

FAO PROJECT - GCP /INT/743/CFC

**GLOBAL COFFEE PROJECT ON ENHANCING
COFFEE QUALITY THROUGH THE PREVENTION
OF MOULD FORMATION**

**FINAL REPORT OF THE MISSION ON THE
REVIEW OF COFFEE QUALITY/SAFETY
MANAGEMENT AND CONTROL IN UGANDA AND
KENYA**

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The views expressed in this report are those of the author(s) and do not necessarily reflect the views of the Food and Agriculture Organization of the United Nations.

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ACROYNMS/ ABBREVIATIONS

CBK	Coffee Board of Kenya
CCPs	Critical Control Points
CMB	Coffee Marketing Board
CORI	Coffee Research Institute
CRF	Coffee Research Foundation
EAFCFA	East African Fine Coffee Association
ESNS	Food Quality and Standards Service of FAO
EU	European Union
FAO	Food and Agriculture Organization
GAPs	Good Agricultural Practices
GHP	Good Hygienic Practice
GMP	Good Manufacturing Practice
HACCP	Hazard Analysis Critical Control Point
HPLC	High Pressure Liquid Chromatograph
ICO	International Coffee Organization
KCC	Kenya Coffee College
KCTA	Kenya Coffee Traders Association
KEBS	Kenya Bureau of Standards
KEPHIS	Kenya Plant Health Inspectorate Service
KIRDI	Kenya Industrial Research and Development Institute
LCs	Local Councils
LGA	Local Governments Act
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MOU	Memorandum of Understanding
NAADS	National Agricultural Advisory Services
NARO	National Agricultural Research Organization
NUCAFE	National Union of Coffee Agri business and Farm Enterprises
OTA	Ochratoxin A
PMA	Plan for Modernization of Agriculture
RDCs	Resident District Commissioners

UCDA	Uganda Coffee Development Authority
UN	United Nations
UNBS	Uganda National Bureau of Standards

SUMMARY OF RECOMMENDATIONS

- 1) The project on “Enhancing coffee quality through the prevention of mould formation” has created significant awareness and generated research findings on prevention of OTA contamination in Uganda and Kenya. However prevention of contamination by OTA in coffee is still at a nascent stage and daunting task. It is, thus recommended that further financial and technical support be availed towards improvement of coffee processing, adoption of better coffee drying practices, storage, transportation, monitoring of coffee quality, entrenchment of awareness about OTA in coffee and the implementation of best practices and enforcement of OTA prevention.
- 2) The legal framework for the coffee sub sector in Uganda and Kenya is presently out of date. It is recommended that the laws on coffee are reviewed and updated to incorporate policy decisions from recent government policy reforms of the coffee sub sector and to remove obsolete provisions. The revision should also address quality and safety management and control in coffee, particularly, regarding prevention of mould growth and contamination by OTA.
- 3) Regulation of the coffee sector, compliance with quality requirements and enforcement are unsystematic and are implemented at a low level in Uganda and Kenya. It is recommended that regulation and enforcement be strengthened and the apparent lack of clarity in respect of the agency/agencies directly responsible for extension advisory services and enforcement of quality and safety along the coffee chain be urgently addressed.
- 4) Awareness training about quality and safety of coffee by prevention of mould growth and contamination by OTA is a new concept. It should be championed and implemented to reach all stakeholders in the coffee chain.
- 5) The majority of coffee farmers in Uganda are individual small holders who are not organized in groups or Societies. Better organization of farmers into groups along the Cooperatives model could improve their ability to handle and process coffee hygienically.

- 6) Coordination and collaboration among government agencies whose mandate impacts quality and safety of coffee should of necessity be strengthened.
- 7) It is recommended that a strategy be developed and promoted to harness the potential of the private sector entities along the coffee chain and equip them to practice self regulation.
- 8) An EU Regulation EU882 requiring establishment of a National Food Safety Authority will come into effect in January 2006 and might affect coffee as a food. It is recommended that consideration be given to enactment of a National Food Safety Law and establishment of a National Food Safety Authority to be ready.
- 9) Currently there are no appropriate National standards and Codes of practice or Regulations for coffee safety and quality in Uganda and Kenya. It is recommended that all the essential National standards, Codes and Regulations for coffee safety and quality be expeditiously developed.
- 10) It is recommended that capacity building be undertaken to ensure enforcement of quality and safety management and control along the coffee chain.
- 11) The policy reforms and restructuring of the coffee sub sector are still on going. It is recommended that the Governments complete the reforms and restructuring expeditiously to allow the sub sector to be fully organized and to operate with optimum efficiency.
- 12) The extension and advisory services offered to the coffee farmers by the Ministry of Agriculture, CRF, Millers, Cooperatives and other parties in Kenya should be harmonized to avoid uncoordinated and sometimes contradictory messages.
- 13) It is recommended that the UCDA, CBK and CRF strengthen collaboration with the private sector players and optimally harness and maximize the capacity of these private sector entities along the coffee chain, to practice self-regulation to comply with quality and safety requirements and produce safe coffee of premium quality.

INTRODUCTION

1.1 BACKGROUND TO THE MISSION

Uganda and Kenya are participating countries in the Global Project GCP/INT/743/CFC on “Improving coffee quality through prevention of mould formation”. The above Global project focuses mainly on the prevention of Ochratoxin A (OTA) contamination in green coffee. The project has reviewed practices in the coffee production and handling; implemented field trials aiming at providing a better understanding of the factors that lead to OTA contamination; provided training to national trainers on good hygiene practices in the coffee chain; supported national programmes of training and dissemination; conducted surveys of practices and problems along the national coffee marketing chains; and developed capacity for OTA analysis in producing countries.

The European Union (EU) has recently established maximum limits for OTA in roasted and soluble coffee. They will decide before the end of 2006 whether limits should be set for green coffee. Some countries have already established national limits for OTA in green coffee. Apart from official checking of green coffee, there has been increased inclusion of OTA clauses in commercial coffee buying contracts and increased checking of OTA by buyers. Countries that rely heavily on revenues and employment generated from coffee exports have an interest in ensuring that they are not “black listed” as sources of highly contaminated coffee.

During the project implementation, it became clear that coffee marketing systems and the regulation of coffee quality and safety varies widely from country to country. Responsible authorities need guidance in establishing practical measures for assuring that good practices, that will reduce opportunity for mould growth and OTA formation, are followed.

Under the project, Food and Agriculture Organization (FAO) recruited Dr. Eve Kasirye-Alemu as consultant to review coffee quality/ safety management and control in Uganda and Kenya for seven weeks in one mission, to undertake the following tasks:

1.2 TERMS OF REFERENCE

Under the technical and operational supervision of the Food Quality and Standards Service of FAO (ESNS) and in close collaboration with the national coordinators of the Global coffee project (GCP/INT/743/CFC) and FAO Offices within the countries, the consultant will undertake the following tasks:

- Considering the entire coffee production/marketing chain, identify the institutions that are involved in the control of coffee quality and safety and determine the legal basis for their actions.
- Considering the entire coffee production/marketing chain identify the institutions that are involved in advising or training in quality and safety management.
- Review the activities of the institutions identified above and assess the extent to which these activities address important aspects of coffee production and handling along the chain (those aspects of production and handling that affect risk of mould contamination)
- On the basis of interviews with key stakeholders and review of survey data collected under the project or by the national coffee authority, assess the effectiveness of the existing controls.
- Assess the human and other resources that are used in the control and management of coffee quality/ safety; and, estimate the cost of the existing controls of coffee quality and safety to the government as well as to stakeholders in the coffee sector.
- Identify areas where there are overlapping responsibilities for the control of coffee/quality control and explain in concrete terms how this affects the efficiency and effectiveness of control (being sure to investigate overlaps with broader framework of general food control- this may be particularly

important in countries where roasting and other downstream processing activities take place to a significant extent at national level).

- Identify areas along the coffee production/marketing chain where there is no clear legal designation of responsibility for control; also identify areas where responsible authorities do not effect control even if the legal power exists.
- Make recommendations for improving coffee quality/safety management and control along the coffee chain covering: the legal and policy framework; the institutional framework; mechanisms for ensuring adequate coordination among concerned agencies; interaction with the private sector; the design and implementation of programs relating to assurance of acceptable coffee quality and safety; technical capacity to support these programs; evaluation of the efficacy of programs; involvement in relevant international organizations.
- Outline a plan of action for the follow up of recommendations; and estimate the resources required.
- Design a poster that highlights the importance of an appropriate regulatory framework relating to the quality and safety of green coffee within Uganda and Kenya and the main problems they face in enforcing regulations (the poster will be displayed at a conference attended by people largely involved in coffee marketing and will not have a deep understanding of food control systems).

Itinerary

Duty station Kampala with travel as required within Uganda and 2 weeks in Kenya (Nairobi and Ruiru). The itinerary to Kenya was Entebbe/ Nairobi/Ruiru 20th June 2005 Ruiru/Nairobi/ Entebbe 1st July 2005

1.3 ACKNOWLEDGMENTS

The consultant gratefully acknowledges the administrative assistance of the FAO Office in Uganda, particularly Mr. James Okoth and Ms Josephine Oyee and Dr. Augusta N. Abate, Assistant FAO Representative (Programme), FAO Office in Kenya for making the arrangements for the mission. Special thanks go to the Director Research, Dr Kimemia, Coffee Research Foundation (CRF), Ruiru, Kenya, Mr. Joseph Karanja Mburu, the

Project Coordinator in Kenya, who arranged all the appointments and logistics in Kenya and Mr.C. Maina at CRF for ensuring execution of the planned appointments. Assistance of Dr. N. Ojijo Ochang'o, of Jomo Kenyatta University of Agriculture and Technology, Ruiru is also acknowledged.

Appreciation is extended to Mr. Henry Ngabirano, Managing Director, Uganda Coffee Development Authority (UCDA), Mr. David Kiwanuka, Head of Quality and Information Department UCDA, Mr. Robert Sentamu, Coffee Development Officer, Masaka District and special thanks to Mrs. Albertina Kakuba, Project Coordinator in Uganda for her assistance with information and contacts. The consultant acknowledges with thanks all the contact persons, who gave useful information.

The consultant particularly appreciates and thanks FAO, for selecting her and giving her the opportunity to undertake this mission.

