LAND O'LAKES VENTURE37

STDF | STANDARDS and TRADE DEVELOPMENT FACILITY

Report: Voluntary Third-Party Assurance Regulatory Environment Scan

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Review of the national food safety environment for horticulture and aquaculture fisheries value chains in Rwanda and Uganda (Activity 1.1.6) under the Piloting the use of Third-Party Assurance (TPA) Programme in East Africa.

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ACRONYMS

BAP	Best Aquaculture Practices
BRCGS	British Retail Consortium Global Standard
CA	Competent Authority
CB	Certification Body
DiFR	Directorate of Fisheries Resources
FBO	Food Business Operator
GAPs	Good Agricultural Practices
GHP	Good Hygienic Practices
GMP	Good Manufacturing Practices
HACCPS	Hazard Analysis Critical Control Points System
NAEB	National Agricultural Export Development Board
NFCS	National Food Control System
PRP	Pre-requisite Program
RICA	Rwanda Inspectorate, Competition Consumer Protection Authority
RSB	Rwanda Standards Board
SMETA	SEDEX Members Ethical Trade Audit
STDF	Standard and Trade Development Facility
UNBS	Uganda National Bureau of Standards
vTPA	Voluntary Third-Party Assurance
WTO	World Trade Organization

1.0. INTRODUCTION

1.1. OVERVIEW AND CONTEXT OF THE PILOT PROJECT

The Piloting the Use of Third-Party Assurance Program in East Africa to Improve Food Safety Outcomes for Public Health and Trade is a project funded by the Standards and Trade Development Facility (STDF) that is piloting the use of a Voluntary Third-Party Assurance (vTPA) Program in Rwanda for the horticulture sector and Uganda for fisheries sector. The program which is implemented in close cooperation with the governments of Rwanda and Uganda is aimed at improving food safety, based on the Codex Principles and Guidelines for the Assessment and Use of Voluntary Third-Party Assurance Programs (CXG-93-2021).

The project is intended to assess and make use of data and information from vTPA Programs to support ongoing food safety reform processes in Rwanda and Uganda, including the move towards a more risk-based inspection system that will further strengthen dialogue and cooperation with small-scale producers and food business operators, as part of efforts to modernize and strengthen food safety management.

The pilot project is aimed at achieving three key outcomes namely:

(a) Increased awareness of regulatory authorities on how to assess and use data/information generated by vTPA program in Rwanda and Uganda

(b) Improved food safety compliance of food business operators (FBOs) in the horticulture and fisheries value chains based on the use of vTPA program.

(c) Increased awareness of food safety regulators on the application of vTPA approaches in other countries.

Food business operators (FBO) have the most critical role and responsibility to ensure that consumers' health is preserved by producing food that is safe and nutritious. To do so, they have to implement food safety management systems and comply with food safety regulatory requirements. In addition, as it is increasingly in demand by sectors such as retail, more and more companies in the food sector are voluntarily choosing to use food safety and quality assurance programmes, including voluntary third-party assurance programmes (vTPA), to demonstrate compliance with regulatory requirements.

1.2. INTEGRATING VTPA INFORMATION/DATA IN NATIONAL FOOD CONTROL SYSTEM (NFCS)

A Voluntary Third-Party Assurance (vTPA) program, as defined by Codex, is an autonomous scheme comprising of the ownership of a standard that may utilize national or international requirements; a governance structure for certification and conformity assessment that provides for periodic onsite audits of food business operators' operations for conformity with the standard,

and in which food business operators' participation is voluntary (CXG 93-2021). These programs include quality assurance schemes with documented food safety systems aimed at improving food safety outcomes at FBO level.

Competent authorities (CA) are responsible for establishing and maintaining legal requirements, as well as verifying that food producers comply with them to ensure consumer protection and fair practices in the food trade. However, with the growing scale and complexity of the food supply chain and limited resources and personnel, competent authorities are finding it more challenging to ensure the control and verification of all FBOs in a country.

The Codex Principles and Guidelines for National Food Control Systems (NFCS), CAC/ GL 82-2013 state the rationale that a CA may consider quality assurance systems in their national food control system to support their regulatory controls. One possible way to do this is through an agreement between the CA and the vTPA owner to use the information/data generated by the vTPA program, provided that the CA is satisfied that the information and data they intend to use is reliable and fit for purpose. The information and data generated by industry voluntary third-party assurance programmes (vTPA) can support food safety regulatory authorities target their official inspections to the areas of highest risk, improving the efficiency of the use of the national food control system's resources

Competent authorities are increasingly considering and/or using vTPA programs to better inform risk profiling of food businesses, and more effectively target resources within their national food control systems. Using vTPA programs can help competent authorities and food business operators to improve food safety outcomes, while allowing each to operate within their defined roles and responsibilities.

Competent authorities that choose to use information/data from vTPA programmes to inform their NFCS should satisfy themselves that the vTPA programme information/data can be trusted and is fit for purpose. To do this, they may carry out a full or partial assessment of the credibility and integrity of the vTPA programme, commensurate with their intended use of the vTPA programme information/data.

1.3. OBJECTIVES OF THE CONSULTANCY ASSIGNMENT

1.3.1 OVERALL OBJECTIVE

The overall goal of the consultancy assignment was to review or scan the national food safety environment looking at prominent vTPA programs used within the horticulture and aquaculture fisheries value chains in Rwanda and Uganda respectively against the existing regulatory framework and the requirements. This activity also assessed how the vTPA programs meet international food safety requirements for horticulture and aquaculture fisheries.

1.3.2 SPECIFIC OBJECTIVES

The following are the specific objectives:

(a) Describe the set up and requirements of the existing prominent vTPA programs

implemented in the horticulture and aquaculture fisheries value chains in Rwanda and Uganda respectively.

(b) Particularly map the set up and requirements of GLOBAL G.A.P, SMETA, and ORGANIC certification in the horticulture value chain in Rwanda, and BRCGS, IFA-GLOBAL G.A.P, and BAP in the aquaculture (fishery) value chain in Uganda.

(c) Highlight the national regulatory requirements for food safety for horticulture and aquaculture fisheries value chains in Rwanda and Uganda respectively.

(d) Assess the extent of food safety control achieved by the above vTPA with reference to the national requirements. The assessment should highlight any strength and/or gaps (including on integrity and credibility of the scheme evaluation outcomes), with reference to the national and international food safety requirements.

(e) Highlight any opportunities and/or synergies that can be harnessed by promoting the use of any particular or all the above prominent vTPA programs to enhance food safety control outcomes within the horticulture and aquaculture fisheries value chain; and

(f) Make any recommendations on how to improve the use of vTPA programs with reference to the CODEX “Principles and Guidelines for The Assessment and use of Voluntary Third-Party Assurance Programs”, CXG 93-2021

(g) Develop a draft criterion that maybe used by the government regulators to undertake a cost-benefit analysis of implementing vTPA approaches as part of the Official Control System in Uganda and Rwanda

2.0. METHODOLOGY

To achieve the specific objectives of the assignment, the following activities were undertaken:

2.1. CONDUCTED A COMPREHENSIVE DESK REVIEW OF RELEVANT LITERATURE AND DOCUMENTS.

The purpose of the desk review was to provide the status of the national food safety regulatory environment for horticulture and aquaculture fisheries value chains in Rwanda and Uganda respectively with respect to the use of vTPA programs; and assess whether the food safety requirements of the vTPA programs meet national and international food safety requirements.

