACITY	CAPACITY NEEDS	RECOMMENDATION
	Disease	Prescribed Test	Alternative Test	Capacity at CVL		Provide support to meet the identified needs
1	Foot and Mouth disease	ELISA, VNT	CFT	3ABC ELISA Antigen detection Blocking ELISA	VNT – No capacity	
2	Vesicular Stomatitis	CFT, ELISA, VNT		CFT	ELISA – Kits lacking VNT – No capacity	
3	Swine Vesicular Disease	VNT	ELISA		ELISA – Kits lacking VNT – No capacity	
4	Rinderpest	ELISA	VNT	C ELISA I ELISA		
5	Peste des Petits Ruminants	VNT	ELISA	C ELISA	I ELISA – Kits lacking VNT – No capacity	
6	Contagious Bovine Pleuropneumonia	CFT	ELISA	CFT	ELISA – More kits required	
7	Lumpy Skin Disease	-	VNT		VNT – No capacity	
8	Rift Valley Fever	-	HI, ELISA, PRNT		ELISA – No kits HI – No capacity PRNT – No capacity	
9	Blue Tongue	Agent id, AGID, ELISA, PCR	VNT		No capacity	
10	Sheep and Goat pox	-	VNT		VNT – No capacity	
10	African Horse Sickness	CFT, ELISA	VNT	CFT	ELISA – No kit VNT – No capacity	
11	African Swine Fever	ELISA	IFAT	PCR AGID	ELISA – More kits IFA – No kit	
12	Classical Swine Fever	NPIA, FAVN, ELISA	-		NPIA – No capacity FAVN – No capacity ELISA – No kit	
13	Highly Pathogenic Avian Influenza		AGID, HI	Real time RT-PCR	Biosafety issues	
14	Newcastle Disease	-	HI		HI – No capacity	
15	Anthrax	-	-	Agent id under microscope; PCR	Biosafety issues	
16	Aujeszky's Disease	ELISA, VNT	-		ELISA – No kit VNT – No capacity	
17	Echinococcosis / Hydatidosis	-	-	ELISA		

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	PARAMETER			STATUS OF SMCA CAPACITY	CAPACITY NEEDS	RECOMMENDATION
	Disease	Prescribed Test	Alternative Test	Capacity at CVL		Provide support to meet
18	Leptospirosis	-	MAT		MAT – No capacity	
19	Rabies	VNT	ELISA	FAT	ELISA – No kit VNT – No capacity	
20	Paratuberculosis (Johne's Disease)	-	DTH, ELISA		DTH – No capacity ELISA – No kit	
21	Heartwater	-	ELISA, IFAT		ELISA – No kit IFAT – No reagents PCR – No kit	
22	Q – Fever	-	CFT	Required	CFT – Reagents	
23	Leshmaniosis	-	Agent id	Agent id		
24	Bovine Brucellosis	BBAT, CFT, ELISA	FPAT	ELISA BBAT	CFT – Reagents required	
24	Bovine Genital Compylobacteriosis	Agent id	-	Agent id		
25	Bovine Tuberculosis	Tuberculin Test	-		Tuberculin test - No kit PCR – No kit	
26	Enzootic Bovine Leukosis	AGID, ELISA	PCR		AGID – No kit ELISA – No kit PCR – No kit	
27	Infectious Bovine Rhinotracheitis / Infectious Pustular Vulvovaginitis	VNT, ELISA, agent id (semen only)	-	Agent id	VNT – reagents required ELISA – No kit	
28	Trichomoniasis	Agent id	Mucus agg.	Agent id	Mucus agg – no reagents	
29	Bovine Anaplasmosis	-	CFT, agg. card,	Agent id	CFT – no reagents Agg.card – no reagents	
30	Bovine Babesiosis	-	ELISA, IFAT	Agent id	ELISA – no kit IFAT – no reagents	
31	Bovine Cysticercosis	-	Agent id	Agent id	ELISA – no kit	
32	Dermatophilosis	-	-	Agent id		
33	Theileriosis	Agent id, IFAT	-	Agent id	IFAT – No reagents	
34	Haemorrhagic Septicaemia	-	Agent id	Agent id	PCR – no kit	
35	Bovine Spongiform Encephalopathy	-	-	Histopathology	ELISA – no kit	
36	Malignant Catarrhal Fever	-	VNT, IFAT, PCR		VNT – No reagents IFAT – No reagents PCR – No kit	
37	Trypanosomosis (Tsetse vectored)	-	IFAT	Agent id	IFAT – No reagents	
38	Ovine Epidymitis (Brucella ovis)	CFT	ELISA		CFT – no reagents ELISA – no kit	
39	Caprine and ovine Brucellosis	BBAT, CFT	Brucellin Test	ELISA (except ovine) BBAT – Rose Bengal Test	CFT – Reagents required	
40	Contagious agalactia	-	-			

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	PARAMETER			STATUS OF SMCA CAPACITY	CAPACITY NEEDS	RECOMMENDATION
	Disease	Prescribed Test	Alternative Test	Capacity at CVL		Provide support to meet
41	Caprine arthritis / encephalitis / Maedi-Visna	AGID	ELISA		AGID – No reagents ELISA – No kit	
42	Contagious Caprine Pleuropneumonia	CFT	-		CFT – No reagents	
43	Enzootic Abortion of Ewes (Ovine chlamydiosis)	-	CFT		CFT – No reagents	
44	Scrapie	-	-	Histopathology		
45	Ovine Pulmonary adenomatosis (adenocarcinoma)	-	-	Histopathology		
46	Nairobi Sheep Disease	-	-		Direct FAT – no reagents VNT – no reagents AGID – no reagents	
47	Salmonellosis (<i>Salmonella abortusovis</i>)	-	Agent id	Agent id		
48	Contagious Equine Metritis	Agent id	-	Agent id		
48	Dourine (<i>Trypanosoma equiperdum</i>)	CFT	IFAT, ELISA	Agent id	CFT – no reagents IFAT – no reagents ELISA – no kit	
49	Equine Encephalomyelitis (Eastern and Western)	-	HI, CFT, PRNT	Histopathology	HI – no reagents CFT – no reagents PRNT – No capacity	
50	Equine Infectious Anemia	AGID	ELISA		AGID – no reagents ELISA – no kit	
51	Equine Influenza	-	HI		rRT-PCR – No kit RT – PCR – No kit HI – no reagents	
52	Equine piroplasmiasis (<i>Theileria equi</i> & <i>Babesia caballi</i>)	CFT, IFAT	-	Agent id	CFT – no reagents IFAT – no reagents	
53	Equine Rhinopneumonitis	-	VNT		VNT – no reagents	
54	Glanders	Mallien test, CFT	-		Mallien test – no capacity CFT – no reagents	
55	Equine Viral Arteritis	VNT, Agent id (semen only)	-		No capacity	
55	Horse Mange	-	Agent id	Agent id		
56	Venezuelan Equine Encephalomyelitis (VEE)	-	HI, CFT, PRN		No capacity	
57	Epizootic Lymphangitis (<i>Histoplasma capsulatum</i>)	-	-	Agent id		
58	Japanese Encephalitis	-	-		VNT – no capacity Isolation – no capacity	
59	Surra (<i>Trypanosoma evansi</i>)	-	-	Agent id		
60	Atrophic Rhinitis of Swine (<i>Pasteurella multocida</i> , <i>P. bronchiseptica</i>)	-	-	Agent id		
61	Porcine Brucellosis	ELISA	BBAT, FPAT	ELISA BBAT – Rose Bengal Test	FPAT – no capacity	
62	Enterovirus Encephalomyelitis	-	VNT		VNT – no capacity	
63	Transmissible Gastroenteritis	-	VNT, ELISA		VNT – no capacity ELISA – no kit	
64	Porcine Reproductive and Respiratory Syndrome (PRRS)	-	ELISA, IFAT, IPMAT		ELISA – no kit IFAT – no reagents IPMA – no capacity	
65	Porcine cysticercosis	-	Agent id	Agent id	ELISA – no kit	

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	PARAMETER			STATUS OF SMCA CAPACITY	CAPACITY NEEDS	RECOMMENDATION
	Disease	Prescribed Test	Alternative Test	Capacity at CVL		Provide support to meet
66	Infectious Bursal Disease (Gumboro disease)	-	AGID, ELISA		AGID – no reagents ELISA – no kit	
67	Mareks Disease	-	AGID	AGID – no reagents		
68	Avian Mycoplasmosis (<i>Mycoplasma gallisepticum</i>)	-	agg. HI		agg. – no reagents HI – no reagents	
69	Avian Chlamydiosis	-	-		ELISA – no kit PCR – no kit	
70	Fowl Typhoid and Pullorum disease (<i>S. gallinarum</i> , <i>S. enterica/pullorum</i>)	-	-	agent id	agg. – no reagents	
71	Avian Infectious Bronchitis	-	VNT, HI, ELISA		PCR – no kit VNT – no capacity HI – no reagents ELISA – no kit	
72	Avian infectious Laryngotracheitis	-	VNT, AGID, ELISA		VNT – no capacity AGID – no reagents ELISA – no kit	
73	Avian Tuberculosis	-	Tuberculin test		Tuberculin test – no reagents	
74	Duck Virus Hepatitis	-	-		Agent id (cell culture) – no capacity	
75	Duck Virus Enteritis	-	-		PCR – no kit Agent id (cell culture) – no capacity	
76	Fowl Cholera (Avian Pasteurellosis)	-	-		agent id – anaerobic culture capacity needed	
77	Fowl pox	-	-	Histopathology	VNT – no capacity ELISA – no kit AGID – no reagents	
78	Myxomatosis	-	AGID, CFT, IFAT		AGID – no reagents CFT – no reagents IFAT – no reagents	
79	Tulremia (<i>Francisella tularensis</i>)	-	agent id	agent id		
80	Rabbit Haemorrhagic disease	-	-		HI – no reagents	
81	Cysticercosis (all spp)	-	agent id	agent id Post mortem exam	ELISA – no kits	
82	Bunyaviral diseases of animals (excluding RVF) Akabane virus infection Cache Valley Virus Nairobi Sheep Disease - NSD (see above)	-	-		Agent id (isolation) – no capacity ELISA – no kit CFT – no reagents	
83	Salmonellosis	-	agent id	agent id		
84	Mange	-	agent id	agent id		
85	Border Disease	agent id (isolation and immunostaining)			isolation and immunostaining – no capacity	
86	Bovine viral diarrhea	agent id (isolation)			isolation a– no capacity PCR – no kit ELISA – no kit VNT – no capacity	