2 MAIN MISSION FINDINGS

2.1 ACTIVITIES UNDERTAKEN DURING THE MISSION

2.1.1 GENERAL ACTIVITIES

The consultant undertook the mission in Uganda in collaboration with Mrs. Albertina T. Kakuba, Project Coordinator at UCDA. During the mission in Kenya the consultant collaborated with Mr. Joseph Karanja Mburu the Project Coordinator at CRF. The consultant further collaborated with the FAO Country Offices in Uganda and Kenya and carried out the following activities.

At the start of the mission the consultant reported to FAO Office, Uganda to finalize the preparations for the mission and for logistical arrangements regarding the travel to Kenya. The consultant also undertook and successfully completed the prerequisite test and got the certificate for the “ Basic Security in the Field –Staff Safety, Health and Welfare” training, which is a requirement by the United Nations (UN) for security clearance for travel to another duty station, in another country, in this case, Kenya.

In both Uganda and Kenya visits were made to the relevant institutions and government departments, to the coffee farmers, Farmers Associations, coffee factories/mills and coffee exporters. The purpose was to assess the current legal, regulatory and institutional framework, coffee quality and safety management and control, the extent of extension and advisory services and to discuss required remedial measures for improvement.

2.1.2 ACTIVITIES IN UGANDA

In Uganda the consultant held discussions with the Project Coordinator, the Managing Director and other officials of UCDA and assessed the available facilities. Consultations were held with officials in the National Agricultural Research Organization (NARO), Quality Assurance Department of National Agricultural Advisory Services (NAADS), National Phytosanitary Services and the Plan for Modernization of Agriculture (PMA).

The consultant also exchanged views with representatives of the National Union of Coffee Agribusiness and Farm Enterprises (NUCAFE), which is the farmers organization in Uganda, as well as the Executive Director of East African Fine Coffee Association (EAFCA). Field visits were made to Masaka District, where coffee factories were visited and discussions held with the owners as well as officials of Coffee Farmers' Associations. The consultant further visited farmers in Bigasa Sub County, Masaka District and listened to their views on coffee quality and safety management and control, extension outreach and regulation. The visit also provided an opportunity to learn first hand about the efforts to improve quality of coffee in the area by one of the export companies named IBERO, U. Ltd.

2.1.3 ACTIVITIES IN KENYA

In Kenya the consultant first reported at the FAO Country Office in Nairobi and held discussions with the officials concerned with backstopping the project locally, prior to proceeding to Ruiru.

While in Kenya the consultant was based at the CRF, Ruiru and Nairobi with travel to other places. Discussions were held with officials of CRF and its training arm, Kenya Coffee College (KCC). During the training Seminar held for Coffee liquorers at KCC, the consultant was invited and she made a brief address to participants about the importance of preventing mould growth and contamination by OTA in coffee. This resulted in an invitation for a special session with the Executive of Kenya Coffee Traders Association (KCTA) to discuss OTA and coffee safety. Visits were made to Socfinaf Co. Ltd, a large scale coffee processing mill in Ruiru, as well as to the coffee mill owned by Komothai Coffee Growers Cooperative Society Ltd, at Kigumo. The farmers expressed their views on legal framework, regulatory aspects and quality control. The Farm Manager at Rukera Farm at CRF provided constructive inputs on problems of coffee quality control and regulation.

Discussions were held with government officials from various institutions, which included; Ministry of Agriculture Headquarters, Coffee Board of Kenya (CBK), Kenya

Bureau of Standards (KEBS), Kenya Industrial Research and Development Institute (KIRDI) and Kenya Plant Health Inspectorate Service (KEPHIS).

The consultant also had a fruitful dialogue with a Senior Lecturer, Department of Food Science and Technology, Kenyatta University of Agriculture and Technology, Ruiru.

A session to exchange views on coffee quality and safety, plus the way forward regarding prevention of OTA in coffee was held with members of the Executive of KCTA. During the meeting, KCTA resolved to sensitize its members about prevention of contamination of coffee by OTA.

At the end of the mission the consultant wrote a report covering Uganda and Kenya and designed a poster for each country highlighting the importance of an appropriate regulatory framework relating to the quality and safety of green coffee and the main problems in enforcing the Regulations.

2.2 FINDINGS

2.2.1 FINDINGS FOR UGANDA

Coffee Sub-sector in Uganda

Uganda is the second largest producer of coffee in Africa. It predominantly produces robusta coffee, which is sun- dried and dry- milled. There is also production of a small fraction of arabica coffee, which is mainly wet processed. Coffee used to be the highest earner of foreign exchange and it still remains a strategic product. It is grown in about two-thirds of the country and contributes to the livelihoods of millions of Ugandans. It is predominantly grown by informal small holders in over 500,000 households. The majority of the small holders are not formally organized into groups. The low level of formal organization by the coffee farmers has had a negative impact on quality and safety as it impedes wider outreach of advisory messages and regulation is not focused. In addition farmers cannot bulk their product and do not have bargaining power to negotiate for better prices for quality coffee.

Prior to dissolving the Cooperative Societies, many coffee growers were organized in Cooperative Societies. Presently coffee trade in Uganda is liberalized. In 1991, the Uganda government liberalized the coffee industry to end the monopoly previously enjoyed by Coffee Marketing Board (CMB) in external marketing of coffee. There are currently government and private sector players. Liberalization greatly improved the price paid to coffee farmers and the promptness of paying. However, the disbanding of Cooperatives and liberalization negatively impacted quality and regulation of the coffee chain. Uganda coffee used to be of the highest quality, but presently the quality is low and requires improvement. According to a 2003 Report by the Coffee Sector Restructuring Taskforce to the PMA Steering Committee, coffee undergrads rose from 4.5% in 1991 to 20% in 2003, representing loss of about 16% of the coffee value. Presently (2005) some farmers sell their coffee before harvest to buyers without adequate facilities to handle it and to middle men 'debe traders' who bulk incompletely dried or wet coffee and sell it to millers. Some millers mill wet coffee and then dry it, reducing safety and quality. There are also farmers or buyers, who first store their coffee until it develops mould, and then they dry it, because it apparently dries faster. Due to excess established capacity, millers tend to compete for coffee and accept even wet coffee.

There are many constraints along the coffee chain, ranging from lack of financial resources and access to affordable credit, high cost and inaccessibility of inputs such as fertilizers and facilities like drying tarpaulins, unavailability of advisory/extension services and absence of effective regulation, adverse dry or rainy weather, shortage of work force and others.

The public sector restructuring and reform led to change of the lead Ministry responsible for the coffee sub-sector from the Ministry responsible for Cooperatives and Trade to the Ministry responsible for Agriculture. This policy reform and others have not yet been effected legally.

2.2.1.1 INSTITUTIONS INVOLVED IN COFFEE QUALITY AND SAFETY MANAGEMENT AND CONTROL AND THEIR LEGAL BASIS

Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)

Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) is the line Ministry responsible for making policy for the coffee sector, but this responsibility has not been legally operationalized. UCDA Statute, 1991 has not yet been amended to reflect the Ministry responsible for Agriculture. Furthermore, the Ministry of Agriculture used to be in charge of extension services, including for coffee, but after restructuring extension was devolved from the Ministry to other agencies, albeit without adequate accompanying human, financial and other resources. The Ministry of Tourism, Trade and Industry has responsibility for formulation of the coffee sub-sector related trade policies, legislation and standards.

Uganda Coffee Development Authority (UCDA)

The Uganda Coffee Development Authority (UCDA) was established by the Uganda Coffee Development Authority Statute, 1991 to be the apex body for promoting, overseeing and regulating the coffee sub- sector, including, control of quality and safety. Since the establishment of UCDA, the line Ministry it is responsible to has been changed to the Ministry in charge of Agriculture. UCDA is currently undergoing reform to make it solely regulatory. Responsibilities like extension services which UCDA is implementing are being removed. In the interim, UCDA is still the main body undertaking provision of extension services to the coffee sector, through its District Coffee Coordinators.

The UCDA Statute, 1991 is out dated. It has to be amended to embrace changes brought about by global developments, change in national macro policies of liberalization, privatization, decentralization and reforms in the coffee sub-sector, in order to reflect the current situation.

National Agricultural Advisory Services (NAADS)

National Agricultural Advisory Services (NAADS) derives its mandate from the National Agricultural Advisory Services Act, 2001 and is the apex institution responsible for agricultural extension or advisory services in Uganda.

However, NAADS services rendered through the service providers are voluntary at the request of the farmers and on the basis of prioritized enterprises. Coffee is a national strategic crop, which farmers rely on, but take for granted. Consequently, farmers have not prioritized coffee to NAADS as an enterprise for which to request for advisory services. As a result, at present coffee is essentially not directly being provided with extension advisory services through NAADS. This will leave the coffee sector without extension services when the interim period for UCDA services ends if no timely measures are put in place.

The consultant discussed the apparent future gap of extension advisory services for the coffee sub sector with officials of NAADS. They indicated they are working on mechanisms to address the provision of advisory services to the coffee sub sector, especially, to the smallholder farmers, who would not voluntarily seek for advisory services from NAADS. For the coffee sub sector NAADS plans to reach farmers with advisory/extension services using a special fund.

National Agricultural Research Organization (NARO)

The National Agricultural Research Organization (NARO) was established by the NARO Statute, 1992 as the main agricultural research organization in Uganda. It undertakes, coordinates and disseminates all research for improvement of crops, livestock, fisheries and forestry. NARO is the institution mandated to carry out strategic research on coffee, through one of its institutes, the Coffee Research Institute (CORI). Another NARO institute mandated with research on post-harvest technologies has capacity to research on post-harvest aspects of coffee. However, in implementation of the current Global Coffee Project, NARO/CORI appears not to have been involved.

NARO is currently undergoing reform to involve other public sector and private sector agricultural researchers in national research, but its mandate for strategic research on coffee will remain.

Local Governments

Decentralization of service delivery is government policy and its enshrined in the Local Governments Act, 1997(LGA). Under the LGA, certain functions and services previously implemented by the Central Government have been divested and given to the districts and lower governments. The functions and services divested include agricultural extension and advisory services for crops and licensing of produce buying. The districts and lower governments constitute a key component of the institutional framework for the coffee sub sector.

While the Ministry of Local Government has no specific legal mandate for control of coffee quality, its district officials in the Local Councils (LCs) and Resident District Commissioners (RDCs) in some districts like Masaka are providing significant assistance to UCDA in ensuring that coffee is dried properly and effectively, before being transported or traded.

National Phytosanitary Services

The National Phytosanitary Services operate under the MAAIF. The National Phytosanitary Services are very important in the control of coffee safety before export. There are officers specifically stationed at UCDA to routinely carry out phytosanitary certification.