The following documents were reviewed:

(a) Documents for the vTPA schemes in horticultural sector included

i. Information obtained on the official websites of GLOBALG.A. P, SMETA and ORGANIC.

ii. Sedex Members Ethical Trade Audit (SMETA) Measurement Criteria, Version 6.0

of April 2017.

iii. The Base Code Ethical Trading Initiative (ETI).

iv. Sedex Members Ethical Trade Audit (SMETA) Best Practice Guidance, Version 6.0 April 2017.

v. Integrated Farm Assurance IFA-(smart): principles and criteria for fruit and vegetables; version 6.0, with the accompanying rules, guidelines, and checklists

vi. EU Regulation 2018/848 on organic production and labelling of organic products and repealing Council Regulation (EC) No 834/2007 ORGANIC certification requirements to the EU market;

vii. RS EAS 456: 2019: Organic Standard for Rwanda

viii. RS 428: 2020: Good Agricultural Practices- Basic requirements for Rwanda

(b) Documents for the vTPA schemes in the fisheries and aquaculture sector included:

i. information obtained on the official websites of BRCGS, GLOBAL G.A.P, and BAP vTPA programs.

ii. BRCG Global standard for food safety, issue 9; with accompanying guidelines, rules, and checklists.

iii. Best Aquaculture Practices (BAP) Farm standard 3.1 version.

iv. BAP Feed mill standard 3.1 version.

v. BAP Hatchery standard 2.1 version.

vi. BAP Sea Food Processing Standard Version 5.1

vii. Integrated Farm Assurance IFA-(smart) principles and criteria for aquaculture-version 6.0, with the rules, guidelines, and checklists.

(c) Policy documents, laws, regulations, standards, and codes of practices detailing food safety control for horticulture and aquaculture (fishery) value chains at national and international level, and these included:

i. Law n°16/2016 on plant health protection in Rwanda.

ii. Law n° 30/2012 governing of agrochemicals in Rwanda.

iii. Law nº 31/2017; establishing Rwanda Inspectorate, Competition and Consumer Protection Authority.

iv. Law no. 13/2017 establishing National Agricultural Export Development Board (NAEB); and NAEB packhouse food safety system and quality manual.

v. Fish Act, Cap 197; Uganda

vi. The fish (fishery and aquaculture products) (quality assurance) rules, 2017

vii. ISPM no. 1:2 Guidelines for phytosanitary certificates (2001).

viii. Maximum residue limits (MRLs) and risk management recommendations (RMRs) for residues of veterinary drugs in foods CX/MRL 2-2021.

ix. General food law: EU Regulation No: 178/2002.

x. Regulation (EC) no 396/2005 contains maximum residue limits (MRLs) for pesticide residues.

xi. Regulation (EC) no. 2073/2005 on microbiological contaminants.

xii. Regulation (EC) 1881/2006 on heavy metals provides the maximum levels for certain contaminants in foodstuff.

xiii. Regulation (EC) no 852/2004 on the hygiene of foodstuffs.

xiv. Regulation (EU) no 37/2010 on pharmacologically active substances and their classification regarding maximum residue limits in foodstuffs of animal origin.

xv. EU regulation No. 1333/2008 on food additives.

xvi. manual of standard operating procedures for fish (fishery and aquaculture products) inspection and quality assurance (Uganda)

xvii. Aquaculture training manual for extension agents in Uganda

(h) Principles and Guidelines for the assessment and use of voluntary third-party assurance programs (CXG 93-2021)

(i) Project Application document

(j) Project report on mapping the existence and use of vTPA programs in Rwanda and Uganda

2.2. CONDUCTED FIELD VISIT TO PRE-SELECTED FOOD BUSINESSES IN THE HORTICULTURE AND AQUACULTURE FISHERIES VALUE CHAINS IN RWANDA AND UGANDA RESPECTIVELY.

The purpose of the field visit is to collect data on the effectiveness and efficiency of the prominent vTPA programs being used to manage food safety outcomes. The overall objective of the field visit was to have an overview of the visibility of the vTPA program and how the FBOs are fulfilling the requirements of the vTPA programs.

Specifically, the field visit was looking at the following key issues:

(a) adherence of the vTPA programs to their own processes and procedures.

(b) the compliance of the participating FBOS to the requirements of the vTPA programs and regulatory requirements.

The assessment considered FBOs implementing the following vTPA programs: BRCGS, IFA-GLOBAL G.A.P, and BAP in aquaculture value chain in Uganda and GLOBAL G.A.P, SMETA, and ORGANIC in the horticulture value chain in Rwanda.

FINDINGS OF THE ENVIRONMENT SCAN

This section is structured into two parts. Part A addressing findings from the Aquaculture sector and Part B for findings from the horticulture sector.

PART A: AQUACULTURE VALUE CHAIN

3.0 FOOD SAFETY REGULATORY ENVIRONMENT FOR AQUACULTURE

3.1. INTERNATIONAL FOOD SAFETY REQUIREMENTS FOR FISH AND AQUACULTURE PRODUCTS

This section provides an overview of the food safety regulatory requirements of the fish and aquaculture value chain at national (Uganda) and international level.

3.1.1. CODEX STANDARDS

The Codex Alimentarius provides a collection of internationally adopted food standards and related texts aimed at protecting consumers' health and ensuring fair practices in the food trade. The Codex Code of Practice for Fish and Fishery Products (CXC- 52-2003) is an essential reference point for technical guidance on the harvesting, processing, transport and sale of fish and fishery products. This Code is designed to assist all stakeholders engaged in handling and production of fish and fishery products, or concerned with their storage, distribution, export, import and sale, in attaining safe and wholesome products that can be sold on national or international markets and meet the requirements of Codex standards.

The codex code CXC- 52-2003 provides the following requirements for establishments processing fish and fishery products:

(a) Implementing a food safety management system based on HACCP principles

(b) Implementing a prerequisite program (PRPS) that addresses good hygienic practices in the following areas:

- Facility design and construction
- Design and construction of equipment and utensils
- Hygiene control programme
- Product traceability
- Product recall
- Training of employees in food safety

- Transport.

For establishments engaged in in aquaculture (farmed fish), the following additional provisions are emphasized:

- Fish farms should be located in areas where the risk of contamination by chemical, physical or microbiological hazards is minimal and where sources of pollution can be controlled.
- Feed ingredients not to contain unsafe levels of pesticides, chemical contaminants, microbial toxin, additives s or other adulterating substances
- All veterinary drugs for use in fish farming should comply with national regulations and international guidelines
- Observing MRL for veterinary drug residues
- observation of withdrawal period for veterinary drugs.