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	PARAMETER			STATUS OF SMCA CAPACITY	CAPACITY NEEDS	RECOMMENDATION
	Disease	Prescribed Test	Alternative Test	Capacity at CVL		Provide support to meet
87	West Nile Encephalitis (<i>West Nile Virus</i>)	-	-		RT-nPCR – no kit Igm C-ELISA – no kit	
88	<i>Compylobacter jejuni</i> and <i>C. coli</i>	-	-	agent id ELISA		
89	Hendra and Nipah Virus disease (<i>Hendra virus</i> - horses & <i>Nipah virus</i> - pigs)				Agent id (cell culture) – no capacity VNT – no capacity ELISA – no kit	
90	Swine Influenza	-	-		Agent id (cell culture) – no capacity HI – no reagents RT-PCR - kit	
91	Toxoplasmosis	-	-		PCR no kit ELISA – no kit IFAT – no reagent	
92	Verocytotoxigenic <i>Escherichia coli</i> ; e.g. <i>E.coli</i> O157	-	-	agent id	PCR – no kits ELISA – no kit	
93	Lesteriosis	-	-	agent id (culture) Rapid identification in food	ELISA –no kit PCR – no kits	
94	Acariosis of Bees (Tarsonemid mite / Tracheal mite)	-	-	agent id – by microscopy		
95	America Foulbrood (<i>Paenibacillus larvae</i>)	-	-	agent id PCR		
96	European Foulbrood (<i>Mellisococcus pluton</i>)	-	-	agent id PCR		
97	Nosemosis of Bees (<i>Microsporidium</i> , <i>Nosema apis</i>)	-	-	agent id – microscopy		
98	Varroosis (Varroa mites)	-	-	agent id brood exam		
99	<i>Tropilaelaps</i> infestation of bees (<i>Tropilaelaps clareae</i> , <i>T. koenigerum</i>)	-	-	agent id Colony and brood exam Sticky board exam		

Abbreviations

Agent id – Agent identification

Agg. – Agglutination test

AGID – Agar Gel immunodiffusion test

BBAT – Buffered *Brucella* Antigen Test

CFT – Complement Fixation Test

DTH – Delayed-type hypersensitivity

ELISA – Enzyme Linked Immunosorbent Assay

FAVN – Fluorescent Antibody Virus Neutralization

Test

FPA – Fluorescent Polarizations Assay

HI – Haemagglutination Inhibition test

IFAT – Indirect Fluorescent Antibody Test

IPMA – Immunoperoxidase Monolayer Assay

MAT – Microscopic Agglutination Test

NPLA – Neutralizing Peroxidase-Linked Assay

PCR – Ploymerase Chain Reaction

PRNT – Plaque Reduction Neutralization Test

VNT – Virus Neutralization Test

- No test designated for the particular disease yet

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Table 2.2: Ministry of Agriculture, Animal Industry, and Fisheries – Department for Fisheries Resources

#	SMCA	STATUS OF SMCA CAPACITY	CAPACITY NEEDS	RECOMMENDATION
1	Standards and Technical regulations	<p>i) The following are in place: Fisheries Policy, Fish Act, Fish Quality Assurance Rules, Implementation of food safety standards based on HACCP</p> <p>ii) Compliance to International Quality Standards in the sector is guaranteed by Department of Fisheries Resources (DFR) in MAAIF, Uganda National Bureau of Standards, Food Science and Technology Research Institute, National Environment and Management Authority and the Ministry of Health;</p> <p>iii) Quality Assurance Rules and Standard Operating Procedures SOP;</p> <p>iv) Monitoring of residues and environmental contaminants in sediment, water and fish</p> <p>v) DFR was subjected to EU FVO Inspection mission in May 2011. The Quality assurance unit adequately prepared and demonstrated that the official controls in Uganda met the equivalency of EU food and feed Law thus guaranteed safety and quality of fishery products exported from Uganda to EU member states.</p>	<p>(i) The status of fish stocks in all water bodies on which to establish sustainable levels of fishing;</p> <p>(ii) The facilities for seed multiplication and artificial propagation for restocking and stock enhancement;</p> <p>(iii) Breeding and nursery grounds are not identified, mapped and gazetted;</p> <p>(i) Inadequate capacity of BMUs in fisheries quality (hygiene) management;</p> <p>(ii) Lack of awareness on SMCA requirements</p> <p>(iii) Inadequate enforcement of technical regulations e.g. Continued use of illegal gears and methods;</p> <p>(iv) Poor data collection due to limited resources to cover a number of water bodies with many scattered small fish landing centers;</p> <p>(v) Lack of coordination between various stakeholders; Non Government organizations and the competent authority (DFR).</p> <p>(vi) Inadequate infrastructure for fish safety and quality assurance.</p>	Support should be provided to address the identified capacity gaps and also to have a bill to regulate all organizations involved in aquaculture activities by the Fisheries Department as the competent authority and as focal point for aquaculture in the country;
2	LABORATORY AND TESTING	<p>(i) Uganda Fisheries Laboratory (UFL) is highly specialized in testing of fish and fishery products, water and ice, and have the ability to test other food products within its current scope of test parameters.</p> <p>(ii) The Laboratory consists of a microbiology section, sensory analysis section and the chemistry section. Procurement for some equipment including Gas Chromatography Mass Spectrophotometer (GCMS) for pesticide residue analysis, Atomic Absorption Spectrophotometer (AAS); for heavy metal analysis and fume cabinets is underway.</p> <p>(iii) UFL samples and monitors the quality of fish, tap water, lake water, ice and swabs from fish establishments, landing sites, lakes and fish ponds</p> <p>(iv) A database has been put in place upon which the laboratory's external and internal assessments have been based.</p>	<p>Accreditation of the laboratory to ISO 17025.</p> <p>More technical personnel required;</p> <p>Training required for the technical personnel in ISO 17025;</p>	<p>Support accreditation of the laboratory and training of the staff</p> <p>Review the role of fisheries laboratory in food control to maximise capacity utilisation</p>

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#	SMCA	STATUS OF SMCA CAPACITY	CAPACITY NEEDS	RECOMMENDATION
		(v) Current test parameters are microbiological including; <i>Total Plate Count, Salmonella, Total Coliforms, Escherichia coli, Sulphite reducing clostridia, Staphylococcus aureus</i> and <i>Listeria monocytogens. Vibrio cholerae</i> , moulds and yeasts are soon to be considered as routine test parameters		
3	INSPECTION AND CERTIFICATION	<p>(i) Quality Assurance Unit inspects fish processing plants, and establishments, gazetted landing sites for compliance and ensuring fish quality and safety; it also issues certificate of conformance for fish and fishery products for exports.</p> <p>(ii) Quality Assurance manual for inspection of fisheries services is in place;</p> <p>(iii) Clean water, sanitation and fish handling facilities established at selected fishing landing sites in the 9 districts.</p> <p>(iv) National and district fish inspectors trained in ICT and Information Management</p> <p>(v) Fisheries inspection database functional</p> <p>(vi) Code of Practice for artisanal fish processing and marketing prepared.</p> <p>(vii) Code of Practice for fish farms prepared</p>	<p>(i) Lead auditors course</p> <p>(ii) Sustainable fisheries inspection</p> <p>(iii) Training in ISO range of standards such as ISO 9000, ISO 65, ISO 22000, ISO 17020 and Acquisition of the relevant accreditations; SA 8000; Global GAP auditors course</p> <p>(iv) HACCP; 4C, UTZ, Naturland and several other private standards;</p>	<p>Support the training of the inspectors and certifiers to attain the relevant competence;</p> <p>Upgrade the existing certification system to electronic system (E-certification for the industry)</p> <p>Introduce 17020 for the inspectorate and work toward its implementation</p> <p>Develop code of conduct for inspectors to effectively operationalise powers of inspectors</p>
4	ANIMAL AND FISHERIES PRODUCTS AND ANIMAL FEED LABORATORY	Lab structure without equipment's, consumables and personnel	Lab equipment's, consumables and personnel	Support the lab with equipment's, consumables and personnel

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Table 2.3: Ministry Of Agriculture, Animal Industry, and Fisheries – Department for Crop Protection

#	SMCA	STATUS OF SMCA CAPACITY	CAPACITY NEEDS	RECOMMENDATION
1	Standards / Technical Regulations	Agricultural Chemicals Control Act 2006: provides for registration, inspection and enforcement of agricultural chemicals	Introduction the concept of accreditation of personnel involved in the evaluation and undertaking of trials for pesticides	Support the training and accreditation of the staff
2	Metrology		Calibration services for equipments when procured	UNBS be facilitated to provide calibration services
3	Testing	A building to house the laboratory was put in place but no equipments and consumables	Equipping the laboratory - human resource, equipments and consumables Equipments for the analysis of pesticides: <ul style="list-style-type: none"> • Gas Chromatograph • HPLC, • MS, • multiple gas generators, • detectors (FID, ECD, NPD/FTD, FPD) , • GCMS-QP-2010 Plus, • Vacuum Manifold, • Rotary Evaporator • Assorted Laboratory Glassware • Laboratory Chemicals • Weighing Analytical Balances • Fume – hoods Accreditation of the laboratory	Support the equipping of the laboratory with the identified equipments
4	Inspection and Certification	Inspectorate with 54 Inspectors (border points, airport)	<ul style="list-style-type: none"> ▪ No vehicles to carry out inspection ▪ No fuel (gas, petroleum for some equipment's and generators ▪ Training up to accreditation to 17020; ▪ Support the certification body to be to accredited to EN 45011 or ISO/IEC Guide 65 or ISO/IEC 17065; ▪ Support the creation of an accreditation body in MTIC to facilitate accreditation services at affordable services; 	Support the training for new inspectors (29) in inspection (17020) systems internally and externally on pesticide management systems, inspection regimes, pesticide analysis and monitoring
5	Post Entry Quarantine Laboratory	i) Infrastructure and equipments without consumables and trained personnel ii) Inspectorate has 50 staff at border points iii) Ongoing plant clinics programme but lack field kits (dissecting kits, sample boxes, reagents (ethanol), preservative, tents, fact sheets, cameras, chairs, tables, and microscope). iv) The program has no vehicles to carry samples and hire services from district to Kampala v) Green house without net and polythene sheet vi) No screen house vii) Idle generator	<ul style="list-style-type: none"> • Specialized training in microbiology, entomology, pathology, virology, biotechnology, fungal and bacteria, molecular biology, weed science etc for junior officers • Training for senior officers (PHD, M.Sc) • Training for plant clinic inspectors and officers • Equipment's: Autoclave, laminar flow hood, weighing scales, water bath, incubator (100M), fridge (30°C, 40°C); • Field kits (dissecting kits, sample boxes, reagents (ethanol), preservative, tents, fact sheets, cameras, chairs, tables, and microscope). • Rehabilitation of green house (need nets, polythene). • Need screen house • Fuel for generator • Sample transportation 	Support the laboratory to function effectively by bridging the identified needs
6	Virology Laboratory	Infrastructure without equipment's, consumables	Equipment's, Consumables and Personnel	Support with the equipment's and