Uganda National Bureau of Standards (UNBS)

The Uganda National Bureau of Standards (UNBS) is mandated to formulate Uganda national standards and Codes of Best Practice for implementation by various agencies in industry. The UNBS mandate is derived from the Uganda National Bureau of Standards Act, 1983. While this mandate is recognized and there is some cooperation between UNBS and UCDA, there are no standards or Codes of Practice elaborated through UNBS for use in the coffee sub sector.

Regarding the quality and safety management and control of coffee, for the Codes of Practice developed so far by UCDA; UNBS was not involved in the process. National, regional and global standards are a key element for effective implementation and regulating quality and safety management and control in the coffee chain. In practice it is incumbent on the sector concerned, to propose to the national standards body the standards needed by the sector so that they are prioritized for action in the work plans. The need for strong collaboration between UCDA and UNBS cannot be over emphasized.

Private Sector Institutions/Organizations

The production, marketing, processing, warehousing, transportation and export of coffee and coffee products are fully liberalized. However, there are collaborative arrangements between local governments, the Coffee Farmers Association, the Coffee Traders Federation and the UCDA, regarding regulation of and service delivery to the coffee sub-sector.

2.2.1.2 INSTITUTIONS INVOLVED IN ADVISING OR TRAINING ON QUALITY AND SAFETY MANAGEMENT AND CONTROL

The UCDA is the agency that carries out training on quality and safety management along the coffee chain from the farm to the export stage. The training is conducted by the District Coffee Coordinators and staff based at UCDA Headquarters. However, in view of the restructuring of UCDA, which leaves it with a regulatory and supervisory role and divests the implementation of extension services to the local governments and NAADS, while the mandate for research is wholly designated to NARO, staffing levels are understandably greatly reduced. Due to the changed mandate and the Government's policy of having lean organizations, there is insufficient number of staff available to effectively conduct the training.

The Local Governments and NAADS have a role to play in advising and training on quality and safety management, but they have not addressed this responsibility significantly so far.

Private Sector involvement in training

The government capacity to conduct training on quality control and safety management through UCDA is not sufficient to effectively address the need. With UCDA encouragement, National Union of Coffee Agribusiness and Farm Enterprises (NUCAFE) has increasingly assumed a significant role as a private sector player in training farmers about quality and safety of coffee and prevention of contamination by OTA. NUCAFE was subcontracted to partly conduct the training on prevention of mould growth and OTA contamination, on behalf of UCDA during the current project.

2.2.1.3 EFFECTIVENESS OF KEY INSTITUTIONS INVOLVED IN ADDRESSING ASPECTS OF COFFEE PRODUCTION AND HANDLING ALONG THE CHAIN, ESPECIALLY IN PREVENTING RISKS OF MOULD GROWTH.

UCDA

The restructuring of the coffee sub sector in Uganda, including downsizing have left UCDA with limited capacity and therefore, reduced effectiveness in coffee quality and safety management and control. The removal of the extension role from UCDA, which leaves it solely with the supervisory, regulatory role, makes the coffee sub sector vulnerable in the short term with no institution immediately ready to enforce quality and safety management and control. NAADS extension and advisory services are obtained on voluntary (request) basis. Therefore, there remains an urgent need for enforcing coffee quality and safety management and control. The District Coffee Coordinators require strengthening to address the new concept of quality control and quality assurance through prevention of mould growth and contamination by OTA. The capacity of the local governments also is limited. There are a number of agencies that have potential to augment the level of effectiveness of regulation and control, for example NAADS,

UNBS, NARO and local governments, but due to the low level of collaboration and coordination between them and UCDA they have not made a contribution. It is incumbent on UCDA to proactively enhance the degree of cooperation.

There are no by laws to assist the local authorities implement quality/safety management and control in their areas of jurisdiction. National standards and Codes of Practice for coffee also do not exist. Lack of clarity on legal mandate is a cause of inaction by all parties. Shortage of human resource and facilities prevents carrying out advisory, supervisory and regulatory duties resulting in low effectiveness.

The UCDA is concerned about enhancing quality and is initiating as well as encouraging measures that foster quality control and quality assurance. The measures include certification of Mills and experimenting with a warehouse receipt system, which has been initiated at two sites, one in the west and another in the east of the country. Under the warehouse receipt system, only coffee of high quality is accepted and it is then sold through auction at a negotiated price that adequately rewards the farmers. The UCDA is also encouraging formation of farmer groups in coffee growing areas and coffee villages around wet processing mills. Furthermore, there are efforts to create a pool of out growers around large-scale nucleus farms. The NUCAFE as well, is being encouraged to assist farmers to have direct sale of their coffee to the ultimate international buyers rather than the middleman, for better remuneration. Towards the quality improvement effort, there is also need for UNBS to proactively encourage the coffee sector to adopt product and quality management systems certification.

Private sector role in preventing risks of mould growth.

In the liberalized coffee sector, the private sector has potential and will play a dominant role in preventing the risks of mould growth. UCDA and NAADS have to proactively promote self-regulation by the private sector players. A Code of Conduct for the processing and marketing of coffee exists for the players and should be expanded to encompass OTA prevention to enhance self-regulating mechanisms.

2.2.1.4 HUMAN AND OTHER RESOURCES USED IN COFFEE QUALITY AND SAFETY MANAGEMENT AND CONTROL

The MAAIF and UCDA used to supply the human resource for quality and safety management and control in the coffee chain. Due to reform and restructuring the extension arm of MAAIF was devolved as well as the responsibility for the production departments, without reciprocal human and financial resources. UCDA, which also has responsibility for extension, but for the whole coffee chain from production to export, was restructured to remove the extension responsibility after a specified interim period.

While the UCDA retains responsibility for supervising quality control along the chain, it has a total of 38 District Coffee Coordinators plus 5 Regional Officers to provide extension advice at the production stage. It has no personnel for quality assurance and control of quality along the chain up to export. Since the coffee sector was liberalized, control of quality has been left to private sector players like millers, traders, exporters without adequate oversight or facilitation, because of shortage of staff and other resources, plus a lack of clarity on mandate.

It will be necessary to adopt alternative strategies for addressing effective delivery of services for quality and safety management and control for coffee. More involvement and bottom up self- regulation of the private sector players, in the coffee chain will have to be promoted and regulated/ supervised.

. The time allocated for the mission did not allow for detailed sourcing of information for preparation of cost estimates for control of coffee quality and safety, to government and the stakeholders in the sector. The consultant was, therefore, not in position to extrapolate the costs as was required for in the assignment.

2.2.1.5 AREAS OF OVERLAPPING RESPONSIBILITY FOR CONTROL IN LEGAL FRAMEWORK AND ENFORCEMENT

The responsibility of coffee quality and safety management and control is clearly given to UCDA and strategic research on coffee lies with the NARO institute, CORI. NAADS has overall mandate for extension services, but so far has not ventured significantly into the coffee sector. In the case of Uganda the main problems are the gaps in responsibility and lack of capacity to implement quality and safety assurance, along the coffee chain. The UCDA Statute, 1991 has not yet been amended, as it should, to reflect the reforms. The Statute consequently still contains obsolete provisions whose mandate belongs to NAADS, NARO and Local Governments.

2.2.1.6 AREAS LACKING MANDATE OR WITH NO CLEAR LEGAL DESIGNATION OF RESPONSIBILITY FOR QUALITY AND SAFETY MANAGEMENT AND CONTROL AND WHERE LEGAL MANDATE IS NOT IMPLEMENTED.

As previously stated, through a Cabinet decision the line Ministry for UCDA was changed to the Ministry responsible for Agriculture. This decision has not been legally effected, as the UCDA Statute, 1991 is still not amended. Furthermore, the Government reforms in the coffee sub sector, which include liberalization, privatization and decentralization, made some of the UCDA responsibilities in the Statute obsolete. The UCDA Statute has to be amended to give a clear delineation of responsibility to the parties involved. By-laws for coffee control at the local governments (districts and lower levels) need to be formulated. The UCDA at present does not have Regulations for the new concepts of quality and safety management and control in coffee, especially the prevention of mould growth and contamination by OTA.

The NAADS has responsibility for extension, advisory services in the country, but there is lack of clarity on how NAADS is to comprehensively get involved in delivery of advisory services to the coffee sector. NAADS services are requested for on a voluntary

basis. Furthermore, NAADS advisory services have not yet reached all districts nationwide.

Generally, quality and safety management and control in the coffee sector is officially implemented at a low level and in an unsystematic manner. To a large extent effectiveness is due to individual initiative of the personnel in the field. The legal mandate for extension and advisory services for coffee is not clear and this function is currently not implemented effectively. There is need to specify concrete legal mandate on how the local governments, NAADS and UCDA are to be involved in the mechanisms for implementation and regulation of the coffee sub sector, to ensure quality and safety management and control, especially for promoting the prevention of mould growth and contamination by OTA.

2.2.2 FINDINGS FOR KENYA

Coffee Sub sector in Kenya

Kenya grows arabica coffee, which is wet processed. The coffee is predominantly grown by small holders Cooperatives, taking up 75% of the coffee growing area while large-scale, plantation estates occupy 25% of the area. In respect of production, 60% of the coffee is from Cooperatives and 40% out of the estates.

Kenya produces less than 2% of the world coffee, but it is of high quality fetching a premium price and on demand even when world coffee prices are low. The sub sector has an entrenched culture of producing high quality coffee. However, the concept of quality control by prevention of mould growth and contamination by OTA is new and is only beginning to be taken on board.

2.2.2.1 INSTITUTIONS INVOLVED IN COFFEE QUALITY AND SAFETY MANAGEMENT AND CONTROL AND THEIR LEGAL BASIS

The Ministry of Agriculture is the line Ministry for the coffee sub sector in Kenya and it is responsible for policy making and overseeing the sub sector in general. The Ministry for some years now has been instituting policy reform in the coffee sector, which has resulted in a degree of liberalization and privatization. According to the Ministry the reforms are continuing and will include further downsizing, streamlining and clear delineation of responsibility for the players in the sector. The Ministry of Agriculture, in addition has responsibility for providing extension services to farmers, including coffee farmers.

Coffee Board of Kenya (CBK)

The CBK is the apex body for regulation of the coffee sector, including the control of coffee quality and safety. The policy reforms made CBK's role strictly regulatory. The CBK derives the new mandate from The Coffee Act, 2001 and carries out its role in conjunction with CRF. The Coffee Act, 2001 is out of date and has to be amended to reflect the changes brought about by global developments, new national macro- policies on liberalization, decentralization, privatization and reforms in the coffee sub-sector. While the CBK is charged with quality control, at present it has no established capacity to enforce or oversee quality criteria other than the traditional cup quality, and other parameters like defects, maximum moisture content and grades. It is the private sector, which largely enforces quality and safety management and control along the coffee chain by virtue of a historically inculcated quality culture.