3.1.2. EU REQUIREMENTS

Fish and fishery products exported to the European Union (EU) are required to meet relevant hygiene and public health requirements established in the EU legislations. The EU hygiene legislation contains specific requirements regarding the structure of processing establishments and other provisions aimed at ensuring that food is produced safely and that contamination of the product during processing is prevented. The requirements are highlighted below:

(a) implement and maintain procedures based on the HACCP principles;

(b) implementing prerequisite programs;

(c) Food safety culture;

(d) Product traceability;

(e) Product recall and withdrawal;

(f) product labelling

(g) limits on microbiological contaminants and other contaminants such as heavy metals

(h) regulations on permitted food additives

(i) In the case of aquaculture products, a residue monitoring plan which includes testing for residues of veterinary drugs, pesticides, heavy metals and contaminants, must be in place.

(j) Products must meet the EU sanitary and phytosanitary requirements (SPS) and be accompanied by a health certificate from the competent authority.

The EU also requires other official certifications and export conditions to be met by countries exporting to the EU and these include:

(a) Recognition of the competent authority of the non-EU country by the European Commission. In Uganda, the Directorate of Fisheries Resources (DFiR) under the Ministry of Agriculture Animal Industry and Fisheries is the Competent Authority recognized by the

EU.

(b) For all fishery products, the country of origin must be on a positive list of eligible countries for the relevant product. Uganda is listed on the EU positive list for export of foods of animal origin

(c) The competent authority must also guarantee that the relevant hygiene and public health requirements are met.

(d) Imports are only authorized from approved vessels and establishments which have been inspected by the competent authority of the exporting country and found to meet EU requirements. The fish processing establishments that were assessed were all found to be approved for export to the EU as per the EU establishment approval list.

(e) For export of aquaculture products countries must have a residue monitoring plan which is approved and listed by the EU. Uganda is among the countries listed by the EU with an approved residue monitoring plan. Regulation (EU) 2021/404 (animal health), Commission Decision 2011/163/EU (residues) provides listed countries and countries with approved residual monitoring plans.

3.2. NATIONAL FOOD SAFETY REQUIREMENTS FOR FISH AND AQUACULTURE PRODUCTS

3.2.1. THE INSTITUTIONAL REGULATORY FRAMEWORK

The regulation of the fish and aquaculture sector is managed at three levels namely:

(a) The central level where the Directorate of Fisheries Resources (DiFR) under the Ministry of Agriculture, Animal Industry and Fisheries is designated as the Central Competent Authority (CCA). The CCA is responsible for ensuring fish complies to national, regional and international quality and safety requirements by conducting statutory inspections, certifications and controls.

(b) The decentralized level which is at the districts where the fisheries department at the Local Government is delegated by the CCA and designated as the Local Government Competent Authority (LGCA). The LGCA is responsible for local certification of fish and fishery products destined for processing for export and local consumption at the place of first landing. The inspectors at this level conduct routine inspection of fish landing sites for adherence to safety and quality and issue Local Fish Health certificates that accompany fish transported to establishments. These certificates are used for traceability and material balance before raw material is processed.

(c) The third level of control is at the local community where Landing Site Management Committee (LSMCs) are established as approved by the CCA. The LSMCs are responsible for issuing Fish Movement permits in addition to ensuring that operators under their jurisdiction comply to prescribed food safety requirements. Their activities also contribute to traceability originating from their place of first landing

All the above three levels of control are relevant for tracing fish from the landing site to the point of export.

3.2.2. REGULATORY REQUIREMENTS FOR FISH AND AQUACULTURE PRODUCTS

The principal law governing the aquaculture sector is the Fish Act, Cap. 197, which provides for the control of fishing, fish conservation, the purchase, sale, marketing and processing of fish and matters connected therewith. At operational level, the Fish Act Cap, 197 is operationalized by the ***Fish (Fishery and Aquaculture products) (Quality Assurance) Rules, 2017*** **and the** ***Manual of standard operating procedures for fish (fishery and aquaculture products) inspection and quality assurance*****.** The Rules prescribe measures for monitoring and control of fish, fishery and aquaculture products and the inputs used in the aquaculture value chain; and the procedures for monitoring the substances and groups of residues likely to contaminate fish, fishery and aquaculture products. Food safety requirements for the aquaculture value chain are stipulated in various national standards (see list in annex).

3.2.2.1. Regulatory requirements for capture fish

Food safety requirements, including limits, processes and procedures that contribute to the safety and quality of fish are prescribed in the ***Fish (Fishery and Aquaculture products) (Quality Assurance) Rules, 2017***; and they are summarized below:

(a) Establishment registration and approval by the Central Competent Authority (CCA): Every establishment prior to processing fish must be registered by the CCA upon submission of the architectural plan of the establishment indicating facilities and their respective utilization, product flow, equipment lay-out, sanitary facilities, waste disposal system, pest control system, product(s) flow diagram(s) and emergency power supply systems, among others. Inspected and approved establishments will obtain an Establishment Approval Number (EAN) from the CCA.

(b) Implementation of a Safety and Quality Management Program which specifies Pre-requisite programs (GMP and GHP)

(c) Implementation of a quality assurance system based on Hazard Analysis Critical Control Points (HACCP) principles-

(d) Labelling of the product in accordance with the national standard on labelling of pre-packaged foods

(e) Traceability of fish and fishery products along the value chain. The system enables fish to be traced from the landing site, transport vehicle, processing establishment and finally to the export market.

(f) Product recall

(g) Microbiological limits for: pathogens in fish; hygiene indicators; process water; and total organisms.

(h) Total Volatile Bases (TVB-N) and Trimethyl Amine-Nitrogen (TMA-N).

(i) Fish sanitary certificate: Fish batches or consignments that comply with the relevant sanitary requirements are issued a sanitary certificate by the CCA

3.2.2.2. Regulatory requirements for aquaculture (farmed fish)

FBOs handling farmed fish should in addition to the above requirements demonstrate that the products to be placed on the market meet the following:

(a) maximum residue limit for veterinary drugs;

(b) observing minimum withdrawal periods for pharmacologically active substances

(c) Fish feed, feed materials and ingredients to conform to the national standards for fish feeds with respect to food additives, chemical contaminants, pesticide residues; and heavy metals.

(d) Residue monitoring plan: Monitoring of aquaculture production process for presence of chemical contaminants, heavy metals and veterinary drug residues

(e) Monitoring the environment from which fish is captured or aquaculture production is conducted for the purpose of detecting the presence of environmental contaminants, residues or substances set out in the Ninth Schedule of the ***Fish (Fishery and Aquaculture products) (Quality Assurance) Rules***

(f) Traceability measures for aquaculture animals and products. The management of aquaculture establishments shall ensure adequate traceability measures during harvesting and transportation.