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#	SMCA	STATUS OF SMCA CAPACITY	CAPACITY NEEDS	RECOMMENDATION
		and personnel		consumables
7	Honey and Apiary Products	<ul style="list-style-type: none"> Two regulatory instruments Draft policy Infrastructure without equipment's, consumables and personnel No laboratory but available facility without human resource, equipment's and consumables Inspectorate with 2 Inspectors at the ministry 70 inspectors at the district level No inspection at farm level Certification done on the basis of test certificates from UNBS and Chemiphar laboratories 	<ul style="list-style-type: none"> Approved policy Facilitation in form of human resource, vehicle and equipment's to carry out inspection at farm level 	<ul style="list-style-type: none"> Support the approval process of the draft policy; Improve coordination with SMCA service providers by signing MOUs with UNBS to delegate responsibilities for inspection of honey and premises Upgrade inspection infrastructure with requirements like tool kit (knife, saw and brush, Refractometers, smokers, sample bottles, sample box, personnel protective gears (harvesting suite, gumboots etc) Increase inspectors at district level
8	SOIL ANALYSIS	Lab structure without equipment's, consumables and personnel	Equipment's, consumables and personnel	Make the laboratory functional by providing the necessary equipment's, consumables and personnel
9	PEST/ ENTOMOLOGY	Infrastructure without equipment's, consumables and personnel	Equipment's, consumables and personnel	Provide the equipment's, consumables and personnel
10	PESTICIDES	<ul style="list-style-type: none"> Agricultural Chemicals Control Act 2006 Laboratory structure without human resource, equipment's and consumables Inspectorate with 54 Inspectors (border points, airport) No vehicles to carry out inspection No fuel (gas, petroleum for some equipment's and generators 	<ul style="list-style-type: none"> Equipment's, consumables and personnel Laboratory equipment's (GC, HPLC, MS, multiple gas generators, detectors (FID, ECD, NPD/FTD, FPD) , GCMS-QP-2010 Plus, Vacuum Manifold, Rotary Evaporator Training for new inspectors (29) in inspection (ISO 17020) systems internally and externally Training of personnel in pesticide analysis 	<ul style="list-style-type: none"> Support the laboratory by providing the identified equipment's; consumables; Support recruitment and training in the identified needs to make the laboratory functional;

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Table: 2.4 Uganda Organic Certification Organization (Ugocert)

#	SMCA	STATUS OF SMCA CAPACITY	CAPACITY NEEDS	RECOMMENDATION
	INSPECTION AND CERTIFICATION	<p>UgoCert is ISO 65 accredited and provides certification services for</p> <ul style="list-style-type: none"> (i) Organic crops and livestock production systems (ii) Organic beekeeping system (iii) Wild harvest of organic products (iv) Processors of organic foods and agriculture products. (v) Handling of organic foods such as packers, brokers, distributors, and wholesalers. (vi) Fishery Recertification to the Uganda Organic Standards (UOS); <p>The elements of the UgoCert certification system include:</p> <ul style="list-style-type: none"> a) Standards; b) Inspection and Audit; b) Chain Custody Audit; c) Certificate, licence and label; <p>UgoCert provides the following certification services.</p> <p>Uganda Organic Standard (UOS); Sustainable Wild Freshwater Fisheries (organic fish)</p> <p>UgoCert together with NOGAMU have developed sustainable wild fresh water fisheries standards which are part of the Uganda Organic Standard. UgoCert certifies sustainable wild freshwater fisheries in Uganda based on the UOS</p> <p>EU Regulation: EEC 2092/91 UgoCert has developed a system for certification of production in accordance to the EU Regulation EEC 2092/91</p> <p>UTZ KAPEH Certification UgoCert offers inspection services for the Utz Kapeh certification and is working towards accreditation to IOAS which will enable it offer Utz Kapeh certification.</p> <p>Certification for export markets UgoCert has cooperation agreements with already accredited international certification organizations and is managing a one stop service centre in Uganda for international organic certification. Under such cooperation frameworks, UgoCert together with international certification organisations enables operators to access certification to organic standards and regulations operating in other countries like the EU, Japan and the United States of America . UgoCert arranged certification under this framework delivers more cost effective certification services than would be achieved from any direct individual arrangement an operator may make with an international certifier.</p> <p>Inspection service UgoCert has developed expertise in carrying out inspections and audits of production systems for compliance to organic standards and other environmentally sustainable production standards. UgoCert provides inspection and audit services to the long term partner cooperating certification bodies according to the specifications in the respective cooperation agreements and contracts. UgoCert is currently works in cooperation with CERES, a renowned international organic certifier to provide international certification.</p>	<ul style="list-style-type: none"> • GPS machines and their use • Installation and use of E-certification software (E-cert) • conducting complex inspections and qualified to conduct inspections to a range of standards /regulations • Lead auditors course • Sustainable wild fisheries inspection • Training in ISO range of standards such as ISO 9000, ISO 65, ISO 22000, SA 8000 Global GAP auditors course, HACCP 4C, UTZ, Naturland and several other private standards • Local accreditation to reduce on the high cost trainings for inspectors/ investment in development of quality inspectors/auditors • Create a web-based database that is accessible from anywhere and can easily be used to analyse information and data collected with more accurate technologies like GPS machines • Web managed back ups • Field tab (mobile field computer) • Training the inspectors on how to use the software • Sensitization of the clients on how to use the software 	<p>Support Ugo-cert to acquire an up to date identified technology and the necessary training to inspect and certify Ugandan products more effectively and efficiently;</p>

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Table 2.5: National Drug Authority

#	SMCA	STATUS OF SMCA CAPACITY	CAPACITY NEEDS	RECOMMENDATION
1	The Standards and quality of medicines, condoms and gloves	<p>The National Drug Policy and Authority Act Cap 206, include:</p> <ul style="list-style-type: none"> i) Controlling the quality of drugs, encouraging research and development of herbal medicines and disseminating information to health professionals and the public. ii) registration of drugs on which approved iii) inspection and certification 	<p>Act does not adequately and explicitly address areas like cosmetics, public health products, medical devices, vaccines yet these needs to be regulated.</p> <p>The penalties under the Act are not sufficiently deterrent and this has partly encouraged recurrent breach of the law.</p> <p>The current law does not adequately cover regulation of veterinary drugs, yet NDA is mandated to regulate both human and veterinary drugs.</p> <p>There is need to amend the above areas to strengthen the regulatory framework within which NDA operates</p>	<p>Streamline and update legislation</p> <p>Improve coordination and communication exchange among regulators to avoid duplication of services</p> <p>Increase the Human and financial resource base</p> <p>Harmonise legislations in line with regional and international requirements to be able to address regional and global concerns</p>
2	Testing the quality of medicines, condoms and gloves	<p>High Performance Liquid Chromatograms UV-Vis Spectrophotometers Fourier Transform Infrared Spectrophotometer (FTIR) Gas Chromatography (GC) Dissolution testing apparatus Five-decimal place analytical balances Three-decimal precision balances Complete Fume hood units IR- Drier- Programmable Flame Photometer Auto titrimeter A set of Condom testing equipment Water leak test device for gloves. pH/Conductivity meters Thin layer Chromatography (TLC)</p>	<p>Installation of a wide area network (WAN) Laboratory Information Management System (LIMS).</p> <p>Extension of the NDQCL building to create space for more laboratory activities.</p> <p>Work towards the WHO pre-qualification of NDQCL and ISO/IEC 17025.</p> <p>Establish a LIMS System to ease data analysis.</p>	<p>Provide support to NDA to get ISO/IEC accreditation to gain recognition by WHO address the needs</p>
3	Inspection and certification	<p>Have inadequate staff for Inspection and certification of the quality of medicines, condoms and gloves</p>	<ul style="list-style-type: none"> i) Regularly up-dating the GMP guidelines to be in line with new developments. ii) Implementing NDA-wide Quality Assurance system based on ISO 9001 iii) Accreditation of Drug Inspectorate Services to ISO 17020 in order to operate in line with international best practice iv) Equipping inspectors with current knowledge through training and exposition tours v) Training in inspection of Clinical Research Organisations vi) Training in inspection of pharmaceutical plants that produce specialised products like vaccines; Counterfeit detection vii) Rapid Test Kits and scanners at ports of entry viii) Mobile laboratories at Ports of entry ix) High Volume Server for data storage x) Web based/internet connectivity to all regional offices and ports of entry xi) Verification and port inspection software (E-cert) 	<p>Provide support to bridge the identified capacity gaps to ensure effective service delivery;</p>

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Table 2.6: Uganda National Bureau of Standards: Microbiology Laboratory

#	KEY PARAMETERS NOT TESTED IN THE ORGANISATION					
#	STATUS OF SMCA CAPACITY				CAPACITY NEEDS	RECOMMENDATION
	PARAMETER	Prescribed Test	Alternative Test	Capacity at UNBS		
1	Receipt of perishable samples	Sample storage	Sample storage	1 medium sized fridge -1 degree to 10 degrees	1 large capacity scientific fridge – 1 °C to 10 °C	Need to procure 1 large capacity scientific fridge
2	Media preparation	Media storage at controlled temperatures	Media storage	2 Medium sized fridges – 1 degree to 10 degrees	2 large capacity scientific fridges. 1 degree to 10 degrees	Need to procure 2 large capacity scientific fridges
3	Total coliforms /Escherichia coli	ISO 9308 -1	Collilert and reagents for the detection of Total coliforms/ Escherichia coli N:B : Collilert is a rapid test method approved by ISO	ISO 9308-1. However the 44°C shaking water bath is defective	Collilert and reagents for the detection and enumeration of Total coliforms and Escherichia coli	1) Procurement of Collilert and reagents for the detection and enumeration of Total coliforms and reagents. 2) Replacement of 440C shaking water bath.
4	Intestinal enterococci	ISO 7899-2	Collilert and reagents for the detection and enumeration of intestinal enterococci	ISO 7899-2	Collilert and reagents for the detection of intestinal enterococci	Procurement of collilert and reagents for the detection of intestinal enterococci
5	Pseudomonas aeruginosa	ISO 16266	Collilert and reagents for the detection and enumeration of pseudomonas aeruginosa.	ISO 16266	Collilert and reagents for the detection of pseudomonas aeruginosa	Procurement of collilert and reagents for the detection of pseudomonas aeruginosa.
6	Total plate count	ISO 4833	ISO 4833	Very old incubator temperature 30 degrees.C (Mesophillic) No incubator for Psychotrophs - 6 degrees C. AS well as Thermophilles – 55 degrees C	Brand new incubators for mesophilles, psychotrophs and thermophilles.	Procurement of the afore said
7		ISO 6888-1	ISO 6888-1	Very old incubator temperature 37 degrees C.	Brand new incubator.	Procurement of the aforesaid.
8	Yeasts and Moulds	ISO 21527- 1 & 2	ISO 21527 -1 & 2	Very old incubator Temperature 25 degrees C.	Brand new incubator	Procurement of the aforesaid
9	Salmonella – detection Identification Serological	Detection – AOAC 967.26. Identification – AOAC 967.27 Serological – AOAC 967.28	Detection – AOAC 967.26. Identification – AOAC 967.27 Serological – AOAC 967.28	Very old incubator temperature 35 degrees C.	Brand new incubator.	Procurement of the aforesaid.
10	Enterobacteriaceae	ISO 21528-1	ISO 21528-1	Very old Incubator	Brand new incubator.	Procurement of the aforesaid.
11	Vibrio cholera	ISO 21872 -1	ISO 21872-1	Very old incubator	Brand new incubator.	Procurement of the aforesaid.
12	Water distillation units.			2 broken down and 1 working	Brand new water distillers	Procurement of at least 2 more water distillers.