The CBK has the mandate to license the growing, roasting, milling and movement of coffee, which operations are carried out by the private sector. Through licensing CBK can exercise regulation and control over the private sector players to comply with quality requirements. At present the criteria for licensing does not yet take into account the issue of quality and safety management and control, particularly through the prevention of mould growth and contamination of OTA.

Coffee Research Foundation (CRF)

CRF along with CBK have responsibility for regulation of the coffee sector. The CRF's role is training, research liaison and advisory. It derives its mandate from the Coffee Act, 2001 which empowers CRF to conduct research, including research on quality factors, provide advisory services, training and to produce publications as well as make recommendations regarding the quality of inputs like chemicals and seeds. According to the parent Ministry of Agriculture, although CRF has undergone a retrenchment exercise that reduced staff by 500, out of the original 700, down to just over 200 without any new recruitment, there is an ongoing job evaluation by an independent consultant. The purpose is to restructure CRF such that it conforms to its broad mission, "To research, develop and disseminate research findings".

Local governments (districts)

While the districts and sub-locations do not have direct legal mandate for regulation of the coffee sector they can control quality of coffee in their jurisdiction, through use of appropriate by laws including those for prevention of contamination by OTA. The districts can assist by using society field committees as enforcement agents, which would monitor production and processing practices and issue permits for coffee delivery.

Kenya Bureau of Standards (KEBS)

The Kenya Bureau of Standards (KEBS) is mandated with formulation of Kenya national standards and Codes of Best Practice, for implementation by various agencies in industry. Although this is recognized and there is good cooperation between KEBS and CRF as well as CBK, there are hardly any recent national standards elaborated by KEBS for use in the coffee production to marketing chain. The KEBS operates under the Kenya Bureau of Standards Act, 2004 and the line Ministry, which exercises oversight on KEBS, is Ministry of Trade and Industry. The consultant noted that only three standards specifications, one for Instant (soluble) Coffee (1978), another for roasted coffee beans and roasted ground coffee (1993) and another for green coffee beans (1987) had been formulated. However, the standards were all inconsistent with prevailing requirements for control of quality and safety in coffee with respect to moisture content and omission of

mycotoxins, particularly OTA. The KEBS agreed that the standards needed review. KEBS further acknowledged the urgency to formulate standards that address control of coffee quality and safety and prevention of contamination by OTA. Cooperation between CBK/CRF and KEBS cannot be over emphasized because of the need for standards to foster local, regional and global competitiveness in trade.

Kenya Plant Health Inspectorate Service (KEPHIS)

Kenya Plant Health Inspectorate Service (KEPHIS) has a role to play in as far as it is called upon to certify health of coffee planting material and seeds. KEPHIS was established under the provisions of the State Corporation Act (Cap 446) Legal Notice No.305 of 18th October 1996, to undertake quality control services of agriculture inputs, protection of plant varieties and the health of plants and plant produce in the agricultural sector. The services offered by KEPHIS are voluntary. KEPHIS is responsible to the Ministry of Agriculture. KEPHIS has good cooperation with CRF.

Private Sector involvement in quality and safety management and control of coffee.

The coffee millers, Cooperative Societies, dealers and exporters have great influence on the quality control and safety management of coffee by employing practices that achieve high quality and safety and refusing to accept poor quality coffee from their suppliers.

2.2.2.2 INSTITUTIONS INVOLVED IN ADVISING OR TRAINING IN QUALITY AND SAFETY MANAGEMENT AND CONTROL

The CRF is the lead agency with responsibility for training and research liaison, dissemination of information and advising the coffee sector on matters including quality, from the farmer through the chain up to exporter/ trader.

To undertake the training role, CRF has a dedicated institution, Kenya Coffee College (KCC) whose mandate is training. Until the current project, the KCC had no training course that involved quality and safety management and control in coffee, including prevention of mould growth and contamination by OTA. The capacity for training on

quality matters that has been acquired and initiated needs to be continued and expanded nationwide and for the whole coffee chain, from production to trade and consumption. The KCC has 6 trainers who are complemented with CRF research staff whenever the need arises.

Crop Division, Ministry of Agriculture

The Crop Division carries out extension services in agriculture, including coffee and this mandate includes training of the coffee farmers. Considering that coffee is only one of the several crops the extension staff are required to cover and with limited personnel, the effectiveness of the training may be understandably low. The Ministry of Agriculture Extension staff that work directly with the farmer are referred to as Frontline Extension Workers (FEWs). There are 2536 FEWs comprising of 70 District Agricultural Officers and 2466 Extension workers, each one managing a unit, which is a sub-location. The FEW/Farmer ratio varies from district to district, for example, in Kisumu the staff/farmer ratio is 1:3100; Migori 1:2500; Kakamega 1:2500; Butere, Mumias 1:2500. Ideally the Ministry would like a ratio of 1:1200. According to information from the Ministry of Agriculture the number of extension staff (FEWs plus the others that do not directly interface with farmers) was 7,875 in 1990 compared to the current figure of 5,946. In addition, the Ministry used to have specialist Coffee Extension Officers deployed even at Division level. However, following downsizing through retrenchment, retirement, natural attrition and employment freezing, it became necessary that the extension staffs in districts are all rounders, required to handle all extension issues including those for coffee.

Ministry of Cooperatives

The Ministry of Cooperatives has the Department of Cooperatives which oversees the organizational and management effectiveness of Cooperative Societies in Kenya. It also undertakes training on organization and management as well as financial control in the Cooperative Societies. While the training is not focused directly on quality control and safety management, there is indirect impact on coffee quality management and control, since well-managed Societies are likely to insist on high quality of coffee.

2.2.2.3 EFFECTIVENESS OF KEY INSTITUTIONS INVOLVED IN ADDRESSING ASPECTS OF COFFEE PRODUCTION AND HANDLING ALONG THE CHAIN ESPECIALLY IN PREVENTING RISKS OF MOULD GROWTH.

The institutions mentioned above, which have legal mandate to address aspects of coffee production and handling along the chain, particularly, with regard to prevention of mould growth and contamination by OTA, are trying to carry out their obligations, but effectiveness requires significant improvement due to a variety of constraints.

Coffee quality has until now laid emphasis only on cup quality and a few other traditional quality parameters like maximum moisture content, defects and grades. Quality parameters regarding prevention of mould growth and contamination by OTA are new.

Effectiveness of the institutions in the coffee sector is still below expectation. Even within the institutions that are involved in quality and safety management and control not all staff are aware of the need for measures to prevent mould growth and contamination by OTA. There is still an enormous lack of awareness of the importance of preventing mould growth and OTA. Gaps exist in legislation with respect to delineating clear responsibilities for institutions involved in regulation of quality control and implementation of extension services, for example among CBK, CRF and Department of Agriculture. By-laws that are necessary to expedite implementation are absent and need to be developed, for example, by CBK and the district local governments. Where the responsibilities are clear in the legal framework there is still the problem of shortage of human resource and facilities to carry out the work.

Another factor to address is the reduced number of staff to undertake the work as reforms and downsizing continue. Reorientation and adoption of new effective methods of work have to be considered. Proactive collaboration, spearheaded by CBK and CRF is essential to pool efforts with KEBS to formulate the required Standards and Codes for the coffee sector. Local governments should also be encouraged to make by-laws for controlling coffee quality and safety in their areas. In the case of Kenya the private sector entities

involved in the coffee sector, the Cooperatives, Millers and Exporters have an established quality culture and play an effective role in producing quality coffee, which fetches a premium price. It is incumbent of CBK, CRF and the Ministry of Agriculture to increase the cooperation of the private sector players in promoting quality and prevention of mould growth and OTA.

At present there is no specific institution charged with spearheading routine enforcement of quality and safety management and control for coffee, although there is a general mention of quality in the Coffee Act, 2001. This gap or lack of clarity about quality and safety needs to be addressed by government.

The coffee marketing system in Kenya is organized and there is traceability right from the Cooperative Society and the Estates up to the sale stage at the Auction. The system presents a good opportunity for targeted accelerated training of the stakeholders along the chain, about coffee quality and safety ,especially prevention of contamination by OTA.. Following effective training it would be easy for the stakeholders to exercise self-regulation for quality and safety. Furthermore, targeted provision of equipment or machinery, that can significantly impact the improvement of coffee quality and safety with respect to prevention of contamination by OTA, would greatly enhance quality and safety. Furthermore, a second system of coffee marketing through direct sales, which has been approved to operate in Kenya would also benefit from targeted assistance, especially at the Cooperative and Plantation level where the stakeholders have already shown great eagerness for the system.

2.2.2.4 HUMAN AND OTHER RESOURCES USED IN COFFEE QUALITY AND SAFETY MANAGEMENT AND CONTROL

The key Government institutions involved in regulation of coffee quality and safety management and control, namely CBK, CRF and Department of Agriculture have been recently downsized and are adjusting to functioning with a much reduced human resource.

According to the line Ministry of Agriculture, the restructuring of CBK is still continuing to make it truly regulatory and for CRF to closely conform to its mission of research and dissemination of research findings. These developments would require the above institutions to adjust their current methods of work and adopt new alternative strategies that will effectively address quality and safety management and control. One way would be by promoting, and involving the private sector players more and through inculcation of a culture of self-regulation among them, with a bottom up approach, starting with the farmer.

During this mission it was learnt that the staff at CRF, who are specifically or generally involved in addressing quality issues, including prevention of mould growth and contamination by OTA, number around 53. They include researchers, technicians, laboratory support staff, field attendants, regional managers, inspectors, trainers and advisory liaison officers and the support staff. In addition, the Ministry of Agriculture has 5,946 extension staff, who are all rounders and not necessarily specialists on coffee and out of whom 2466 work directly with farmers. Some districts also have a Cooperatives Officer.

Apart from the shortage of human resource there are financial constraints in respect of logistics like vehicles, motorcycles and transport plus allowances for fieldwork, training materials such as brochures and pamphlets, protective clothing for hygiene and during mobility plus capacity building or refresher courses. In light of the still continuing reforms, the individuals and the various institutions contacted during the mission could not give a clear guidance on current costs or anticipated costs for control of coffee quality and safety, to the government and the stakeholders in the coffee sector. The time allocated for the mission did not allow for detailed sourcing of information for preparation of cost estimates. The consultant was therefore, not in position to extrapolate the costs as was required for in the assignment.