3.3. OVERVIEW OF VTPA PROGRAMS USED BY FBOS IN THE AQUACULTURE VALUE CHAINS

Competent authorities that choose to use information/data from vTPA programmes to inform their NFCS should satisfy themselves that the vTPA programme information/data can be trusted and is fit for purpose. This can be done by assessing the credibility and integrity of the vTPA programme, commensurate with their intended use of the vTPA programme information/data. The Codex Principles and Guidelines for the assessment and use of voluntary third-party assurance programs provides the benchmark criteria for assessing the credibility and integrity of the vTPA program.

All the schemes considered in the fisheries and aquaculture sector have documented governance arrangements and responsibilities and they are structured in a way that avoids potential conflicts of interest especially in the standards development process. Development of standards is a transparent process involving a wide range of key stakeholders. The vTPA programs use accredited certification bodies (CB) to audit FBOs that implement their standards; and they also have an accreditation arrangement with an accreditation body with international standing. A summary of food safety requirements, governance arrangements, and third-party certification

arrangements of the vTPA programs is summarized below:

3.3.1. BRITISH RETAIL CONSORTIUM GLOBAL STANDARDS (BRCGS)

3.3.1.1. Food safety requirements of the standard

The BRCGS is global standard for food Safety. It is a process and product certification scheme that has been developed to specify the safety, legal, authenticity, quality, and operational criteria required within a food manufacturing organization to fulfil obligations with regard to legal compliance and protection of the consumer. The Standard is based on four key components namely: senior management commitment; development of a food safety plan – a HACCP-based hazard and risk assessment system; a product safety and quality management system; and use of prerequisite programs.

(a) The provisions in the standard which are specific on food safety include:

(b) Application of risk assessment and HACCP principles

(c) Application of pre-requisite programs

(d) Risk assessment approach to identify and manage hazards

(g) Supplier and raw material approval and performance monitoring

(h) Management of allergens

(e) Control of non-conforming products

(f) Traceability of products

(i) Management of incidents, product withdrawal and product recall

(j) Food defense

(k) Product labelling

(l) Management of allergen

(m) Product authenticity, claims and chain of custody

(n) product testing and laboratory analysis

(o) Personnel training

(p) Personnel and establishment hygiene

(q) Medical screening

(r) Production risk zones – high risk, high care and ambient high care

(s) The standard also requires the FBO to maintain appropriate registrations with relevant authorities, where required by legislation

3.3.1.2. Governance Arrangements:

BRCGS is operated by a Board and a Management Team; and receives strategic and technical input from an International Advisory Board (IAB). The Board is made up of organizations that have an interest in the development, implementation, and maintenance of BRCGS' Global Standards. The IAB consists of food service companies and manufacturers, leading international retailers and producers with a global reach and reputation and provides strategic and technical input.

The Global Standards and associated schemes are managed by the BRCGS Technical Team and governed through a number of technical committees, each of which works to a set of defined terms of reference. The committees provide a forum for input from various bodies and individuals with an interest in product safety, for example manufacturing trade associations, retailers and food service companies, regulatory bodies, accreditation bodies, certification bodies, and sector experts.

Third party audits are carried out by independently accredited certification bodies (CBs) that are approved and licensed by BRCG. FBOs are required to select a certification body approved by BRCGS. BRCGS lays down detailed requirements for certification body to meet in order to gain approval. As a minimum, the certification body shall be accredited to ISO/IEC 17065 by a national accreditation body affiliated to the International Accreditation Forum (IAF) and recognized by BRCGS. Rules and guidelines are laid down detailing the responsibilities of the certification body and auditors, and adherence to these rules are monitored by the BRCGS Compliance team, as well as the National Accreditation Body. BRCGS recognizes accreditation bodies that are signatories to the IAF Multilateral Agreement (MLA) for product certification and therefore work in accordance with the requirements of ISO/IEC 17011 ‘Conformity assessment – General requirements for accreditation bodies accrediting conformity assessment bodies.

3.3.2. BEST AQUACULTURE PRACTICES (BAP)

BAP is certification program for the aquaculture sector having four standards covering the entire production chain, namely:

(a) BAP Farm standard

(b) Hatchery standard

(c) Feed Mills standard

(d) Seafood Processing Standard (SPS)

The BAP program has four pillars namely: food safety, social accountability, environmental responsibility, and animal health and Welfare. The standard has an overarching set of traceability requirements. The food safety requirements for each standard are highlighted below:

3.3.2.1. Food safety requirements for the Seafood Processing Standard:

This standard applies to establishments processing aquaculture farmed products. The food safety requirements contained in the food safety pillar are summarized below:

(a) **Food Safety and Quality Assurance**: Emphasis is placed on having a Quality

Management System that includes a clear Food Safety Management System based on HACCP.

(b) **Specifications**: Facilities should document all items purchased that impact food safety, regulatory requirements, and quality. The purchasing process shall be controlled to ensure these items conform to requirements.

(c) **Control of Non-Conformity**: products which does not conform to requirements (food safety, quality, legality, or customer specification requirements) are to be clearly identified and controlled to prevent unintended use or delivery.

(d) **Product Recall**: This addresses how non-conforming products are recalled in the event of rejection or non-conformity related to food safety, legality or quality.

(e) **Food Fraud**: This addresses any deliberate action to deceive consumers in regards to the integrity of food to gain undue advantage.

(f) **Food Defense**: addresses efforts to protect food from acts of intentional adulteration or tampering

(g) **Product Testing** to verify microbiological limits and chemical contaminants.

(h) **Traceability** of the aquaculture products along the value chain

3.3.2.2. BAP -Farm standard

This standard is applicable to the farming of finfish, crustaceans, and other aquatic invertebrates. The standard covers all production methods, including flow-through, partial exchange, and closed or recirculating aquaculture systems operated in ponds, cages, net pens, tanks, raceways, or closed-containment vessels. The food safety requirements in the standard are highlighted below:

(a) **Contamination Risk Assessment**- This involves identifying and managing potential environmental hazards that affect the food safety of products from an aquaculture farm. A farm-level HACCP plan wis proposed to identify, evaluate, and control the food safety risks that occur during production.

(b) **Chemical and Drug Management** – This provision addresses management of veterinary drug residues, feed additivities, prohibited antimicrobials, ban on use of antimicrobial agents designated as critically important for human medicine by the World Health Organization (WHO) and any other residues from chemicals used in feed.

(c) **Microbial Sanitation, Hygiene, Harvest and Transport:** This addresses application of good hygiene measures or practices on the farm, during harvesting and transportation.

(d) **Traceability:** This requirement addresses tracing of the products and keeping of records

3.3.2.3. BAP- Hatchery Standard

This Standards applies to all aquaculture hatchery and nursery facilities that produce eggs and/or juvenile aquatic animals for live transfer to other aquaculture facilities and to all species for which BAP farm standards are available.