Table 2.7: Uganda National Bureau Of Standards: Chemistry Laboratory.

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Uganda National Bureau Of Standards: Chemistry Laboratory							
	Parameters (Scope)	Test Methods and accreditation status	Equipment Required	Describe Manpower Capacity	Describe the capacity of equipment	Describe the capacity of space for equipment, storage etc.	Availability of consumables
1	Food additives , preservatives and food dyes	AOAC methods to be Accredited in future	Sample preparation Equipment and servicing of available HPLC, GC, GCMS in the laboratory	No staff trained	Analysis of volatile compounds	Not very adequate	Standards and other consumables Not adequate
2	Mycotoxins	AOAC methods to be Accredited in future	Sample preparation Equipment and servicing of available HPLC	2 staff trained	Analysis of volatile compounds	Not very adequate	Standards and other consumables Not adequate
3	Poly Aromatic hydrocarbons, Poly chlorinated Biphenyls,	AOAC methods to be Accredited in future	Sample preparation Equipment and servicing of available HPLC	No staff trained	Analysis of various organic contaminants	Not very adequate	Standards and other consumables Not adequate
4	Antibiotics residues	AOAC methods to be Accredited in future	Sample preparation Equipment and servicing of available HPLC	1 staff trained	Analysis of volatile compounds	Not very adequate	Standards and other consumables Not adequate
5	Heterocyclic amines	AOAC methods to be Accredited in future	Sample preparation Equipment and servicing of available HPLC	No staff trained	Analysis of volatile compounds	Not very adequate	Standards and other consumables Not adequate
6	Pesticides	AOAC methods to be Accredited in future	Sample preparation Equipment and servicing of available HPLC	3 staff trained	Analysis of various organic contaminants	Not very adequate	Standards and other consumables Not adequate
7	Selenium, zinc, other inorganic elements with some anions	AOAC methods to be Accredited in future	ICP/AES and Lamps for AAS	4 staff trained	Analysis of inorganic contaminants	Not very adequate	Standards and other consumables Not adequate
8	Volatile organic compounds and other organic	AOAC methods to be Accredited in future	GC WITH ECD, NPD AND FID ATTACHED TO LIQUID AND HEADSPACE ANALYSIS. HEADSPACE ANALYSIS OPTIONS INCLUDE SOLID PHASE MICROEXTRACTION (SPME)	NONE	Analysis of volatile compounds	Not very adequate Standards and other consumables Not adequate	

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Table 2.8: Uganda National Bureaus of Standards – Electrical Laboratory

#	STATUS OF SMCA CAPACITY				CAPACITY NEEDS	RECOMMENDATION
	ELECTRICAL TESTING LABORATORY AT UNBS					
1	PARAMETER	Prescribed Test	Alternative Test	Capacity at UNBS		
	Conductor resistance	Direct readout from digital Microhmmeter	Wheatstone bridge method	LCR Databridge. Not suitable for cables	2 Digital Microhmmeters	Need to buy a Microhmmeter
	Insulation resistance	Insulation resistance meter	N/A	None	Insulation resistance meter	Need to buy Insulation resistance meter
	Electric Power, energy, harmonics	Power analyzer	Power meter	None	Power analyzer	Need to buy Power analyzer
	Solar panel peak power, current and voltage	I-V curve tracer with irradiance meter	PV array tester	None	I-V curve tracer with irradiance meter	Need to buy I-V curve tracer with irradiance meter
	Resistance to heat & fire	Glow wire tester	N/A	None	Glow wire tester	Need to buy Glow wire tester
	Secondary battery rated capacity	Battery life cycle test system	N/A	None	Battery life cycle test system	Need to buy Battery life cycle test system
	Primary battery service output	Primary battery test bench	N/A	Manual test racks with a timer. Very limited	Primary battery test bench	Need to buy a Primary battery test bench
	Temperature	Infrared thermometer	Digital thermocouple	Digital thermocouple. Inadequate for some	2 Infrared thermometer s	Need to buy Infrared thermometer
	Performance at variable voltage	Variable ac voltage source	Autotransformer	None	Both variable ac voltage source & autotransformer	Need to buy both pieces of equipment

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Table 2.9: UGANDA NATIONAL BUREAU OF STANDARDS – MATERIALS LABORATORY

#	STATUS OF SMCA CAPACITY				CAPACITY NEEDS	RECOMMENDATION
	PARAMETER	Prescribed Test	Alternative Test	Capacity at UNBS		
1	Tensile strength And Compressive strength	BS 4449	None	Lacking	Universal Testing machine 1000KN	Support the procurement of the identified equipments and consumables to enable the identified tests to be carried out
2		BS 4449	None	Lacking	Universal Testing machine 1000KN	
3	Chemical composition	BS 4449	None	Lacking	F20 Optical Emission Spectra Analyzer	
4	Hardness (HRC)	BS	None	Lacking	Steel Hardness testing machine	
4	Particle size analysis	BS 410/BS 812/BS 1377	None	Some are broken	Set of sieves	
5	Temperature and moisture content	BS812	None	Lacking	Digital thermometers and hydrometers For carbon credit testing of stoves	
6	Aggregate crushing value	BS 812, EN 1097 -6	none	Lacking	Aggregate impact value	
7	Los Angeles Abrasion	BS 812, EN 1097 -6	none	Lacking	Los Angeles abrasion machine	
8	Soil testing-compaction	BS1377-4	None	Lacking	Compaction rammer	
9	Compaction	BS 1377-4	None	Lacking	Proctor Compaction rammer	
10	CBR California Bearing ratio	BS 1377	None	Lacking	CBR testing machine	
11	Permeability	BS 1377	None	Lacking	Combination Permeameter	
12	Soil strength	BS 1377	None	Lacking	Digital tri-test	
13	Bearing capacity	BS 1377	None	Lacking	Palte bearing test equipment	
14	Concrete setting mixer	EN 12350	None	Lacking	Mixing equipment	
15	Compacting concrete	EN 12350	None	Lacking	Vibrating table equipment	
16	Casting concrete	EN 12350	None	Lacking	Concrete moulds	
17	Concrete strength	EN2504	None	Lacking	Concrete test hammer	
18	Concrete strength	BS 1881	None	lacking	Pulse velocity	

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Table 2.10: Uganda National Bureaus of Standards – Metrology & Calibration Laboratory

#	SMCA STATUS OF METROLOGY CAPACITY	CAPACITY NEEDS	RECOMMENDATION
1	Calibration of temperature equipment	1PRT, 2 TCs, Bath (-30 – 120 °C)	Support the procurement of the identified equipments and consumables to enable the identified tests to be carried out
2	Calibration of pressure equipment	2 Pressure balances pneumatic 50bar, Hydraulic 830 bar	
3	Calibration of Electrical equipment	Multi product calibrator 5500A, fifty turn coil	
4	Calibration of mass related equipment	4 comparators, standard masses class E1, 5000 ton roller weights, calibration truck.	
5	Calibration of Volume and flow equipment	2 master meters 1200l/min, 5 provers 50l to 4000l Stationary provers system and water meter test bench, calibration truck.	
6	Calibration of Dimensional equipment	Gauge blocks grade oo and o and guage block comparator	
7	Calibration of hygrometers and humidity measurement equipment	non	
8	Viscosity and density measurements	Capillary viscometers, penetrometer, spindle viscometer , viscometer caps and bath	
9	Acoustic and vibrations equipment calibration	non	
10	Force and torque equipment calibrations	Load column	
11	Light (photometry) measurement and calibration	Non	

Table: 2.11: Uganda Coffee Development Authority

Report on the Producers' SMCA Needs and Capacity Assessment of the SMCA Service providers

#	SMCA	STATUS OF SMCA CAPACITY	CAPACITY NEEDS	RECOMMENDATION
1	Standards and Technical Regulations	The Uganda Coffee Development Authority has a statutory mandate to promote and oversee the development of the entire coffee industry through research, quality assurance, improved marketing, and providing for other matters connected therewith. Both internal and export marketing are regulated through The Coffee Regulations, 1994, a statutory instrument (Supplement No. 30 dated 16 th November, 1994) which stipulate the requirements which have to be met including minimum standards of coffee traded at all post-harvest levels within the coffee supply chain. The Regulations provide for registration of players dealing in internal and export marketing of the coffee, inspection and quality control including issuance of quality certificates, grade analysis, mode of coffee export sales, publication of indicative prices of various grades of coffee to all sector participants, repatriation of foreign exchange, books, records and accounts, administrative guidelines, offences, penalties as well as arbitration in case of disputes between the sellers and buyers. It also provides for amendments in case the Regulations need revision.	Review the current coffee regulations (1994) Harmonize the policy in the region Develop and harmonize the coffee standards Awareness creation on the SMCA requirements More effort in fighting the coffee wilt disease	Provide support for the identified needs
2	Laboratory & Testing	Two analytical laboratories at UCDA Laboratory with some equipments and personnel	Upgrade and accreditation to international standards (ISO17025) Additional equipment's and consumables Additional working space and human resource Additional training Training in lab and management skills; Equipments and sensory analysis for coffee Equipments for chemical and biological analysis	Provide support for the identified needs
3	Inspection and Certification	Some qualified inspectors at UCDA	More staffing to carry out Inspection at the farm level Development of standard operating procedure Training of staff to gain international recognition	Provide support for the identified needs