2.2.2.5 AREAS OF OVERLAPPING RESPONSIBILITY FOR CONTROL IN LEGAL FRAMEWORK AND ENFORCEMENT

In Kenya the situation is more about gaps than overlaps. At present Kenya does not have an agency charged with overall responsibility for food control and regulation. Although coffee is broadly food, it is regarded as a trade commodity and not food. There is no agency with responsibility for routine enforcement of quality control and safety for coffee in the whole chain. CRF, CBK and Ministry of Agriculture deliver extension services to coffee farmers in an unsystematic way.

It was reported that sometimes the messages conflict because the three bodies act independently of each other with no prior coordination to synchronise the advice. Clarity of roles and responsibilities by the parent Ministry for the institutions involved would streamline this problem and enhance effectiveness.

Overlap exists in the mandate for research on coffee. While CRF has the overall mandate for research on coffee, Kenya Industrial Research and Development Institute (KIRDI), has the mandate to carry out research in all industrial and allied industries, which would include coffee. As a result of this overlap, KIRDI and CRF are simultaneously and independently of each other and under different funding, conducting research on OTA for the coffee sector and developing two separate Hazard Analysis Critical Control Points (HACCP) Plans. The duplication prevents optimum utilization of financial resources and divides up the expertise into two different research endeavours instead of being applied to a single joint effort.

Formulation of standards is the responsibility of KEBS and efforts by other bodies to elaborate their own standards is unnecessary, as they can initiate the standards projects of interest under the umbrella of KEBS and use the elaborated National Standards for enforcement in their respective fields.

2.2.2.6 AREAS LACKING MANDATE OR WITH NO CLEAR LEGAL DESIGNATION OF RESPONSIBILITY FOR QUALITY AND SAFETY MANAGEMENT AND CONTROL ALONG THE COFFEE CHAIN OR WHERE LEGAL MANDATE IS NOT IMPLEMENTED.

As the government of Kenya continues to institute reforms and dismantle the non core functions of CBK, the quality control of coffee is increasingly transferred to private sector players along the chain, who include the Cooperatives, Millers, Marketing agents, Traders/ Exporters and Shippers, to effect voluntary quality and safety management and control under CBK umbrella. For effective regulation, it will be necessary to amend the law, The Coffee Act, 2001, to include a requirement for self-regulation by players along the coffee chain.

The CBK has regulatory mandate over the coffee sector, but the current law does not cater for the new concept of quality control through prevention of mould growth and OTA.

While legal mandate exists for CBK to oversee extension and production of quality coffee at the farm level, this is hardly being implemented at present. Similarly, Ministry of Agriculture has field extension staff to advise on coffee, but they are insufficient and not specialized for the task that has to be accomplished.

3. CONCLUSIONS OF THE MISSION

Coffee is regarded as a strategic crop in both Uganda and Kenya and both Governments have undertaken policy reforms and continue to do so for the coffee sub sector.

However, the coffee sub sector has not yet implemented or effected some of the policy decisions. The reforms also did not sufficiently take into account how to guarantee quality assurance and safety of coffee under the reformed set up and this remains a gap to be addressed, especially, with regard to the provision of routine extension and advisory services that impact on quality, in the sub sector.

The Key legal framework for the coffee sub-sector is in place through UCDA in Uganda and CBK in Kenya, but in both countries, the legislation is out of date and not harmonized with the policy decisions that have been made by the Governments in recent years. Therefore, it has to be amended to embrace changes brought about by global developments, change of national macro policies on liberalization, decentralization, privatization and reforms in the coffee sub-sector. The legal framework requires comprehensive review and updating to reflect the current situation.

The Organizational structure anchored in the line Ministry responsible for Agriculture and Lead Agency for Coffee, UCDA in Uganda and CBK in Kenya, is appropriate and provides a direct chain of command suited for service provision to the whole coffee chain and its supervision, regulation and control for quality and safety assurance. However the mandates of the lead agencies and scope need clarification. The organizational structures of the lead agencies require comprehensive review to align them with the new mandates and roles, which are solely supervisory and regulatory instead of being the key implementers, as stated earlier under the sections on “Institutions involved in Coffee Quality and Safety Management and their Legal basis” and “Effectiveness of Key Institutions”.

While the central structural framework for regulation of the coffee sub sector in Uganda and Kenya, namely, UCDA and CBK/CRF, is clear, the structures to enable effective

implementation, supervision and regulation for the whole coffee chain are not clearly specified and to a large extent are absent and should be addressed to remove ambiguity. In particular, there is a big gap regarding, who and how, plus the resources for providing extension and advisory services for coffee, with respect to safety and quality assurance and quality management and control, in both Uganda and Kenya. The governments have to urgently rectify this obstacle.

At present the potential of Local governments and the private sector players has not been adequately channeled for purposes of coffee safety and quality assurance and quality management and control.

The private sector entities and the local governments, which are closest to the production and processing of coffee along the chain, will play a very important role in enforcement and self-regulation for ensuring quality and safety of coffee by preventing mould growth and OTA formation.

Collaboration and coordination of the lead agencies with other government institutions that impact on coffee quality and safety and prevention of contamination by OTA is low or absent. The UCDA and CBK/CRF have to consider establishing or strengthening the necessary collaboration to augment the efforts for safety and quality of coffee.

Product and quality systems standards, Codes of Best Practice and guidelines are a necessity in guiding the implementation, supervision, enforcement and providing reference for the quality and safety of coffee and for enhancing confidence of the coffee buyers. Standards and guiding Codes are presently absent in Uganda and Kenya and have to be expeditiously elaborated.

The concept of improving quality of coffee through prevention of mould growth and contamination by OTA is new and has to be publicized. Training on the above subject has only just started and is not wide spread in the sector. It has to be vigorously promoted.

4. MISSION RECOMMENDATIONS

4.1 RECOMMENDATIONS FOR UGANDA

4.1.1 GENERAL RECOMMENDATIONS

- 1) The project on “Improving coffee quality through prevention of mould formation” has had significant success in Uganda, with regard to creation of awareness as well as research on OTA. However prevention of contamination by OTA in coffee is still at a nascent stage and daunting task. It is, thus recommended that further financial and technical support be availed towards improvement of coffee processing, adoption of better coffee drying technologies, storage, transportation, monitoring of coffee quality, entrenchment of awareness about OTA in coffee and the implementation of best practices and enforcement of OTA prevention.
- 2) The legal framework for the coffee sub sector in Uganda “The UCDA Statute, 1991” and “The Coffee Regulations, 1994”, is presently truncated and out of date. It is recommended that the UCDA Statute is reviewed and updated to incorporate decisions from recent government policy reforms in the coffee sub sector, including streamlining the line of authority and remove obsolete provisions. The revision should also address quality and safety management and control in coffee, particularly, regarding to prevention of mould growth and contamination by OTA.
- 3) Regulation of the coffee sector, compliance with quality requirements and enforcement are unsystematic and are implemented at a low level. It is recommended that regulation and enforcement be strengthened and the apparent gap showing absence of any agency/agencies directly responsible for extension advisory services and enforcement of quality along the coffee chain, following the recent government reforms, be urgently addressed.
- 4) Awareness training about quality and safety of coffee by prevention of mould growth and contamination by OTA is a new concept. It should be championed and implemented to reach all stakeholders in the coffee chain.

- 5) The majority of coffee farmers in Uganda are individual small holders who are not organized in groups or Societies. To expedite delivery of advisory messages on safety and quality, pooling resources and facilities, it is recommended that farmers be organized into groups along the Cooperatives model.
- 6) There is apparent lack of coordination and sustained collaboration among government agencies whose mandate impacts quality of coffee. Coordination and collaboration should of necessity be strengthened.
- 7) It is recommended that a strategy be developed and promoted to harness the potential of the private sector entities along the coffee chain and equip them to practice self regulation to comply with quality and safety requirements.
- 8) It is recommended that the culture of production of quality and safe coffee be instilled among stakeholders/players along the chain, to stop the current situation where quality fluctuations occur based on any rise or fall in market price.
- 9) An EU Regulation EU882 requiring establishment of a National Food Safety Authority will come into effect in January 2006 and might affect coffee as a food. It is recommended that the National Food Safety Law, which has been worked on since 1995 be completed to be ready.
- 10) Currently there are no National standards on coffee and Codes of practice or Regulations for coffee safety. It is recommended that all the essential National standards, Codes and Regulations for coffee safety and quality be expeditiously developed.
- 11) It is recommended that capacity building be undertaken to ensure enforcement of quality and safety management and control along the coffee chain

4.1.2 SPECIFIC RECOMMENDATIONS

For Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)

- 1) There is need to streamline the organizational set up. The line Ministry responsible for the Uganda Coffee Development Authority (UCDA) was changed from Ministry of Tourism, Trade and Industry to the Ministry of Agriculture

Animal Industry and Fisheries, (MAAIF) by a Cabinet decision but “The UCDA Statute 1991, and the Coffee Regulations of 1994 have not been changed as a matter of priority to reflect the transfer. Thus, the mandate to MAAIF is not legally operationalised. It is therefore recommended, that “The UCDA Statute, 1991 be amended accordingly to reflect MAAIF to enable the MAAIF as the line Ministry to make enforceable Regulations and guidelines for the coffee chain.

- 2) The legal framework for the coffee sub sector requires thorough review. The MAAIF as the lead Ministry with overall responsibility for the coffee sector should prioritize the comprehensive review and update of the current UCDA Statute and Regulations .The Ministry should, in addition, consider prioritizing policies for quality assurance and the prevention of contamination of coffee by OTA and ensure the policies are reflected in the enabling law. MAAIF should as well consider spearheading the enactment of necessary laws and regulations where they do not exist, in order to ensure enforcement of quality and safety management and control for coffee in the whole marketing chain. In strengthening the legal framework for the agencies involved in the coffee chain, consideration should be given to providing a clear delineation of responsibility, elimination of duplication and overlaps, especially with regard to UCDA, NAADS, NARS and players concerned with execution of coffee extension services.
- 3) The reforms in the coffee sub sector leave no particular agency responsible for extension and advisory services, since advisory services will in future be offered on request. It is recommended that the MAAIF addresses in a timely manner the matter of comprehensive extension and advisory services, plus the apparent weak official enforcement of quality control and safety for coffee and for OTA prevention, in particular, in the whole coffee marketing chain.
- 4) The regulatory, supervisory role of UCDA requires strengthening and the UCDA organizational structure should be adapted to effectively undertake the task. It is recommended that the MAAIF carries out a comprehensive functional analysis, to

determine the human resource plus facilities and other resources needed for the new mandate, then streamline and strengthen UCDA accordingly.