The food safety requirements in the standard are highlighted below:

(a) **Assessment of food safety risks and risk management plan:** Hatcheries shall conduct an assessment that identifies potential food safety risks. The hatchery shall develop a management plan that describes procedures to prevent, monitor and control those risks and provide evidence that the plan is operational and effective.

(b) **Hazard Analysis and Critical Control Point (HACCP):** Used as a framework for the food safety risk assessment and management of food safety risks

(c) **Chemical and drug management:** Prohibited antibiotics, drugs, and other chemical compounds must not be used.

(d) **Prohibited Antimicrobial Agents:** Hatcheries must have lists of antimicrobial agents prohibited for use in the country where production occurs as well as in the country or countries representing the primary markets for farmed aquatic animals.

(e) **Treatment with Antimicrobial Agents:** Antimicrobial agents must only be used on the prescription of a veterinarian or a recognized aquaculture health professional. **FBOs must have** Health Management Plans to disease diagnosis, treatment protocols to be followed and including verification of efficacy and the application of any required withdrawal times.

3.3.2.4. BAP -Feed Mills Standard

The BAP standard applies to facilities that process and manufacture finished feeds for the culture of fish, crustaceans, and other aquatic and terrestrial animals. The food safety provisions in the standard are summarized below:

(a) **Good Manufacturing Practices (GMPs)/** pre-requisite programs: Feed mills shall have current, systematic, and documented process controls combined with good manufacturing practices that minimize or eliminate food safety hazards.

(b) **HACCP:** Food safety hazards shall be identified, and corresponding risks managed effectively through a Hazard Analysis & Critical Control Points (HACCP)-based or equivalent system.

(c) **Recall Procedures:** Recall procedures shall be planned and documented,

(d) **Process Controls:** A quality management system shall be established, implemented, documented, and maintained. The quality management system shall demonstrate compliance with all applicable legislation and be subject to a third-party audit.

(e) **Training:** All employees shall have appropriate levels of competence and be trained in the tasks they are required to perform together with personal hygiene, HACCP, food safety and customer requirements

(f) **Ingredients:** Feed ingredient shall be subject to a formal HACCP-based risk assessment, selection, and approval procedure.

(g) **Quality Control and Recalls:** There shall be a designated person responsible for Quality Control including the approval or rejection of feed ingredients, packaging material, work-in-progress feeds, and finished feed products; feed ingredients and finished products to

be tested in ISO/IEC17025 accredited or an equivalent standard or approved by a competent authority. In-house laboratories shall be operating on Good Laboratory Practices (GLPs) per ISO/IEC17025.

3.3.2.5. Governance of BAP

Best Aquaculture Practices is a division of the Global Seafood Alliance (GSA), an international, non-profit trade association dedicated to advancing responsible seafood practices through education, advocacy, and third-party assurances. GSA is a membership-driven organization comprised of certified producers, corporations, and individuals. Best Aquaculture Practices act as Program Managers for the GSA, who are the owners of the standards.

Global Seafood Alliance (GSA) coordinates the development of Best Aquaculture Practices (BAP) standards through **technical committees**. To promote broad stakeholder involvement, consensus, and transparency in the standards development process, GSA delegates the primary guidance and oversight for the process to a **Standards Oversight Committee (SOC),** whose members represent one-third industry, one-third non-governmental conservation and social justice organizations, and one-third academic and regulatory interests. **GSA** has a **Standards Coordinator** who works closely with the Standards Oversight Committee and Technical committee chairpersons to carry out the general administration of the standards.

Best Aquaculture Practices approves and contracts Certification Bodies (CB) to carry out certification of FBO; is responsible for training of auditors and maintains a list of approved auditors from all CBs; conducts regular reviews of the operation of the scheme to protect program integrity and ensure compliance with the requirements of global standards.

To be recognized by BAP, CBs must be accredited under ISO/IEC Guide 17065 by an International Accreditation Forum-member accreditation body and a Multilateral Recognition Arrangements signatory to another internationally recognized scheme.

A contract is required between the CB and Best Aquaculture Practices. The contract will provide the basis by which a CB can undertake evaluations against the Standards for which they are approved.

The CB must ensure that an agreement with the Applicant/Facility is in place for the authorization of the provision of the audit report and any associated information to Best Aquaculture Practices. The CBs agreement with the facilities shall include a provision to ensure that the CB is informed of any food safety prosecution, significant regulatory/food safety nonconformity or any product recall relating to food safety. CBs shall have procedures in place to ensure the integrity of certification after notification. The CB shall inform Best Aquaculture Practices of any such notifications.

3.3.3. GLOBAL G.A.P

GLOBALG.A.P. is a brand of smart farm assurance solutions developed by FoodPLUS GmbH with cooperation from producers, retailers, and other stakeholders from across the food industry. These solutions include a range of standards for safe, socially, and environmentally responsible farming practices. The most widely used GLOBALG.A.P. standard is Integrated Farm Assurance

(IFA), applicable for fruit and vegetables, aquaculture, floriculture, livestock, and more.

3.3.3.1. IFA for aquaculture

The IFA standard for aquaculture is a global standard for responsible farming practices that covers the entire production chain, from brood stock, seedlings, and compound feed to farming, harvesting, and transportation. The food safety requirements of IFA for aquaculture are highlighted below:

(a) **Site history:** Identification of potential contaminants and hazards that may compromise food safety i.e. physical, chemical (including allergens), and biological hazards

(b) **Hygiene:** hygiene risk assessment and hygiene procedures to minimize food safety risks-based on the risk assessment

(c) **Recall and withdrawal procedure:** managing recall and withdrawal of products originating from the marketplace.

(d) **Food defense:** A system to address risks associated with malicious attack or contamination

(e) **Parallel ownership:** system to identify and segregate products from GLOBALG.A.P. certified processes from products originating from noncertified processes.

(f) **Food fraud mitigation:** A system to address risks associated with food fraud.

(g) **Specifications:** Specifications for materials and services that are relevant to food safety are in place and readily available.

(h) **Non-conforming products, and product release at the farm**

(i) **Chemical compounds**: All chemical compounds must be approved for aquaculture production processes.

(j) **Traceability and stock origin:** Farmed aquatic species are traceable to the previous farm(s) and back to

(k) **Treatments:** The producer uses only medicines and treatments that are permitted by the relevant competent authority

(l) **Maximum Residue Limits (MRL):** demonstrate compliance regarding maximum residue limits (MRLs) in the market where the farmed aquatic species will be traded (domestic or international).

(m) **Use of authorized vaccines, medicines, and treatments:** authorized and/or prescribed by aquatic animal health professional.

(n) **Residue analyses:** MRLs for approved medicines and other contaminants are based on local/national legislation-

(o) **Traceability** of products

3.3.3.2. Governance of GLOBAL G.A.P:

FoodPLUS GmbH is a limited liability cooperation registered in Cologne, Germany. It manages all company's activities including standard setting and certification. FoodPLUS GmbH is governed by an elected Advisory Board consisting of an equal number of representatives from retail/foodservice and producer/supplier organizations.