Table 2.12: Cotton Development Authority

#	SMCA	STATUS OF SMCA CAPACITY	CAPACITY NEEDS	RECOMMENDATION
	Standards and regulations	The cotton development act is in place that created the Cotton Development Organisation which monitors the production, processing, and marketing of cotton in Uganda. The organisation promotes the distribution of high quality cotton seed and generally facilitates the development of the cotton industry. Uganda cotton is inherently high quality,	The use of improper picking practices (harvesting wet cotton, not removing debris in the field, use of polyester bags for field handling and transport to gin, etc.) and, improper storage (on dirt floors at the farm, under high moisture levels at buying centers and gins) of the seed cotton prior to ginning has led to degradation in quality during handling. Quality potential is inherent into cotton and cannot be improved after harvest. The quality level of cotton can only be maintained (not improved) after harvest. Therefore, the practices used on the farm and in the gins are a major concern in efforts to maintain or improve cotton quality.	Strengthen enforcement of the technical regulations
	Laboratory and Testing	There is a laboratory with the following equipments: moisture meters, sampling devices and testing instruments	Increase the numbers of moisture meters, sampling devices and testing instruments	Provide more equipments
	Inspection and Certification	Limited capacity for inspection at CDO	Capacity to inspect across the value chain	Build capacity for inspection across the value chain

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Table 2.13: Dairy Development Authority

#	SMCA	STATUS OF SMCA CAPACITY	CAPACITY NEEDS	RECOMMENDATION
	STANDARDS & TECHNICAL REGULATIONS	The following regulatory framework is in place; The Dairy Industry Act, 1998 The Dairy (marketing and processing of milk and milk products) regulations, 2003 By the regulatory services department through inspection, enforcement, training and awareness creation and product testing	<ul style="list-style-type: none"> Trained personnel Standard Operating Procedures 	The identified needs require support for the effective functioning of the authority.
	METROLOGY		i) Functional and calibrated equipment ii) Validation and proficiency of tests	
	TESTING		i) Training in ISO 17025 ii) Acquiring more laboratory equipment iii) Have the laboratory accredited to ISO 17025 iv) Testing in chemical analysis and microbiology v) Training in the analysis of pesticide and drug residues vi) Training in Good Laboratory Practices (G.L.P.) vii) Equipment associated with chemical analysis of dairy products viii) HPLC or GC/MS for drug and pesticide residue analysis ix) Acquisition of validated laboratory information software x) Standard Operating Procedures for equipment operation, calibration/verification and maintenance	
	INSPECTION & CERTIFICATION		<ul style="list-style-type: none"> Quality Management Systems Risk analysis Food inspection HACCP, GMP, GAP, GHP 	
	ACCREDITATION		Accreditation of the laboratory (ISO 17025), inspectors (ISO 17020) and certification body (17065)	

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Table2.14: Ministries of Internal Affairs: Directorate of Government Analytical Laboratories

#	STATUS OF SMCA CAPACITY				CAPACITY NEEDS	RECOMMENDATION
1	PARAMETER	Prescribed Test	Alternative Test	Capacity available		
	Pesticide residues and pesticide formulation	GC method Multi residue method	LC –MS multi residue methods	Gas Chromatography available With NPD,ECD,FID detector	Additional analytical equipment e.g LC-MS	Provide support to accreditation and expand the testing scope to include Triazines
	PolyAromatic Hydrocarbons Polychlorinated Biphenol Trihalomethane	Gas chromatography (GC)	As above	Gas Chromatography	Analytical Standards Upgrading of existing GC at Directorate of Government Analytical Laboratory	Provide Support to accreditation and technical support
	Residues of veterinary drugs	HPLC-UV		HPLC-UV	Upgrading of existing capacity Analytical standards	Support to accreditation and technical upgrading
	Mycotoxins	HPLC + TLC		HPLC+ TLC	upgrading of existing capacity Installing a a variable UV detector, fluorescence Electrochemical and PDA detectors Purchase of a densometer Purchase Mycotoxin standards	Support accreditation and technical upgrading
	Heavy metal	AAS method, Flame photometer		AAS and Flame photometer	Upgrade the AAS to have a graphite	Support accreditation and technical upgrading
	Radiation	Geiger Muller		None	Purchase radiation detection equipment (Geiger Muller)	Support technical capacity building and training
	Storage space	Large capacity refrigeration		Medium size storage facility	Large capacity freezer	Support technical upgrading of storage facilities at Directorate of Government Analytical Laboratory (GAL)
	Sample preparation	Automation of sample preparation		Not available	Automated sample preparation equipments	Support upgrading of sample preparation equipments

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Table 2.15: Ministry of Works: Central Materials Laboratory

CURRENT SMCA STATUS	SMCA NEED	RECOMMENDATIONS
Services offered <ul style="list-style-type: none"> • Geotechnical technology investigation equipment • Soil testing equipments • Equipments for quality control • Earth work-compaction test • Concrete testing equipments • Coring equipment (hardness and freshness) • Pavement evaluation <ol style="list-style-type: none"> 1. Beckmann 2. Plate bearing 3. Surface roughness 	<ul style="list-style-type: none"> • No space for installation of equipments • International linkages do not exist • Resources • Challenge of repair and maintenance of equipments due to unavailable funds • No AAS for chemical testing 	<ul style="list-style-type: none"> • AAS for chemical testing • Upgrade laboratory to accreditation to ISO 17025 • Repair and maintenance of equipments
Equipment available Steel testing machine (not working)	Repair and maintenance of the steel Testing machine	Repair and maintenance

Annex 3: REFERENCES

1. East African Community SQMT Act, 2006
2. Laura L. Ignacio (2006) Implications of Standards and Technical Regulations on Export Competitiveness
3. MAAIF (2010), Support to Uganda's Agricultural Sector Development Strategy and Investment Plan (DISP), 2010/11 – 2014/15
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5. MFPED (2010), National Development Plan
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9. MTTI (2011), National Standards and Quality Policy
10. MTTI (2011), Review of the Capacities of Lead Agencies in involved in standardization in Uganda (Draft Report)
11. PSFU/PSCPII (2009), National standardization Strategy for Uganda
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40. <http://www.uncst.go.ug/>
41. <http://www.works.go.ug/>

Annex 4: Institutions and persons contacted.

#	Institution/ organization	Person contacted	Title	Contact/ telephone
1.	Cotton Development Organisation	Mr. Patrick Ilukat	Principal Cotton Classifier	0414 0 232968
2.	Phenix Logistics (U) Ltd	Mr. Kyobe Ssempe	Standard and Environmental Coordinator	0712248422
3.	Uganda National Bureau of Standards	Dr. Ben Manyindo	Executive Director	0414 0 505995
4.	Uganda National Bureau of Standards	Deus Mubangizi	Manager Testing	0414 0 505995
5.	Uganda National Bureau of Standards	Mr. Patrick Ssekitoileko	Manager International liaison	0414 0 505995
6.	Uganda National Bureau of Standards	Miss JacquelineKwesiga	Principal Analyst	0414 0 505995
7.	Uganda National Bureau of Standards	Mr. AziziMukota	Principal Analyst	0414 0 505995
8.	Uganda National Bureau of Standards	Ms. Stella Apolot	Senior Standards Officer	0772884000
9.	Uganda National Bureau of Standards	Eng. Vicent Ochwo	Principal Standards Officer	0772454467
10.	Uganda National Bureau of Standards	Mr. David Eboku	Principal Standards Officer	07726332658
11.	Uganda National Bureau of Standards	Mr. Okumu		
12.	Uganda National Bureau of Standards	Mr. Yasin	Manager Metrology	0782306931
13.	Uganda Coffee Development Authority	Mr. Kananura Edmund	Quality Manager	
14.	Crane shoes	Mr. Moses Agaba	Quality Manager	0782363903
15.	Uganda Labour and Allied Industries Association	Mr. Emmanuel Mwebwa	Quality Manager	Leatheruganda gmail.com
16.	Sugar Cooperation of Uganda SCOUL	Mr. Muwonge Timothy	Senior	0312555500
17.	Biofresh Ltd	Mr. Amolo Herbert	Production Coordinator	0776721711
18.	Horticulture Exporters	Mr. David Lule	Chairman	0772419357
19.	Association Exporters	Mr. Tonny Kibirige	Coordinator	0782016816
20.	Jakana Foods Ltd	Mr. Assimwe Isaac	Production Manager	0414567714
21.	Presidential Initiative On Banana Industrial Development (PIBID)	Mr. Kulaba George	R & D Coordinator	0772684213
22.	Flona Commodities Ltd	Mr. Isiko Stephen	Managing Director	0772409557
23.	Uganda Coffee Development Authority	Mr. Mafabi Laban	Quality Controller	0782962181
24.	Uganda Coffee Federation	Mr. Samson Emong	Programme Manager	0414343692
25.	Zigoti Coffee Works Ltd	Kisekka George William	Production Manager	0414250420
26.	Kyagalanyi Coffee Ltd	Mpungu Paul	Assistant Production Manager	0772700710
27.	NUCAFE	Nuwagaba Deus	Entrepreneurship Services Manager	0414236199
28.	Century Bottling Company Ltd	Magala James	QEOSH Manager	0772738645
29.	Vin View International Ltd	Ms. Nakiganda Josephine	Quality controller	Vinview international yahoo.com
30.	Rwenzori Bottling Company	Mr. Innocent Obong	Quality Assurance Manager	0312333000
31.	Savannah Commodities Ltd	Mr. Omono Godfrey	Quality Controller	0785373097
32.	Upiga Millers Ltd	Mr. Okeyo Samuel	Mill Manager	0414285390
33.	Busia Produce Dealers Cooperative Society Ltd	Mr. Ngereza David	Manager	0772378979
34.	Sunrise commodities and millers	Mr. VicentMonteiro	Manager	0712624624
35.	Uganda manufacturers Association	Mr. Godfrey Ssali	Policy and Advocacy manager	0702940910
36.	Chemiphar u Ltd	Mr. Kephara Kateu	Operations manager	0772409158