- 5) The MAAIF should advocate for augmenting the human resource and capacity building of the field extension staff engaged in the control of quality and safety of coffee, particularly with regard to the prevention of mould growth and OTA formation. MAAIF should in the process ensure that the whole marketing chain is catered for with regard to extension and advisory outreach as well as enforcement of quality control and safety.
- 6) Awareness about the importance of preventing mould growth and OTA formation in coffee is still very low. The MAAIF should champion the creation awareness at policy level, about prevention of mould and OTA contamination throughout the coffee chain.
- 7) The MAAIF should advocate and negotiate for an increment in budget allocation to the coffee sector, to enable it put in place the human resource and other requirements for implementation of quality and safety management and control and to facilitate effective enforcement and compliance, from coffee production to consumption.

For Uganda Coffee Development Authority (UCDA)

- 8) UCDA is the apex coordination and regulatory authority in the coffee sector, but supervisory oversight and enforcement of quality are at a low level. The UCDA should thus consider prioritizing oversight on the enforcement of quality control and safety for coffee, including, prevention of mould growth and contamination by OTA. To strengthen enforcement and regulation of the sector UCDA should spearhead the putting in place the essential enabling regulations and other requirements encompassing all stages of the coffee chain.

- 9) The concept of safety and quality control by prevention of mould growth and contamination by OTA is very new and requires development of a HACCP based sector wide Code of Best Practice to implement and enforce. Development of HACCP Manual is recommended. UCDA should also ensure guidelines are developed for Good Agricultural Practices (GAPs), Good Hygienic Practices (GHP) and Good Manufacturing Practice (GMP), as these are prerequisites for implementation of HACCP.
- 10) Furthermore, currently no Standards specifications, Regulations, Codes of Practice or guidelines exist for addressing the quality and safety of coffee; except for the traditional parameters. Where some specifications are available, for example, maximum moisture contents, they are inconsistent and need review to remove the inconsistency with known recommended safe moisture levels. It is, therefore further recommended that UCDA, considers collaborating with UNBS, the agency responsible for standards and quality, to convene a representative, Technical Committee (TC) to elaborate a HACCP Manual on OTA prevention and to formulate the necessary quality and safety standards for the coffee chain, including adoption of national OTA maximum limits. The national OTA limits can be useful to FAO/WHO Codex Alimentarius Commission when formulating a worldwide standard on maximum limits for OTA in future.
- 11) The capacity to enforce regulatory supervision of the coffee sub sector is low at present. The UCDA should solicit for support from government to strengthen and develop the capacity of its field staff who are engaged in quality control to effectively oversee enforcement of quality control and safety, including prevention of OTA contamination in the whole production-marketing chain.
- 12) Capacity for routine enforcement of Regulations and quality control is thin on the ground. It is recommended that UCDA delegates to public sector and private sector players close to the particular points of the coffee chain and provides them with incentives and accompanying resources to implement or enforce

Regulations. The enforcers of Regulations should, include local governments, Coffee Farmers Associations, Millers/Processors, Traders, Transporters and Exporters. Towards this effort, the current Memorandum of Understanding (MOU) that UCDA has with local governments could be further strengthened and accountability insisted upon.

- 13) Collaboration and coordination between UCDA and other Government agencies, whose mandates impact quality needs enhancement. For example, the current project has accomplished commendable research on various aspects of prevention of mould growth and contamination by OTA in coffee. The research was done utilizing services of committed researchers from different Faculties of Makerere University, but without involvement of the National Agricultural Research Organization (NARO). NARO has a specific Institute, Coffee Research Institute (CORI) mandated to undertake strategic research on coffee as well as another Institute whose mandate is post harvest and processing research. NARO also has direct national linkage with coffee farmers and the extension lead agency, NAADS, all of which would expedite mechanisms for delivery to and adoption of outputs of research findings by the farmers, nationally. It is, therefore, recommended that for future research on OTA in coffee, consideration may be accorded to involvement of NARO /CORI as the leader and national mandated agency for strategic research on coffee. Collaboration between UCDA and other government agencies like NAADS, UNBS and Local governments should be strengthened.
- 14) As the apex supervisory agency, the UCDA should continue to champion the training on awareness about OTA, which has been initiated during the current project to ensure it encompasses the whole coffee production-marketing chain and reaches to a significant, core number of stakeholders.
- 15) UCDA is a beneficiary of some laboratory equipment under the current project. It is recommended that UCDA puts this equipment to effective use at the earliest

opportunity and develops modalities for use of the laboratory facilities by stakeholders.

- 16) Practices that foster quality assurance, like certification of Mills, direct sale of coffee by farmers to ultimate international buyers, warehouse receipt system, as well as others like product and quality systems certification, should be actively championed by UCDA.
- 17) Improper handling practices whereby some farmers sell their coffee prior to harvest or soon after harvest before drying, to buyers who have inadequate drying facilities or time to dry it well, predispose the coffee to loss of quality, mould growth and OTA contamination. The UCDA should consider devising mechanisms of encouraging farmers to retain ownership of their coffee, up to the point of sale until they have properly dried it, for maximum benefit and quality. UCDA should discourage and penalize the prevailing practice of selling coffee to buyers while it is in the field and or selling wet coffee to “debe” hawkers or millers, who do not possess capacity to dry the coffee.
- 18) A clear process for providing extension and advisory services to the coffee chain should be pronounced.
- 19) UCDA through the National Codex Contact Point at UNBS should play an active role in any future elaboration of an international standard on OTA Maximum Limits by FAO/WHO Codex Alimentarius Commission.

For Uganda National Bureau of Standards (UNBS)

- 20) It is recommended that UNBS as the body mandated to formulate national standards in Uganda, convenes a TC for coffee stakeholders and elaborates a HACCP-based Code of practice for the coffee sector. UNBS may consider recommending the Code to become mandatory. The TC should also reconcile the existing UCDA Codes of Best Practice, Guidelines and Standards for coffee and

adapt them into national Codes and Standards for coffee, in line with international requirements and practice. Guidelines for GAPs, GHP and GMP should be prioritized.

- 21) UNBS in conjunction with UCDA should actively contribute to any future development of international standards on OTA Maximum Limits by FAO/WHO Codex Alimentarius Commission.

For National Agricultural Advisory Services (NAADS)

- 22) The National Agricultural Advisory Services (NAADS) is the national, lead agency with mandate for agricultural extension services, but the services are voluntary on request by the farmer. This has left coffee, which has not been prioritized as an enterprise by farmers with virtually no comprehensive extension service delivery for the future considering that UCDA, which currently offers some extension services for coffee does so on an interim basis as its mandate transforms into solely regulatory. It is, therefore, recommended that NAADS together with UCDA address the mechanisms for future extension services to the coffee sector. Consideration may be given to collaborating with and encouraging national Associations like NUCAFE and other appropriate private sector entities to assume the extension role, similar to the practices in other strategic sectors, for example, tea, sugar and cotton. To expedite uptake of extension advice and compliance with quality and safety requirements for coffee, the formation of farmers groups should be addressed and encouraged as a priority, based on Cooperatives model, as is the policy for accessing NAADS services.

To the Government of Uganda

Basing on the HACCP Code to be developed under the current Global Project, Uganda is to develop a national HACCP- based Code of best practice for the coffee production-marketing chain. Assistance will be needed for publicizing the Code and popularizing it for implementation and enforcement, for example, by using the media and production of publications.

The Government of Uganda may consider approaching FAO to give consideration to the following:

1. Providing further assistance to the UCDA to ensure that the training provided during the current project is disseminated to a wider critical mass that encompasses the entire production-marketing chain, that would continue with training others and ensure sustainability of quality assurance and safety with regard to OTA in coffee. However, this undertaking will be hand –capped by lack of communication facilities and training aids. Assistance will be required towards acquiring the needed equipment and facilities for the purpose.
2. During the current project UCDA has carried out significant research on various aspects of OTA in coffee. However, further research is needed to arrive at concrete conclusions on some of the research. Further assistance is necessary to consolidate the research, concretize any inconclusive findings and determine their potential application. It would be beneficial if future research involves the research experts in NARO, whose mandate is ordinarily coffee.
3. UCDA is poised to spearhead formulation of the necessary HACCP Manual for the coffee chain, plus the Guidelines, Codes and Standards for coffee quality and safety as well as OTA prevention. The exercise will require committed involvement of the UNBS. The current project has provided a hygiene CD ROM and guidelines on mould prevention, which will assist the responsible authorities in undertaking the task. Financial assistance towards the timely elaboration of the Guidelines and Standards for coffee that compliment the HACCP Manual for effective implementation and enforcement should be considered.

4.2 RECOMMENDATIONS FOR KENYA

4.2.1 GENERAL RECOMMENDATIONS

- 1) The project on “Improving coffee quality through prevention of mould formation” has achieved significant outputs in Kenya, however prevention of contamination by OTA in coffee is still at a nascent stage and daunting task. It is, thus recommended that further financial and technical support be availed to: research on coffee processing (e.g. search and development of better coffee drying technologies; prevention of defective beans where possible, conditioning, storage, transportation, monitoring of coffee quality arising from the coffee farms etc); entrench awareness about OTA in coffee; the implementation of best practices and enforcement of OTA prevention.
- 2) The legal framework for the coffee sub sector in Kenya is, “The Coffee Act, 2001”. It is elaborate on control of coffee trade along the marketing chain by licensing and registration, but only makes brief reference to quality and safety of coffee. Furthermore, some of the Acts provisions have been rendered obsolete by policy reforms. It is recommended that The Coffee Act, 2001, be reviewed and updated to eliminate obsolete provisions and to incorporate quality and safety provisions, especially with reference to prevention of mould growth and contamination by OTA.
- 3) The policy reforms and restructuring of the coffee sub sector are still on going. It is recommended that the government completes the reforms and restructuring expeditiously to allow the sub sector to be fully organized and to operate with optimum efficiency.
- 4) The stakeholders in the Kenya coffee marketing chain are conscientious about maintenance of quality, but official regulation and enforcement is at a low level. It is thus recommended that regulation and enforcement of quality and safety

- management and control be strengthened to sustainably achieve premium coffee quality.
- 5) Presently there are 3 National Kenya standards concerning coffee, and no Codes of Practice or Regulations. It is recommended that all the essential National Standards, Codes and Regulations for coffee safety and quality be expeditiously elaborated for the coffee chain.
 - 6) It is recommended that capacity development be undertaken to ensure enforcement of quality and safety management and control along the coffee chain.
 - 7) Awareness training about quality and safety of coffee through prevention of mould growth and contamination by OTA is a new concept. It should be championed and implemented to reach all stakeholders in the coffee chain.
 - 8) The extension and advisory services offered to the coffee farmers by the Ministry of Agriculture, CRF, Millers, Cooperative and other parties should be harmonized to avoid uncoordinated and sometimes contradictory messages.
 - 9) There appears to be limited coordination and collaboration among government agencies, whose mandate impacts coffee quality, for example, CRF, KEBS, Department of Crop Production in Ministry of Agriculture and KIRDI. Strengthening coordination and collaboration is therefore recommended.
 - 10) The private sector players in the coffee chain already have a collaborative relationship with the CBK and CRF. It is recommended that the CBK and CRF optimally harness and maximize the capacity of the private sector entities along the coffee chain, to practice self-regulation to comply with quality and safety requirements and produce safe coffee of premium quality.