GLOBALG.A.P. standards are developed and defined by various Technical Committees, Focus Groups and the Certification Body Committee. GLOBALG.A.P. Advisory Board gives direction to the GLOBALG.A.P. Secretariat, the technical committees, and the focus groups.

FBO are audited by independent third-party certification bodies that are approved by GLOBALG.A.P. These CBs conduct both announced and unannounced onsite farm inspections and audits throughout the year. CBs can only be accredited by accreditation bodies (ABs) that have signed a Memorandum of Understanding (MoU) with GLOBALG.A.P.

The accreditation body to which a certification body applies shall be a signatory of IAF multilateral Recognition Arrangement (MLA) for product certification.

3.4. BENCHMARKING THE FOOD SAFETY REQUIREMENTS OF AQUACULTURE VTPA PROGRAMS AGAINST NATIONAL AND INTERNATIONAL REQUIREMENTS

One of the outcomes of the pilot project is to assess how competent authorities can utilize or rely on the data/information generated by vTPA programs to support food safety outcomes of the national food control system. The competent authorities must satisfy themselves that the vTPA program information/data can be trusted and is fit for purpose. All the vTPA programs have set standards that provide food safety and other requirements that must be met by the FBOs.

3.4.1. REQUIREMENTS FOR CAPTURE FISH

The Codex principles and guidelines for the assessment and use of voluntary third-party assurance programs provides a criterion on standard setting process which assesses the extent to which the vTPA standards are consistent with Codex or other relevant international standards and/or applicable national regulatory requirements; and whether the vTPA standards contain specified requirements to protect consumers in relation to food safety and fair practices in the food trade. Other issues to be considered in the assessment include whether the vTPA standards are developed through a transparent consultative process with relevant experts and stakeholders reflecting the range of business; and whether the vTPA standards are written in a way that they can be assessed for conformity

Two vTPA programs, namely BRCG and BAP- Seafood Processing Standard (SPS) are applicable to fish processing establishments. A benchmark of the scheme food safety requirements against national and international requirements has shown the following:

(a) The food safety requirements contained in the BRCG and BAP-SPS standards meet the national and international requirements. Both standards have provisions HACCP, PRPs, traceability, food recall, training, labelling, microbiological limits among others as indicated

in table 1. However, BRCGS requirements are more elaborate as compared to those of BAP-SPS.

(b) Both standards emphasize the aspect of conducting risk assessments (e.g. documented risk assessment conducted on raw materials or groups of raw materials, cross contamination, and cross-contamination), while this is not explicitly provided in the national legislations. Although this may be indirectly provided for in the requirement for implementation of the HACCP based food safety system in national requirements.

(c) Both standards have extra requirements which are not stated in the national regulations, and these are food defense, management of allergens, food fraud, and food safety culture.

(d) The BRCG has a well-structured format clearly stating the clause and the criteria to be fulfilled by the FBO unlike the BAP-SPS standard which has generic provisions. The way BRCGS standard is structured makes it easy for audits to be performed against specific clauses.

3.4.2. REQUIREMENTS FOR FARMED FISH

The standards applicable to farmed fish (aquaculture) include the BAP- farm standard, BAP-Hatchery Standard, BAP- Feed mills standard and the GLOBAL G.A.P Integrated Farm Assurance (IFA) standard for aquaculture (IFA-Aquaculture).

(a) The GLOBAL G.A.P IFA-Aquaculture is a well-structured standard specifying the principle and the criteria to be met by the FBO hence making assessment to conformity easy. The standard meets the national food safety requirements for farmed fish as shown in table 1. Like the BRCG standard, this standard has extra food safety provisions which are not included in national requirements namely, food defense, management of allergens, food fraud, and food safety culture.

(b) The BAP standards for farm, fed mill and hatchery provide some of the national requirements for farmed fish. However, these are also provided in a more generic nature, hence not making it user-friendly for food safety audits.

Overall, all the scheme standards (BRCGS, GLOBAL G.A.P IFA-Aquaculture, and BAP) are developed in a transparent consultative process by engaging different experts and stakeholders in the sector. The governance structure in relation to setting of standards is governed by either a separate organization or by committees that are independent of the management of the vTPA program owner.

The governance arrangements and responsibilities within the vTPA program for all the vTPA programs are clearly defined, with oversight arrangements structured to avoid potential conflicts of interest.

The vTPA programs have modalities of ensuring that only independent and accredited certification bodies perform audits of the FBO. They also require that CBs have sufficient expertise and experience to conduct the audits; and their performance is monitored by the accreditation body.

Table 1. Summary of the food safety requirements contained in both the national legislations1 and the vTPA programs (BRCG, BAP and IFA- GLOBALLGAP for Aquaculture)

BRCG

a. Maintain appropriate registrations with the relevant authorities, where required by legislation
b. Application of risk assessment and HACCP principles
c. Application of pre-requisite programs
d. Supplier and raw material approval and performance monitoring
e. Management of allergens
f. Control of non-conforming products
g. Traceability
h. Management of incidents, product withdrawal and product recall
i. Product labelling
j. Product authenticity, claims, and chain of custody
k. product testing and laboratory analysis
l. Personnel training
m. Personnel and establishment hygiene
n. Medical screening
o. Production risk zones – high risk, high care and ambient high care
p. Food defense
q. Food fraud
r. Management of allergen
s. Risk assessment approach to identify and manage hazards

BAP -SEAFOOD PROCESSING STANDARD: FOOD SAFETY REQUIREMENTS

This standard applies to establishments processing aquaculture products. Although the standard has four pillars, the focus is on provisions that are relevant to food safety. These include:

a. **Food Safety and Quality Assurance:** Emphasis is placed on having a Quality Management System that includes a clear Food Safety Management System based on HACCP.
b. **Specifications:** Facilities should document all items purchased that impact food safety, regulatory requirements, and quality. The purchasing process shall be controlled to ensure these items conform to requirements.
c. **Control of Non-Conformity:** products which does not conform to requirements (food safety, quality, legality, or customer specification requirements) are to be clearly identified and controlled to prevent unintended use or delivery.
d. **Product Recall:** This addresses how non-conforming products are recalled in the event of rejection or non-conformity related to food safety, legality, or quality.
e. **Product Testing** Verification Requirement:
f. **Traceability** of the aquaculture products along the value chain
g. Product labelling
h. ***Food Fraud:*** *This addresses any deliberate action to deceive consumers in regards to the integrity of food to gain undue advantage.*
i. ***Food Defense:*** *addresses efforts to protect food from acts of intentional adulteration or tampering*