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#	Institution/ organization	Person contacted	Title	Contact/ telephone
37.	Uganda Tea Association	Mr. Ssekitooleko G. W	Executive secretary	
38.	Uganda Tea Development Agency Ltd	Miss Purity Mbae	Marketing manager	0312266116
39.	Uganda Flower Exporters Association	Ms Juliet Musoke	Executive Director	0312263321
40.	Ministry Of Agriculture Animal Industry And Fisheries MAAIF	Ms. Tumuboina Ephrance	Principal Agricultural Inspector	0414320801
41.	Ministry Of Agriculture Animal Industry And Fisheries MAAIF	Dr. Ben Kyokwijuka	Principal Agricultural Inspector	
42.	Ministry Of Agriculture Animal Industry And Fisheries MAAIF	Mr. Stephen Byantale	Principal Agricultural Inspector	
43.	Ministry Of Agriculture Animal Industry And Fisheries (MAAIF)	Mr. Andrew Mugarura	Principal Agricultural Inspector	
44	Lake Bounty	. Mr. Tenywa Moses		0751 959 524 mosestenywa@yahoo.co.uk
45	Craneshoe	Moses Agaba		0392 824465, mosesagaba34@yahoo.com or craneshoestcfc@yahoo.com
46	Apitrade Africa	Mr Bosco Okello,		info@apitradeafrica.org
47	Bee Natural Uganda	Ms Maria Odido		
48	Kisoro Beekeepers Community	Robert Dayizimana		078277 67 29, kbkcommunity@yahoo.com
49	Maganjo Grain Millers	Mr. Christopher Onoria		0774 014027
50	Kayeba Sauce Packers	Mr. Cissy Nalweyiso		0777925126
51	East African Basic Foods	Mr. Robert Otion		0777046342
52	Sameer Agriculture and Livestock Ltd	Mr. Robert Walimbwa		0772448562
53	Uganda Industrial Research Institute (UIRI) Dairy Plant	Mr. Peter Salimo		0774455099/0702901415
54	Uganda Industrial Research Institute (UIRI) Meat Plant	Mr. Dan Bahingire		0702 767797
55	Uganda Industrial Research Institute (UIRI) Meat Plant	Mr. Mark Masiko		0772 602 925
56	Uganda Industrial Research Institute (UIRI) Meat Plant	Mr. Nuwagira Edwin		0777 3527 25
57	Uganda Industrial Research Institute (UIRI) Meat Plant	Mr. Tugume Silvester		0772 371 899
58	TOPCUTS	Mr. John Semolya		0752501884. topcuts@utl.online.co.ug
59	Uganda Oil Seed Producers Association (UOSPA)	Mr. Agong Ray Bruno		0772677262, oilseed@utlonline.co.ug , rayagong@yahoo60o.com
60	KISHIITA Abattoir, Kalerwe	Mr. Kezala		0779000527
61	Mayuge Sugar Limited	Mr. Patel		0718203777
62	The Uganda National Apiculture Development Association (TUNADO)	Mr. Biryomumaisho Dickson		0782891933, biryomumaisho@tunadobeas.org , bidicks@yahoo.co.uk

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#	Institution/ organization	Person contacted	Title	Contact/ telephone
63	The Uganda National Apiculture Development Association (TUNADO)	Mr. Jurua McPeace Jackson		0774680445, jjuru@tunadobeas.org , jjuru@gmail.com
64	Uganda Meat Producers Cooperative Union (UMPCU)	Dr. Joshua Waiswa		0779342175, secretariat@umpcu.co.ug
65	Sugar Cooperation of Uganda Ltd (SCOUL)	Mr. Muwonge Timothy,		0312555500, scoul@mehtagroup.com
66	North and Eastern Beekeepers Association	Mr. Manafa		0772375962
67	Bidco Uganda Ltd	Mr. George K		0776713172
68	Busia Millers Ltd	Mr. David Ingiriza		0772378979
69	Family Diet	Mr. Issa		0772506194
70	IFTRA Foods Ltd (fish)	Mr. Badiru Lugolobi		0703637161
71	Mukwano Industries (Oil)	Mr. Okwedar Christopher		
72	World Food Programme (WFP)	Mr. Joel Ayikobua		0772311402
73	National Drug Authority	Mr. Gordon Katende Sematiko	Executive Secretary/Registrar	0414-255665
74	Dairy Development Authority	Agnes Baguma	Regulatory Services Manager	0414343901,
75	Ministry Of Agriculture Animal Industry And Fisheries MAAIF	Mr. Michael Odong	Directorate of Crop Resources	077-2592265 mikeodong@yahoo.co.uk ,
76	Ministry Of Agriculture Animal Industry And Fisheries MAAIF	Mr. Paul Omanyi	Department of Fisheries Resources	paulomanyi@yahoo.co.uk
77	Ministry Of Agriculture Animal Industry And Fisheries MAAIF	Mr. Moses Matovu fosri@utlonline.co.ug	National Agricultural Research Laboratories (NARL), Kawanda	0772- 461322 mousa2k@yahoo.com
78	Consumer Education Trust (CONSENT)			075 1502441 consentug@yahoo.com
79	Uganda Export Promotion Board	Mr. Sam Karuhanga Email: hoo.com		karuhangas2000@yahoo.com
80	Ministry of Water and Environment	Ms. Lillian Idrakua	Directorate of Water Development	0772-895585 lillian.idrakua@mwe.go.ug
81	Private Sector Foundation Uganda	Mr. Moses Ogwal	Director Trade Policy	
82	Uganda Export Promotion Board	Mr. Simon Peter Okiring	Trade Promotions Officer	0773101072/0414230250
83		Ms. Frolence Kata	Executive Director	0414230233
84	Directorate of Government Analytical laboratory	Mr. Eliic Atalao	Ag Commissioner	
85	Uganda National Bureau of standards	Mr George opiyo		
86	Ministry of Trade, Industry and Cooperatives	Mr. Francis odong Gimoro	Principal Engineer /Focal Person For Accreditation	0772614393
87	Uganda Tourism Board	Mr. Asimwe Innocent	Quality Assurance Office	0414- 342196/7
88	Great lakes Safaris and Uganda Lodges	Mr. Amon Wekesa	Managing Director	+256 (0) 414 267153
89	Horticulture Promotion Organization of Uganda (HPOU)	Ms Tushabe Hacifa	Coordinator	0774709900

Appendix 1: Terms of Reference

CALL FOR PROPOSALS ON THE DETERMINATION OF NEEDS OF SMCA SERVICE PROVIDERS (PRODUCERS, ENFORCERS ETC) IN UGANDA

Background

The Ministry of Tourism, Trade and Industry is implementing a 5 year comprehensive programme entitled “Quality Infrastructure and Standards Programme” (QUISP). The programme became effective 1st March 2010. The programme seeks to develop a market driven holistic and coordinated institutional framework for the Ugandan Quality Infrastructure and Standards which support trade, industry, health, safety consumer protection and a sustainable environment while at the same time promoting use of best practices in the production and service sectors. The overall objective is to promote the use of standards and quality infrastructure so as to improve the competitiveness of Uganda’s products, processes and service delivery systems in domestic, regional and international markets.

One of the programme components is capacity development for service providers in the Standards development, Metrology, Calibration and Accreditation (SMCA). This component is coordinated by Uganda National Bureau of Standards (UNBS).

The Ministry conducted a baseline study titled “Review of Capacities of Lead Agencies involved in Standardization in Uganda”, which among others established that the SMCA service providers in Uganda (producers, enforcement agencies, metrology laboratories, testing laboratories etc) are constrained by mainly the lack of proper equipment and competent manpower required to offer the same services at an internationally competitive level.

Scope

The above component will among others support the **rationalized** capacity development of service providers / member associations (e.g. PSFU, UMA, UFPEA etc) as regards implementation of the national quality standards.

Objectives

- 1) Establishment of an efficient mechanism of rationalising the criteria used to assist the leading SMCA service providers in Uganda to improve on the competitiveness of their services in the local, regional and international markets
- 2) Well balanced, essential and affordable standards and quality services of international reputation available in the domestic market.
- 3) Monitored and evaluated capacity development.

Engagement of a National Expert

Under this component, Government through MTTI and support from Sida wishes to

engage a consultant/ expert to undertake the following assignment:

Specific Terms of Reference (TORs)

- (i) Conduct a producer needs assessment based on products or services in priority areas as would be defined in Uganda. The value chains in this case should be at least 10 in each market niche i.e. domestic, regional and international markets.
- (ii) Conduct a value chain mapping by defining:
 - the requirements of the manufacturer e.g. production tests on quality, certification, inspection, marking and net content of packages
 - the requirements in details of service providers/agencies needed to support the producer i.e. relevant testing methods, calibration methods, inspection capacities, accreditation and certification
 - then use the above defined requirements on producers to define their traceability such as certified reference materials, range the accuracy level in testing and calibration and proficiency testing schemes
- (iii) Establish a GAP analysis on each value chain (the review of Capacities of lead agencies study report could be used as a reference in this case)
- (iv) Produce and present an inception report for stakeholder input and later produce a draft report for discussion and stakeholder input before producing a final report.

TIME FRAME AND EXPECTED OUTPUTS

The overall assignment should be completed within one hundred (100) working days (for a five working days week).

In line with the aforementioned tasks (specific terms of reference), the consultant(s) is/are expected among others; to come up with a comprehensive report(s) detailing the existing capacity gaps and needs of SMCA producers and service providers in quality and standards infrastructure, technical regulations, conformity assessment, measurement systems and their traceability, and accreditation mechanisms among others. The report should detail the actual needs of existing the service providers/agencies with a view to establishing a prioritized standards programme and rationalized interventions.

The schedule below gives indicative timing on which the consultants are expected to deliver the following outputs;

Expected Outputs	Timing of the Output
1. Inception report	5 th working day
2. 1 st draft report	70 th working day
3. 2 nd draft report	80 th Working day
4. Validation workshop	Consultant(s) to propose
5. Final report	100 th working day

REPORTING AND APPROVALS OF THE CONSULTANTS REPORTS / OUTPUTS

The consultant will report to the Permanent Secretary MTTI through the Project Manager-QUISP. The consultant will also be required to work closely with the QUISP implementation team, in particular the QUISP component coordinator at UNBS.

QUISP will facilitate meetings between the consultants and the Ministry, plus one stakeholders' validation workshop/ meeting for the review and validation of the consultants' findings and or recommendations.

PAYMENTS AND PAYMENT CURRENCY

Payments will be made as follows;

Percentage Completion	Milestone
40%	After delivery and approval of the 1 st draft report
40%	After delivery and approval of the validation workshop's report
20%	After delivery and approval of the Final report

All payments will be made in Uganda shillings. The quotations of the consultants' fees and other costs related to this assignment may be given either in Uganda shillings, United States dollars or Euros. Where the quotation is not in Uganda shillings, a fixed exchange rate shall be determined and fixed at the signing of the contract and shall be used for conversion purposes.

DESIRED QUALIFICATIONS (MINIMUM)

NB: It is envisaged that the successful firm will preferably have at least 3 experts in the desired field areas as illustrated below;

Expert 1

- 1) Master's degree or similar experience in natural science or engineering
- 2) Specialty in microbiology and metrology in chemistry
- 3) At least 10 years' experience in quality related matters such as conformity assessment
- 4) At least 5 years' experience in laboratory work related to testing, calibration and accreditation
- 5) Knowledge of the stakeholders in Uganda concerned with microbiology and chemistry in international trade
- 6) Experience in the region and knowledge of the current Quality Infrastructure situation is a strong advantage

Expert 2

- 1) Master's degree or similar experience in natural science or engineering
- 2) Specialty in physical metrology and mechanical testing
- 3) At least 10 years' experience in quality related matters such as conformity assessment
- 4) At least 5 years' experience in laboratory work related to testing, calibration and accreditation
- 5) Knowledge of the stakeholders in Uganda concerned with microbiology and chemistry in international trade
- 6) Experience in the region and knowledge of the current Quality Infrastructure situation is a strong advantage

Expert 3

- 1) Master's degree in international business
- 2) At least 5 years professional experience in export and import of products or services
- 3) Experience in quality related matters of products is a strong advantage
- 4) Experience in WTO-TBT and SPS negotiations is a strong advantage

BIDDING

The consultants will be selected in accordance with Uganda (PPDA) procurement guidelines contained in the Government of Uganda's Public procurement and Disposal of Public Assets Act, 2003.