- 11) The proposed government reforms to sell coffee outside the Nairobi Auction and liberalized direct sale of coffee from processors are awaited with great anticipation by the players in the coffee chain. The above developments are expected to enhance quality and safety of coffee. It is therefore, recommended that the reforms are brought into effect in a timely manner.
- 12) An EU Regulation EU 882 requiring an established National Food Safety Authority will come into effect in January 2006 and it might affect coffee as a food. It is recommended that consideration be given to establishment of a National Food Safety Authority to be ready.

4.2.2 SPECIFIC RECOMMENDATIONS

For Ministry of Agriculture

1. The Ministry of Agriculture is the lead Ministry with overall responsibility for the coffee sector. The Ministry should, therefore, consider prioritizing policies for prevention of contamination of coffee by OTA. It should as well consider spearheading the enactment of necessary laws and regulations where they do not exist, in order to ensure enforcement of quality control and safety for coffee in the whole marketing chain. In strengthening the legal framework for the agencies involved, consideration should be given to providing a clear delineation of responsibility, elimination of duplication and overlaps especially with regard to CBK, CRF and the coffee extension functions.
2. The restructuring currently underway by the Ministry of Agriculture to streamline operations of the CBK and other bodies engaged in coffee quality and safety control should be undertaken and completed as soon as possible. This is necessary to address in a timely manner the apparent current weak official enforcement of quality control and safety in the whole coffee marketing chain and OTA prevention, in particular.

3. The Ministry of Agriculture should consider augmenting the human resource and training capacities of the field extension staff engaged in the control of quality and safety of coffee, particularly with regard to the prevention of mould growth and OTA formation. Presently there is no comprehensive extension and advisory system in the chain beyond the farmer. The Ministry should thus ensure that the whole coffee marketing chain is catered for with regard to extension and advisory outreach and enforcement of quality and safety management and control.
4. Ministry of Agriculture should advocate for increasing the budget allocation to the coffee sector to enable it put in place the human resource and other requirements for implementation of quality control and safety and to facilitate effective enforcement throughout the coffee production- marketing chain.

For Ministry of Cooperatives

5. The Ministry responsible for Cooperative development should consider strengthening its oversight over the Cooperatives to ensure that they receive relevant training on quality and safety management and control of coffee, to enable them to comply with the quality requirements.

For Coffee Board of Kenya (CBK)

6. Enforcement of quality and safety management and control in the coffee chain is presently weak. The CBK is the apex coordinating and regulatory authority in the coffee sector. The CBK should thus consider prioritizing the enforcement of quality control and safety of coffee including, prevention of mould growth and contamination by OTA and put in place the enabling Regulations and other requirements at the various stages of the coffee chain.
7. There is an absence of a sector wide Code of Practice on coffee quality and safety. There are plans underway by the CRF to spearhead the elaboration of a HACCP-based Code of Best Practice for the coffee sector in Kenya. It is recommended that CBK teams up with CRF to spearhead the formulation of the Code through

the Kenya Bureau of Standards (KEBS). It is further recommended that once the Code is a National Kenya standard, it is made mandatory and CBK undertakes to ensure its implementation and enforcement in the whole coffee chain to prevent mould growth and contamination by OTA.

8. The effectiveness of extension services is low and it does not address the new concept of prevention of OTA in coffee. The CBK should give consideration to strengthening its field extension human resource and its capacities to effectively enforce quality control and safety, including prevention of OTA contamination in the whole production- marketing chain.

For Coffee Research Foundation (CRF)

9. Awareness training about prevention of mould growth and contamination by OTA is new and has covered a limited number of stakeholders so far. It is recommended that CRF strives to ensure that the awareness about OTA, which it has commendably created during the current project, encompasses the whole coffee production- marketing chain and is extended to a larger number of stakeholders. Greater collaboration and coordination with the other concerned agencies is also recommended to ensure their maximum cooperation and assistance to CRF.
10. The CRF and Kenya Industrial Research and Development Institute (KIRDI) have independently identified Critical Control Points (CCPs) for safety against contamination by OTA along the coffee production- marketing chain. It is recommended that as the Lead Agency for coffee research, CRF causes KEBs to convene a Technical Committee (TC) for coffee stakeholders to initiate the elaboration of a HACCP- based Code of Best Practice for the coffee chain by amalgamating the CCPs identified by CRF and KIRDI.

For Kenya Bureau of Standards (KEBS)

11. There are 3 outdated National standards on coffee and no Codes of Practice. It is recommended that KEBS as the body mandated to formulate National standards in Kenya, convenes a TC for coffee stakeholders and elaborates a HACCP-based Code of Practice for the coffee sector. KEBS may consider recommending the Code to become mandatory. The TC should as well elaborate other Codes and National standards for quality and safety management and control in the coffee sector. Elaboration of Codes of Good Agricultural Practices (GAPs), Good Hygienic Practice (GHP) and Good Manufacturing Practice (GMP), which are prerequisites for HACCP, should receive priority attention.

For the Government of Kenya

The Government of Kenya may consider requesting FAO to give consideration to the following:

1. Providing further assistance to the CRF to ensure that the training provided during the current project is disseminated to a wider critical mass that encompasses the entire production- marketing chain that would continue with training others and ensure sustainability of quality control and safety in coffee with regard to OTA.
2. During the current project, CRF has carried out significant research on various aspects of OTA in coffee. However, further research is needed to arrive at concrete conclusions on some of the research. Thus, there is need for further assistance to consolidate the research and concretize any inconclusive findings and determine their potential application.
3. The financial assistance by FAO in repairing the High Pressure Liquid Chromatograph (HPLC) is acknowledged and greatly appreciated by CRF. However, the HPLC's problems persist to date. Assisting CRF with acquiring a modern HPLC is desirable, to enhance efficiency of the OTA analysis and to enable use of equipment of comparable speed and precision to what the other analysts taking part in the Global OTA project elsewhere use.

4. CRF is poised to spearhead the training and dissemination plus exchange of information about OTA control in coffee. The set of communication and training aids already procured for CRF by the current project is gratefully acknowledged. However, there is still inadequacy of communication facilities and training aids. Assistance to CRF towards acquiring the following would be beneficial:
 - i. Institution-wide access to email.
 - ii. Establishment and maintenance of a web site.
 - iii. Lap tops and LCDs to be used by Coffee College for training.
5. Plans are underway to develop a Kenya national HACCP- based Code of best practice for the coffee production- marketing chain. The current project has provided a hygiene CD ROM and guidelines on mould prevention, which will assist the responsible authorities in undertaking the task. Assistance towards the popularization of the Code for implementation and enforcement, for example by using the media and production of publications would be essential.
6. During the implementation of the project, trainers and coordinators acquired new knowledge about practices elsewhere through visits to the other participating centers. By virtue of being the host center Kenya coordinators, analysts and trainers did not benefit from the exchange visits experience. Availing fellowships to the coordinator, analysts at CRF and the trainers at KCC, to benefit from exchange visits to other participating centers would enhance their capabilities.

5. PLAN OF ACTION FOR THE FOLLOW UP OF RECOMMENDATIONS AND RESOURCES REQUIRED.

1. In both Uganda and Kenya the awareness on importance of control of mould growth in coffee and prevention of contamination by OTA is still very low. The awareness training on prevention of mould growth and OTA should be continued and promoted vigorously as a matter of priority by the lead agencies for coffee, namely, UCDA and CBK, plus their associated training institutions, NARO, NAADS and UNBS in Uganda and for Kenya CRF/KCC and KEBS. The training should cover as many stakeholders as possible and encompass the whole coffee chain in a systematic way covering farmers, local governments, and private sector players i.e. buyers, millers, traders, agents, exporters and shippers. The farmers Associations, Cooperatives, traders and Exporters Associations, among others should be trained.
2. The enabling legislation for the coffee sub sectors in Uganda and Kenya, namely, UCDA Statute, 1991 and The Coffee Regulations, 1994 for Uganda and the Coffee Act, 2001 for Kenya, have to be comprehensively reviewed and amended. The process should be spearheaded by UCDA and CBK respectively and their line Ministries to:
 - i. Incorporate the policy decisions that have been made by the Governments during the recent reform processes.
 - ii. Streamline the legal framework for example, UCDA is practically under the Ministry responsible for Agriculture which is not reflected in the UCDA Statute.
 - iii. Remove all obsolete provisions, which are no longer applicable
 - iv. Incorporate coffee quality and safety management and control provisions, especially concerning prevention of mould growth and OTA. The laws at present address licencing, registration, trade, grading and certification issues.

3. The line Ministries of Agriculture, should specify, which agencies are to carry out routine extension and advisory services for coffee and delineate the scope of their responsibility.
4. Guideline documents and standards are a prerequisite for achieving effective implementation and regulatory control. There is need to develop guiding documents and standards for quality assurance and safety management and implementation for the whole coffee chain. In this regard, CRF/KCC should complete the development of training and dissemination materials started by the current Global project. As the training proceeds, UNBS and KEBS in conjunction with UCDA and CBK plus CRF should convene TCs for stakeholders to develop a HACCP Manual relevant to each country and test its practicability and affordability for implementation along the coffee chain. GAPs, GHP and Good GMP are prerequisites for the implementation of HACCP. Documents for GAPs, GHP and GMP will have to be developed. The coffee standards and guidelines so far developed by UCDA and KEBS should be revised to make them relevant and in conformity with scientifically proven practice. In addition, the TCs should identify standard specifications for coffee, plus the guidelines for quality and safety for various aspects and elaborate them as comprehensive national standards or guidelines for quality/ safety. Matters concerning standards should be removed from the various Regulations where they presently unsystematically appear. This will make it easy to make reference to the standards or guidelines in the Regulations by all players in the coffee sector, who may need to use them. It is also easier to revise/amend, update standards than statutory Regulations.
5. After elaboration and adoption the elaborated standards and guidelines should be publicized and popularized to the potential implementers, by the UCDA and UNBS as well as CBK and CRF, respectively.