IFA- GLOBAL G.A.P AQUACULTURE

a. **Site history**: Identification of potential contaminants and hazards that may compromise food safety i.e. physical, chemical (including allergens), and biological hazards
b. **Hygiene:** hygiene risk assessment and hygiene procedures to minimize food safety risks-based on the risk assessment

c. **Recall and withdrawal procedure:** managing recall and withdrawal of products originating from the marketplace.
d. **Specifications:** Specifications for materials and services that are relevant to food safety are in place and readily available.
e. **Non-conforming products, and product release at the farm**
f. **Chemical compounds:** All chemical compounds must be approved for aquaculture production processes.
g. **Traceability and stock origin**: Farmed aquatic species are traceable to the previous farm(s) and back to
h. **Treatments:** The producer uses only medicines and treatments that are permitted by the relevant competent authority
i. **Maximum Residue Limits (MRL):** demonstrate compliance regarding maximum residue limits (MRLs) in the market where the farmed aquatic species will be traded (domestic or international).
j. Use of authorized vaccines, medicines, and treatments: authorized and/or prescribed by aquatic animal health professional.
k. **Residue analyses:** MRLs for approved medicines and other contaminants are based on local/national legislation-
l. **Traceability**
m. **Food defense**: A system to address risks associated with malicious attack or contamination.
n. **Parallel ownership**: system to identify and segregate products from GLOBALG.A.P. certified processes from products originating from noncertified processes.
o. *Food fraud mitigation*: A system to address risks associated with food fraud.

Note 1: Items that are underlined and italicized are only found in vTPA programs and note in national legislations

3.5. ASSESSMENT OF THE EFFECTIVENESS AND EFFICIENCY OF THE PROMINENT VTPA PROGRAMS IN THE AQUACULTURE VALUE CHAIN

The field visits were conducted to assess the effectiveness and efficiency of the VTPA programs being implemented by FBOs. The sole objective was to have an overview of the visibility of the vTPA program and how the FBOs are fulfilling the requirements of the vTPA programs. Specifically, the field visit was looking at the following key issues: adherence of the vTPA programs to their own processes and procedures; and the compliance of the participating FBOs to the requirements of the vTPA programs and regulatory requirements.

In Uganda, field visits were made to three fish processing plants that are implementing BRCGS namely Victoria Treasures, Karmic foods Limited and Fresh Perch Entebbe. There are no FBOs currently certified to BAP and IFA- GLOBALG.A.P.

Information was obtained by interview- interface with key operational personnel particularly key process owners, review of operational documents related to vTPA program and national regulatory requirements, as well as observations of activities at the packhouse, green house and vegetable gardens. The field visits showed that:

(a) BRCGS conducts annual certification audits using independent and approved certification bodies. The certification bodies used by fish processing FBOs are Intertek Certification Limited and ALCUMUS ISOQAR Limited.

(b) The FBOs personnel (process owners) interfaced with included Quality Assurance Managers and Production Supervisors; and they demonstrated knowledge in national and international food safety requirements, and they were articulate with the operations of the vTPA programs and their requirements.

(c) The FBOs have put in place documents and records that are required by the respective vTPA programs. This was verified by conducting a random document check for key operational and process documents (procedures and records) required by the BRCG standard and these included: HACCP manual, Pre-requisite programs or GMP/GHP; Traceability of products; parallel ownership, traceability, and segregation; product recall and withdrawal; non-conforming products; laboratory test report; food fraud; food defense; and food allergens.

(d) The FBOs use accredited laboratories for analysis of the food safety parameters which is a requirement for both the national competent authorities and the vTPA program. FBOs use Chemiphar laboratories.

(e) The assessment also shows that the FBOs meet national and international food safety requirements as evidenced by the analysis results that were examined. Laboratory analysis reports examined included: microbiological analysis for processed fish, process water and process swabs; heavy metal analysis; organophosphate and organochloride residues.

The findings of the field assessment exercise are summarized in tables 2. The names of the FBOs have been letter coded for purposes of maintaining confidentiality.

Table 2: Assessment of the performance BRCG vTPA program in the fishery and aquaculture sector in Uganda				
NO.	**PARAMETER**	**NAME CODE OF ESTABLISHMENT**		
		AF	**BF**	**CF**
1.	Food safety and quality management provisions	HACCP Manual and GMP manual with all operational, process control, hygiene, procedures; process layout- They are approved by CCA	HACCP Manual and GMP manual with all operational, process control, hygiene, procedures; process layout- They are approved by CCA	HACCP Manual and GMP manual with all operational, process control, hygiene, procedures; process layout- They are approved by CCA
2.	product Traceability	Detailed procedures in the HACCP/GMP manual; -fish purchased from approved landing sites (by CCA); -Local fish certificate accompanies; consignments; - material balance monitoring by CCA	Detailed procedures in the HACCP/GMP manual, -fish purchased from approved landing sites (by CCA), Local fish certificate accompanies consignments; - material balance monitoring by CCA	Detailed procedures in the HACCP/GMP manual; fish purchased from approved landing sites (by CCA); -Local fish certificate accompanies consignments; - material balance monitoring by CCA; -Approved list of suppliers
3.	Recall/withdrawal (records /procedure)	Elaborate procedures available	Elaborate procedures available	Elaborate procedures available
4.	Non-conforming products: (records /procedure)	Elaborate procedures present	Elaborate procedures present	Elaborate procedures present
5.	Food fraud: (records /procedure)	Procedures/records available; purchase from approved landing sites, all suppliers well known	Procedures/records are available, purchase fish from only approved sites and conduct mass balance checks	Procedures/records available; purchase from approved landing sites by CCA
6.	Food defense (records /procedure)	Procedures present: security at entrance to check all visitors and staff;	Procedures present; security checks for all staff and visitors; security deployment at key areas, training and awareness	Procedures and records available; -digital surveillance system; security at critical points (e.g ice, water reservoirs, food, one entrance & exit); -Training and awareness -Food security risk assessment
7.	food allergens	Procedure in place No risk of allergens due to single process and single product	Procedure in place	Policy in place; Single line production so no incidence of mixing -Training workers
8.	Food safety culture	-Periodic training for all staff on food safety		-Suggestion box, food safety monthly meetings