SUBMISSION OF PROPOSALS

Applicants for this assignment are asked to submit in;

1. An application package which includes a maximum of 12 pages of technical proposal outlining suggested work plans, understanding the TORs, methodologies etc
2. Curriculum Vitae of the proposed expert(s), maximum of 6 pages per CV and
3. A financial proposal and budget estimate not exceeding 2 pages (**Do not include in the costs of meetings, workshops or programme staff time**)

All documents should be in either font 11 times Arial or font 12 times

Appendix 2: Questionnaires

2.1: Questionnaires for assessing the producers' SMCA needs



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CONSULTING SERVICE AND GENERAL LOGISTICS

IN ANY CORRESPONDENCE ON THIS SUBJECT

PLEASE QUOTE REF. NO. **TRD/176/11/01/QUISP**

QUESTIONNAIRE ON A STUDY ON THE DETERMINATION OF SMCA NEEDS OF PRODUCERS IN UGANDA

The aim of this study is to collect and provide detailed information to guide rationalized capacity development of producers' requirements with regard to Standards/Technical Regulations, Metrology, Conformity Assessment [testing, inspection and certification] and Accreditation services (SMCA services) provided in Uganda to enhance product¹⁸ competitiveness in domestic, regional and international markets.

The objective of this questionnaire is to determine producers' needs in terms of SMCA¹⁹ services that are required for market access in your nature of business. The information collected will then be used to determine the current SMCA capacity gaps in the identified product value chains of each market niche and used to rationalize existing SMCA services; and identify critical areas of support for SMCA capacity in Uganda for improved service delivery.

All the information provided will be treated with utmost confidentiality and used strictly for the purpose of this study.

For any additional information or clarification you may contact Mr. Julius Oboth the study team coordinator on Telephone: 0772440747 email: juoboth@gmail.com and/or Deogratias Mr. Kamweya Programme Manager/QUISP, Telephone: 0772632854 email: dkamweya@mtti.go.ug

1. Name of respondent: -----Title -----

Name of Institution/Organisation/Producer -----

Physical Address-----

Tel: ----- email: -----

¹⁸ In this document the word product means both goods and services

¹⁹ SMCA stands for Standards/Technical Regulations, Metrology/Calibration, Conformity Assessment [testing, inspection and certification] and Accreditation

Nature of Business -----

Business Sector -----

Description of Major Business inputs/raw materials -----

Description of Major Business outputs/products -----

2. In which market do you operate in? Please tick as appropriate:

(i) Domestic ----- (ii) Regional (EAC, COMESA etc)----- (iii) International -----

-

3. For 3.1, 3.2 and 3.3 please rate the importance of SMCA services as follows:

Rank 1 – very important and urgent

Rank 2 – highly important

Rank 3 – moderately important

Rank 4 – of secondary importance

Rank 5 – not important

You may attach additional paper if space is not enough.

3.1 How important is each of the following SMCA services in market you operate in?

(i) Standards²⁰ ----- (ii) Technical regulations²¹----- (iii) Metrology ²²-----

(iv) Testing²³ ----- (v) Inspection²⁴----- (vi) Certification²⁵ -----

(vii) Accreditation²⁶ -----

3.2 How important is each of the following SMCA services on your inputs/raw materials?

Please specify the input and the SMCA service(s).

(i) Standards ----- (ii) Technical regulations-----

(iii) Metrology ----- (iv) Testing -----

(v) Inspection----- (vi) Certification -----

(vii) Accreditation -----

3.3 How important is each of the following SMCA services on your products?

Please specify the product(s) and the SMCA service(s).

²⁰ Standards are guidelines/specifications for consistent voluntary use

²¹ Technical regulations are mandatory / compulsory standards

²² Metrology are measurements and their standards

²³ Testing is ascertaining characteristics through specified procedures

²⁴ Inspection is determination of characteristics through visual means

²⁵ Certification is confirmation by 3rd party of conformance to standards

²⁶ Recognition of competence to provide specified services

- (i) Standards ----- (ii) Technical regulations-----
(iii) Metrology ----- (iv) Testing -----
(v) Inspection----- (vi) Certification -----
(vii) Accreditation -----

4. Who provides you with the following SMCA service(s)?

- (i) Standards -----

(ii) Technical regulations-----

(iii) Metrology -----

(iv) Testing -----

(v) Inspection-----

(vi) Certification -----

(vii) Accreditation -----

5. What challenges do you have with the following SMCA service(s) for your inputs/raw materials?

- (i) Standards -----

(ii) Technical regulations-----

(iii) Metrology -----

(iv) Testing -----

(v) Inspection-----

(vi) Certification -----

(vii) Accreditation -----

6. What challenges do you have with the following SMCA service(s) for your products?

(i) Standards -----

(ii) Technical regulations-----

(iii) Metrology -----

(iv) Testing -----

(v) Inspection-----

(vi) Certification -----

(vii) Accreditation -----

7. What do think should be done to improve each of these SMCA services in Uganda?

(i) Standards -----

(ii) Technical regulations-----

(iii) Metrology -----

(iv) Testing -----

(v) Inspection-----

(vi) Certification -----

(vii) Accreditation -----

8. What other information do you think could be useful in as far as SMCA services are concerned other than above to enhance the competitiveness/market access of your products in the following market segments?

i) Domestic-----

ii) Regional (EAC, COMESA, etc) -----

iii) International -----

2.2: Questionnaires for assessing the capacity of the SMCA service providers



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Consulting Service and General Logistics

IN ANY CORRESPONDENCE ON THIS SUBJECT
PLEASE QUOTE REF. NO. **TRD/170/11/001/QUISP**
**QUESTIONNAIRE ON A STUDY ON THE DETERMINATION OF CAPACITY
NEEDS OF SMCA SERVICE PROVIDERS IN UGANDA**

The aim of this study is to collect and provide detailed information to guide rationalized capacity development of producers' requirements with regard to Standards/Technical Regulations, Metrology, Conformity Assessment [testing, inspection and certification] and Accreditation services (SMCA services) provided in Uganda to enhance product²⁷ competitiveness in domestic, regional and international markets.

The objective of this questionnaire is to determine SMCA²⁸ services providers' capacity and needs that are required to enhance producers' market access locally and internationally. The information collected will then be used to determine the current SMCA capacity gaps in the identified product value chains of each market niche and used to rationalize existing SMCA services; and identify critical areas of support for SMCA capacity in Uganda for improved service delivery.

All the information provided will be treated with utmost confidentiality and used strictly for the purpose of this study.

For any additional information or clarification you may contact Mr. Julius Oboth the study team coordinator on Telephone: 0772440747 email: juoboth@gmail.com and/or Mr. Deogratias Kamweya Programme Manager/QUISP, Telephone: 0772632854 email: dkamweya@mtti.go.ug

4. BACKGROUND INFORMATION

Name of respondent: -----Title -----

Name of Institution/Organisation -----

Physical Address-----

Tel: ----- email: -----

Website.....

²⁷ In this document the word product means both goods and services

²⁸ SMCA stands for Standards/Technical Regulations, Metrology, Conformity Assessment [testing, inspection and certification] and Accreditation

Line Ministry affiliated to.....

Name and title of primary contact.....

5. LEGAL AND REGULATORY FRAMEWORK AND INSTITUTIONAL SET - UP

- i. What is the mandate in the management of SMCA services?
- ii. Where does your institution derive its mandate in the management of SMCA services?
- iii. How are SMCA law(s), regulations and standards currently implemented and enforced by a) your institution and b) other institutions?
- iv. What threats might hinder improvements to SMCA legislation in Uganda?
- v. What amendments are required to strengthen the legal and regulatory framework for SMCA in Uganda?
- vi. What are the needs to improve the capacity of government agencies responsible for implementing and enforcing SMCA legislation in Uganda?
- vii. To what extent does current legislation and policy promote product quality awareness-raising among stakeholders from farm to table?
- viii. How should the legal and regulatory framework support information & communication related to product quality and safety with stakeholders in Uganda?
- ix. What kinds of legal and regulatory changes are required to provide an enabling framework for product quality and safety information and communication in Uganda?
- x. What are strengths and weaknesses across government and private agencies in the management of SMCA services?
- xi. What is the desired institutional set-up for SMCA management five years from now?
- xii. How would roles and responsibilities be shared and coordinated?
- xiii. How can the existing SMCA management system be rationalized and redefined in line with the desired future situation?

6. ASSESSMENT OF THE CAPACITY NEEDS IN STANDARDS DEVELOPMENT

a) Structure, procedures and culture

- i. How are **standards development** activities currently organized?
- ii. What procedures, methods and processes are currently used in **standards development** in Uganda?
- iii. What values and beliefs (e.g. honesty or dishonesty, integrity or corruption, trust or suspicion, reliability or irregularity, etc.) guide **standards development**?

- iv. What new or amended processes, procedures and methods would be needed to improve the effectiveness of **standards development**?
- v. What would guide the **standards development** in the future from now?
- vi. What changes are required to rationalize the organizational structure of **standards development** in line with the future vision?
- vii. What is required to introduce new **standards development** procedures and methods?
- viii. What is required to encourage and support **standards developers** to adopt the desired guiding values and beliefs?

b) Human Resources

- i. What is the current level (quality and quantity) of technical and managerial skills/capacity among **standards development** in your institution?
- ii. What is the current curriculum and nature of training for **standards developers**?
- iii. What core skills and competencies would be needed for **standards development** in your institution next five years and in future?
- iv. What training would **standards developers** have in the future?
- v. What is required to upgrade the skills of **standards developers** and management in line with the envisaged vision?
- vi. What is required to improve training and develop improved curriculum in line with the future vision?

c) Financial Resources

- i. What financial resources are currently available for **standards development**?
- ii. To what extent does it meet current needs?
- iii. How is **standards development** funded?
- iv. What financial resources would be needed for improved **standards development** services?
- v. Would there be any new sources of revenue for **standards development**?
- vi. What changes are required to arrive at the desired level and allocation of resources?

d) Information Resources

- i. What types of information are currently available to **standards developers**?
- ii. How the information about standards development currently is managed (collected stored, analysed, distributed, etc.)?
- iii. What information would be available to **standards development** five years from now?
- iv. How would information about **standards development** be managed?
- v. What is required to improve access to required information?
- vi. What is required to improve information management for **standards development**?

e) Infrastructure and equipment

- i. What equipment is currently available for **standards developers**?
- ii. How is the equipment used?
- iii. What equipment would ideally be available five years from now?