6. The UCDA and CBK should develop relevant Regulatory statutory instruments through which the above standards and guidelines can be made reference to for purposes of enforcement and implementation.
7. The local governments, districts and lower levels, in Uganda and Kenya should develop by-laws that would enable them to enforce guidelines and standards on quality control and safety of coffee along the chain, starting at the farm to export level. The lead agencies, UCDA and CBK, should proactively develop cooperation with local governments on matters of coffee quality and safety possibly through Memoranda of Understanding (MOUs) and incentives.
8. The way forward for implementation of extension services on coffee quality and safety management and control is through the private sector players. As the lead regulatory agencies, UCDA and CBK should develop strategy for effective enforcement of self-regulation by the private sector players along the coffee chain on all quality and safety matters, particularly prevention of mould growth and OTA.
9. For extension and advisory services, it will be necessary for the two lead agencies to cultivate strong sustained cooperation between themselves and the private sector players on quality and safety and ensure those stakeholders are well trained on the above issues. This would include the Farmers Associations, Cooperatives, Traders, Millers, Marketing Agents, Exporters Associations and any other.
10. In Uganda, small farmers should be organized into groups to expedite adoption of advisory messages and economic use of resources. UCDA, NAADS and private sector Association would help in this process.
11. Strong cooperation / collaboration with other government agencies is necessary to ensure multifaceted implementation and enforcement of coffee quality and safety management and control along the chain. It is incumbent on the lead agencies,

UCDA and CBK and CRF, to develop strong mutual cooperation and collaboration with other government agencies, through whose mandate implementation of coffee quality and safety with regard to OTA prevention can be enforced. UCDA and CBK and CRF may have MOUs with these government bodies stipulating the particular aspects they can provide assistance on.

Examples of agencies to have strong cooperation with in Uganda include NAADS, NARO, CORI, UNBS, National Phytosanitary Service and Production Department of MAAIF and at District level. In Uganda's case there is particularly need for UCDA to proactively strengthen the important collaboration with NARO/CORI, which presently is not evident. Examples of government institutions CBK/CRF should strongly cooperate with on quality matters, are Department of Crop Production in Ministry of Agriculture, KEBS, KIRDI, KEPHIS and Jomo Kenyatta University of Agriculture and Technology, Department of Food Science and Technology. CRF and KIRDI should particularly collaborate to collate findings of the research projects on OTA and mould growth in the coffee chain, which they have undertaken independently. The research findings will be input in developing the HACCP manual.

12. Research that has been undertaken on various aspects of OTA has not been conclusive in Uganda in Kenya. As a follow up the outstanding research should be concluded and other key issues not previously researched on should be initiated. In light of the impending possibility of setting international maximum limits of OTA levels in green coffee, it is vital that the research determines the maximum practical limits for OTA contaminants in dry and wet processed coffee, in Uganda and Kenya. This data would then be forwarded to FAO/WHO Codex Alimentarius Commission to consider when setting worldwide standards on OTA limits in coffee.

CRF should have opportunity to undertake the following specific research, which it considers to be outstanding:

- i. Conduct further drying trials to augment the achievements of this project, which are highly lacking in applicable alternative technologies for quality improvement. This is in light of the fact that the project commenced when the production of coffee was very low in Kenya and therefore, could not capture the real constraints experienced under full production levels.
- ii. Conduct further research/ surveys in the area of conditioning, storage and transportation of coffee,
- iii. Considering that wet processing uses a lot of water and processing water re-circulation is remedial recommendation to enhance fermentation of parchment besides saving water-pumping costs, CRF wishes to reduce the water usage even further and assess the implication to OTA prevalence.
- iv. Monitoring of OTA levels in future to assess the post project impact.

13. Provision of adequate human, financial and other resources should be closely examined and appropriately acted on. Restructuring, reform and downsizing are continuing in the coffee sub sector in Uganda and Kenya. This notwithstanding the Ministries of Agriculture in the two countries plus UCDA and CBK should carry out a functional analysis, determine the core functions and decide the number staff required to implement and enforce quality control and safety in coffee chain, including prevention of contamination by OTA. The institutions where the enforcement staff should operate from also need to be identified. The financial and logistical resources necessary should be realistically assessed. Capacity building of the staff should be priority too, and the Ministries of Agriculture should negotiate for obtaining the resources from government and other sources.

The consultant was not able to obtain information on resources required within the mission period. Such an estimate would require longer and detailed consultation and wider input. The contacts met in both countries did not have

readily available input on the financial and other resources required. Thus no estimates are made available. The consultant, however, envisages that about USD 700,000 (seven hundred thousand) for each country would propel the proposed plan of action significantly. Timeframes for the undertakings itemized in this Report are best decided realistically by the concerned officials in the two countries.

14. UCDA and CBK should proactively explore how to enhance mutually beneficial, sustained cooperation and involvement with international organizations like FAO, IOC, FAO/WHO Codex Alimentarius Commission, regional bodies like EAFCA plus others.

PEOPLE MET IN UGANDA**Annex 1**

NAME	<u>INSTITUTION</u>	<u>OCCUPATION</u>
Ngabirano Henry	UCDA	Managing Director
Kakuba T. Albertina (Mrs.)	UCDA	Quality Controller
Lukwago George	UCDA	Manager Development Dept
Kiwanuka I.David	UCDA	Manager Quality and Information Dept
Mr. Ayiga Elias, R.	UCDA	Technical Officer, Field Operations
Dr. Kawongole J.B.	Agricultural Engineering, Faculty of Agriculture, Makerere University.	
Joseph Nkandu	NUCAFE	National Coordinator
Mrema Herment A.	NUCAFE	Senior Business Manager
Tom Kakuba	P.M.A.	Program Officer. Monitoring and Evaluation
Serani Susan	Dept. of Botany, Makerere University	Postgraduate Student
Senkezi Peter	Safia Coffee Factory, Masaka	Manager
Nansubuga Margaret (Ms.)	Buwenda Coffee Links Factory, Masaka	Manager
Hussein Walakira, Hadji	Quality Task Force, Masaka	Chairman
Senabulya Godfrey	IBERO (U) Ltd. Project. Bigasa, Masaka District	Assistant Field Officer
Kayongo Steven	IBERO (U) Ltd. Project. Bigasa, Masaka District	Assistant Field Officer
Kulaba George W.	Department of Food Science and Technology Makerere University	Lecturer
Wagwa Nsibirwa Robert	East African Fine Coffees Association (EAFCA)	Executive Director
Dr.Kyetere Denis	NARO	Acting Director General
Opolot Okasaai	MAAIF	Assistant Commissioner
Kakembo Nasur, Hadji	Bigasa, Masaka District	Farmer
Bukenya Stanley	Bigasa, Masaka District	Farmer
Dr. Oryokot Joseph	NAADS	Technical Services Manager
Dr. Byekwaso Francis	NAADS	Planning, Monitoring and Evaluation Manager.
Kyamanywa Joseph	NAADS	Finance and Administration Manager
James Okoth	FAO Uganda, Kampala	
Josephine Oyee	FAO Uganda, Kampala	

PEOPLE MET IN KENYA**Annex 1**

NAME	INSTITUTION	OCCUPATION
Dr. Kimemia	Coffee Research Institute (CRF), Kenya	Director Reaearch
Joseph Karanja Mburu	CRF	National Project Coordinator
Cyrus Maina	CRF	Research Officer
Kennedy T.K. Gitonga	CRF	Head Economics Section
Cecilia W. Kathurima	CRF	Research Officer- Quality
Louise Wanjira Njeru	Research Liaison Advisory Section, CRF	Department Head
Nyaga M. Kainga	CRF- Kenya Coffee College	Principal
David Njuguna	Komothai Coffee Growers Co operative Society Ltd.,Kigumo	Secretary Manager
Juhigu Kairu	Komothai Coffee Growers Co operative Society Ltd.,Kigumo	Hon. Secretary
Anthony Waite	Komothai Coffee Growers Co operative Society Ltd.,Kigumo	Vice Chairman
John Kamotto	Komothai Coffee Growers Co operative Society Ltd.,Kigumo	Treasurer
Dr. Nelson Ojijo Ocang'o	Department of Food Science and Technology, Jomo Kenyatta University of Agriculture and Technology.	Senior Lecturer
Masha Gabriel G.K.	Kenya IndustrialResearch and Development Institute(KIRDI).	Senior Research Scientist
Coote	Socfinaf Coffee Co. Ltd.	General Manager
Anthony Mutugi	Socfinaf Coffee Co. Ltd.	Operations Manager
Philip Valentine	Socfinaf Coffee Co. Ltd.	End Product Manager
Patrick Mwangi	Socfinaf Coffee Co. Ltd.	Assistant Mills Manager
Chemutai Tanui	Quality Assurance –Agro Chemicals, KEBS	Head of Section
Joel Gibuku	Testing Services, Nairobi Region, KEBS	Department Head
Tom Olielo	Agrochemical Department, Standrads Dev't Division,KEBS	Department Head

Lucy M. Namu	KEPHIS	Senior Analytical Chemist
Joshua Ngeera	Kenya Coffee Traders Association (KCTA)	Chairman
Isaac Muchomba	Kenya Coffee Traders Association (KCTA)	Executive Secretary KCTA
Samuel M. Kimani	Taylor Winch (Coffee) Ltd.	Director
Mathew Mills	Taylor Winch (Coffee) Ltd	
Sam M. Mburu	Dormans, The Coffee Experts.	Quality Control Manager
Karim Moledina	Monaco Coffee International Ltd.	Chief Executive Officer
Dr. Augusta N. Abate	FAO Kenya, Nairobi	Assistant FAO Representative(Programme)
Karumba S.K.	Coffee Board of Kenya (CBK)	Assitant Field Services Manager
Micheal Mungai	CBK	Chief Liquorer
Christopher Kimani	Ministry of Agriculture	Senior Assistant Director Agriculture, Crop Division

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