- iv. What is required to improve access to and use of the equipment?

f) External linkages and inter-dependencies

- i. How do **standards developers** currently cooperate with other related institutions and groups (e.g. product quality control agencies, laboratories, producers, etc.)?
- ii. How would **standards developers** and other concerned institutions ideally work together five years from now?
- iii. What changes are required to improve inter-institutional relationships and collaboration?

ASSESSMENT OF THE CAPACITY NEEDS IN PRODUCT QUALITY CONTROL INSPECTIONS AND CERTIFICATION

A) Structure, procedures and culture

- xii) How are product quality inspections and certification currently organized?
- xiii) What procedures, methods and processes are currently used in inspection and certification in Uganda?
- xiv) What values and beliefs (e.g. honesty or dishonesty, integrity or corruption, trust or suspicion, reliability or irregularity, etc.) guide inspection?
- xv) What new or amended processes, procedures and methods would be needed to improve the effectiveness of inspection and certification?
- xvi) What would guide the product quality inspection and certification in the future from now?
- xvii) What changes are required to rationalize the organizational structure of product quality inspection and certification in line with the future vision?
- xviii) What is required to introduce new inspection and certification procedures and methods?
- xix) What is required to encourage and support inspectors and certifiers to adopt the desired guiding values and beliefs?

b) Human Resources

- i. What is the current level (quality and quantity) of technical and managerial skills/capacity among inspection and certifying institution(s)?
- ii. What is the current curriculum and nature of training for product quality inspectors and certifiers?
- iii. What core skills and competencies would be needed for product quality inspection and certifying institutions next five years and in future?
- iv. What training would product inspectors have in the future?
- v. What is required to upgrade the skills of product quality inspectors and management in line with the envisaged vision?
- vi. What is required to improve training and develop improved curriculum in line with the future vision?

c) Financial Resources

- i. What financial resources are currently available for product inspection?
- ii. To what extent does it meet current needs?
- iii. How is product inspection funded?
- iv. What financial resources would be needed for improved product quality inspection and certification services?
- v. Would there be any new sources of revenue for inspection and certification?
- vi. What changes are required to arrive at the desired level and allocation of resources?

g) Information Resources

- i. What types of information are currently available to product quality inspectorates and certifiers?
- ii. How the information about product quality inspection & certification currently is managed (collected, stored, analysed, distributed, etc.)?
- iii. What information would be available to product quality inspectorates and certifiers five years from now?
- iv. How would information about product quality inspection and certification be managed?
- v. What is required to improve access to required information?
- vi. What is required to improve information management for product quality inspection and certification?

h) Infrastructure and equipment

- i. What equipment is currently available for inspectors and certifiers? How is the equipment used?
- ii. What equipment would ideally be available five years from now?
- iii. What is required to improve access to and use of the equipment?

i) External linkages and inter-dependencies

- i. How do product quality inspectors and certifiers currently cooperate with other related institutions and groups (e.g. product quality control agencies, laboratories, producers, etc.)?
- ii. How would product quality inspectors, certifiers and other concerned institutions ideally work together five years from now?
- iii. What changes are required to improve inter-institutional relationships and collaboration?

Assessment of the capacity needs in analytical laboratories

a) Organizational structure

- i. How many product quality analytical laboratories are there in your institution?
- ii. How are they structured and coordinated?
- iii. What values and principles guide product quality analysis and testing?
- iv. How should product quality analytical laboratories be organized?

- v. How can product quality laboratories be organized more efficiently?

b) Operations

- i. What are the procedures and processes for product quality analysis (chemical residues, metrology, microbiological, etc.)?
- ii. What are optional procedures and processes for the future?
- iii. What are the needs required to implement conformity assessment procedures and processes sought in the future?
- iv. What are priority-needs to upgrade laboratory operations to conform to accreditation requirements?

c) Human Resources

- i. What is the current capacity level of staff (i.e. scientific and managerial skills, staffing numbers, qualification, experience, etc) in product quality analytical laboratories?
- ii. What core skills and qualifications would product quality analytical laboratories have in the future?
- iii. What is required to upgrade the skills and capacity of the existing staff to reach what in line with the skills level desired in the future?
- iv. What are priority-needs to upgrade laboratory human resource to conform to basic requirements for accreditation i.e analytical quality assurance, proficiency, etc?

d) Financial Resources

- i. What financial resources are currently available for product quality laboratories?
- ii. What is the source of funding for product quality analytical laboratories?
- iii. What budget would ideally be available for product quality analytical laboratories in the future?
- iv. Would any new sources of revenue exist in the future?
- v. What changes are required to obtain the desired level and allocation of resources?

e) Information Resources

- i. What information is currently available in product quality analysis laboratories?
- ii. What information would product quality laboratories ideally have access to in the future?
- iii. What is required to increase access to required information?

f) Infrastructure and equipment

- i. What equipment is currently available for product quality analysis? How is it used? How suitable is the equipment procurement process?
- ii. What equipment would be available for product quality analysis laboratories?
- iii. What would be required to improve access to and use of equipment?
- iv. What are the priority-needs to upgrade laboratory infrastructure and equipment to conform to accreditation requirements?
- v. What needs to be done to improve the efficiency and benefits of procuring equipment?

g) Dimensions of capacity in the product quality and safety system

- i. How does the capacity of product quality inspections and certification affect laboratory testing and analysis?
- ii. What kinds of relationships exist between laboratories, the public health system and other relevant institutions including those responsible for quality assurance enforcement?
- iii. Does existing training for laboratory staff meet current needs?
- iv. How would product quality inspections and certification support laboratory analysis?
- v. What kinds of relationships need to exist between laboratories, the public health system and related institutions?
- vi. What is needed to train laboratory staff?
- vii. What changes are required in product quality inspections and certification?
- viii. How can relations between analytical/testing laboratories and related organizations be improved?
- ix. What is needed to improve training for laboratory staff?

ASSESSMENT OF THE CAPACITY NEEDS IN METROLOGY AND CALIBRATION LABORATORIES

a) Organizational structure

- i. How many **Metrology and Calibration** laboratories are there in your institution?
- ii. How are they structured and coordinated?
- iii. What values and principles guide **Metrology and Calibration**?
- iv. How should **Metrology and Calibration** be organized?
- v. How can **Metrology and Calibration** laboratories be organized more efficiently?

b) Operations

- i. What are the procedures and processes for **Metrology and Calibration** for product quality analysis (chemical residues, metrology, microbiological, etc.)?
- ii. What are optional procedures and processes for the future?
- iii. What are the needs required to implement **Metrology and Calibration** procedures and processes sought in the future?
- iv. What are priority-needs to upgrade laboratory operations to conform to accreditation requirements?

c) Human Resources

- i. What is the current capacity level of staff (i.e. scientific and managerial skills, staffing numbers, qualification, experience, etc) in **Metrology and Calibration** laboratories?
- ii. What core skills and qualifications would **Metrology and Calibration** laboratories have in the future?
- iii. What is required to upgrade the skills and capacity of the existing staff to reach what is in line with the skills level desired in the future?

- iv. What are priority-needs to upgrade laboratory human resource to conform to basic requirements for accreditation i.e proficiency, etc?

d) Financial Resources

- i. What financial resources are currently available for **Metrology and Calibration** laboratories?
- ii. What is the source of funding for **Metrology and Calibration** laboratories?
- iii. What budget would ideally be available for **Metrology and Calibration** laboratories in the future?
- iv. Would any new sources of revenue exist in the future?
- v. What changes are required to obtain the desired level and allocation of resources?

e) Information Resources

- i. What information is currently available in **Metrology and Calibration** laboratories?
- ii. What information would **Metrology and Calibration** laboratories ideally have access to in the future?
- iii. What is required to increase access to required information?

f) Infrastructure and equipment

- vi. What equipment is currently available for **Metrology and Calibration**? How is it used?
- vii. How suitable is the equipment procurement process?
- viii. What equipment would be available for **Metrology and Calibration** laboratories?
- ix. What would be required to improve access to and use of equipment?
- x. What are the priority-needs to upgrade laboratory infrastructure and equipment to conform to accreditation requirements?
- xi. What needs to be done to improve the efficiency and benefits of procuring equipment?

g) Dimensions of capacity in the product quality and safety system

- i. How does the capacity of product quality inspections and certification affect **Metrology and Calibration**?
- ii. What kinds of relationships exist between laboratories, the public health system and other relevant institutions including those responsible for quality assurance enforcement?
- iii. Does existing training for laboratory staff meet current needs?
- iv. How would product quality inspections and certification support **Metrology and Calibration**?
- v. What kinds of relationships need to exist between laboratories, the public health system and related institutions?
- vi. What is needed to train laboratory staff?
- vii. What changes are required in product quality inspections and certification?
- viii. How can relations between **Metrology and Calibration** and related organizations be improved?
- ix. What is needed to improve training for laboratory staff?

ASSESSMENT THE CAPACITY NEEDS IN SMCA INFORMATION AND COMMUNICATION

a) Strategy

- i. What is the existing institutional set-up for product quality safety information and communication?
- ii. What is the role and responsibilities of organizations involved?
- iii. What would the institutional set-up for product quality and safety information and communication ideally look like five years from now?
- iv. How should mandates, responsibilities and roles, etc. be refined?
- v. What changes are required to revise or rationalize organizational roles and responsibilities for product quality and safety information and communication?

b) Structure and competencies

- i. How is product quality/safety information & communication currently planned and implemented from central to lower levels?
- ii. How would product quality/safety information and communication ideally be planned and implemented five years from now?
- iii. What values, beliefs and attitudes would underpin information and communication activities and programmes?
- iv. What changes are needed to reorganize the planning and implementation of product quality/ safety information and communication activities and programmes

c) Information & communication activities and programmes

- i. What is the current scope, nature and reach of product quality safety information & communication materials and programmes?
- ii. What kinds of information/communication materials and programmes would exist five years from now?
- iii. What is required to develop information and communication materials and programmes in line with the desired future needs?

d) Human resources

- i. What skills are currently available for product quality and safety information & communication planning and implementation?
- ii. What skills would ideally be available for planning and implementation five years from now?
- iii. What is required to develop the desired capacity and skills?

e) Information resources

- i. What data and information about risks, consumer attitudes, etc. is currently available?
- ii. What kind of data and information on product quality assurance would be available five years from now?
- iii. What is required to improve the availability, accessibility and dissemination of information to plan and develop tailored and targeted information & communication materials and programmes?

f) Infrastructure

- i. What equipment and infrastructure is currently available for product safety/quality control information and communication

- ii. What kinds of equipment and infrastructure would be available for product quality /safety information and communication five years from now?
- iii. What is required to obtain these resources
- 7. What other information do you think could be useful in as far as SMCA services are concerned other than above to enhance the competitiveness/market access of your products in the following market segments?

iv) Domestic-----

v) Regional (EAC, COMESA, etc) -----

vi) International -----