Table 2: Assessment of the performance BRCG vTPA program in the fishery and aquaculture sector in Uganda				
NO.	**PARAMETER**	**NAME CODE OF ESTABLISHMENT**		
		AF	**BF**	**CF**
9.	Laboratory reports: Fish (pathogens, heavy metals, TVB-N); water pathogens, heavy metals, electrolytes), process swabs	Copies of Laboratory tests present: pathogens in fish, heavy metals, TVB-N; pathogens in water & heavy metals & electrolytes; process swab tests		Copies of Laboratory tests present: pathogens in fish, heavy metals, TVB-N; pathogens in water & heavy metals & electrolytes; process swab tests
10.	How does the facility prepare for certification audits	Internal audits prior to external audits	Internal audits prior to external audits	-Conduct pre-assessment audits before external audit, -monthly internal audits for different departments
11.	National regulatory reference documents: copies of standards, codes of practice, guidelines, regulations	Fish Act, cap 197; The Fish (Fishery and Aquaculture products) (Quality Assurance) Rules, 2017; Manual of standard operating procedures for fish (fishery and aquaculture products) inspection and quality assurance; Aquaculture training manual for extension agents in Uganda	Fish Act, cap 197; The Fish (Fishery and Aquaculture products) (Quality Assurance) Rules, 2017; Manual of standard operating procedures for fish (fishery and aquaculture products) inspection and quality assurance; Aquaculture training manual for extension agents in Uganda	Fish Act, cap 197; The Fish (Fishery and Aquaculture products) (Quality Assurance) Rules, 2017; Manual of standard operating procedures for fish (fishery and aquaculture products) inspection and quality assurance; Aquaculture training manual for extension agents in Uganda
12.	What are the key national food safety regulatory requirements (by the Competent Authority) e.g. pesticide residues, pests, heavy metals, microbiological contaminants etc.	microbial, chemical, heavy metals, pesticides, TVB-N contaminants requirements contained in the Fish (Fishery and Aquaculture products) (Quality Assurance) Rules, 2017	microbial, chemical, heavy metals, pesticides, TVB-N contaminants requirements contained in the Fish (Fishery and Aquaculture products) (Quality Assurance) Rules, 2017	microbial, chemical, heavy metals, pesticides, TVB-N contaminants requirements contained in the Fish (Fishery and Aquaculture products) (Quality Assurance) Rules, 2017
13.	What are the key international/export food safety requirements (destination/export markets)-	EU requirements for microbial, chemical, heavy metals, pesticide contaminants	EU requirements for microbial, chemical, heavy metals, pesticide contaminants	EU requirements for microbial, chemical, heavy metals, pesticide contaminants
14.	Where are the laboratory tests conducted? (in-house or outsourced laboratory)	Chemiphar		Chemiphar; Department of food technology and nutritional laboratories
15.	How does certification to BRCG facilitate you in meeting national and	BRCG requirements are very detailed, -BRCG audit once a year, CCA	It's a requirement by our customers; makes it easy to meet national requirements	BRCG requirements are very detailed, focus on policies, processes and procedures

Table 2: Assessment of the performance BRCG vTPA program in the fishery and aquaculture sector in Uganda				
NO.	**PARAMETER**	**NAME CODE OF ESTABLISHMENT**		
		AF	**BF**	**CF**
	international food safety regulatory requirements	is more on the ground with quarterly audits		
16.	Is there any formal process to share data/information obtained from BRCG certification with the competent authority	NO although CCA always get any information they want upon request	NO although CCA always get any information they want upon request	NO although CCA always get any information they want upon request
17.	Recommendation	Government requested to cost share in the vTPA program to sustain information/data sharing	Government to subsidize on laboratory testing fees	Memorandum of understanding with CCA to enable official sharing of information

PART B: HORTICULTURE VALUE CHAIN

4.0. FOOD SAFETY REGULATORY ENVIRONMENT FOR HORTICULTURE

4.1. INTERNATIONAL FOOD SAFETY REQUIREMENTS FOR HORTICULTURAL PRODUCTS

Sanitary and Phytosanitary requirements are among the mandatory requirements for fruits and vegetables in international trade. The World Trade Organization (WTO) 'Agreement on the Application of Sanitary and Phytosanitary Measures – (SPS Agreement) provides the basic rules for sanitary (human and animal health) and phytosanitary (plant health) measures and standards.

Agricultural products such as fruits and vegetables are susceptible to biological, chemical, and physical hazards known as contaminants, which may include pesticide residues, heavy metals, microbiological pathogens, naturally occurring toxic substances such as mycotoxins, among others. These substances often result from environmental exposure during production, post-harvest handling, manufacturing, processing, packaging, transport or storage.

4.1.1. CODEX REQUIREMENTS

The Codex Code of hygienic practice for fresh fruits and vegetables (*CXC 53-2003*) addresses Good Agricultural Practices (GAPs) and Good Hygienic Practices (GHPs) that help control microbial, chemical, and physical hazards associated with all stages of the production of fresh fruits and vegetables, from primary production to consumption. For primary production activities, the Code points out the need to consider the agricultural practices that promote the production of safe fresh fruits and vegetables, considering the conditions specific to the primary production area, type of products, and methods used.

The following are key food safety requirements contained in the codex code CXC-53-2003.

(a) Environmental hygiene: The site where fruits and vegetables are cultivated should be adequately located to prevent or minimize contamination of produce with physical, chemical, and microbiological hazards, while taking into consideration human and animal activity

(b) Agricultural chemicals: only agricultural chemicals authorized by the competent authorities for the cultivation of the specific fruit or vegetable should be used

(c) Residues of agricultural chemicals should not exceed levels as established by the Codex Alimentarius Commission.

(d) Hygienic design, location, and layout of premises: This is to minimize contamination with food hazards and ensure adequate pest control.

(e) Agricultural input**s** such as irrigation water, agro-chemicals, manure and soil should be free from contaminants such as heavy metals and pathogenic micro-organisms.

(f) Personnel health, hygiene, and sanitary facilities: Hygiene and health requirements should be followed to ensure that personnel who come into direct contact with fresh fruits and vegetables during or after harvesting do not contaminate the products with physical, chemical, and microbial hazards.

4.1.2. EU REQUIREMENTS

FBO exporting fresh fruit and vegetables to Europe are required to meet high standards of food safety and quality. Some markets also require responsible social and environmental conduct as a precondition for export. Food safety requirements for export of fruits and vegetables to the EU market are summarized below:

(a) All food exports destined for the EU market, including fresh fruits and vegetables must be safe. The *General Food Law - Regulation (EC) No 178/2002* provides the foundational rules on the safety of food and feed in the EU which requires all food intended to be placed on the market to be safe.

(b) **Application of HACCP principles and pre-requisite programs:** *Regulation (EC) No 852/2004 on the hygiene of foodstuffs* sets out applicable hygiene requirements on imported food. This legislation, based on Hazard Analysis Critical Control Point (HACCP) methodology to ensure food safety is legally binding for food processors, and is recommended for those involved in primary production (farmers).

(c) **Maximum Residue Limits (MRLs:** Regulation (EC) No 396/2005 contains Maximum Residue Limits (MRLs) for pesticide residues. For horticultural products entering the EU, over 600 potential substances are subject to MRLs. A comprehensive list of these substances and their limits is available on https://ec.europa.eu/food/plant/pesticides/eu-pesticides- database/mrls/?event=search.pr. Pesticides not listed in the pesticide database are not supposed to be used fruits and vegetables and products that exceed the MRL or have banned substances are not allowed on the European market.

(d) **Microbiological contaminants:** *Regulation (EC) No. 2073/2005 on microbiological contaminants* establishes the microbiological criteria for food products including fresh fruits and vegetables. Pre-cut fruits and vegetables must comply with microbiological limits for Salmonella and E. coli. However, there is an exception for testing fresh uncut unprocessed fruits for microbiological contamination as this is considered unnecessary.

(e) **Heavy metals:** *Commission Regulation (EC) 1881/2006 on Heavy metals* **provides the** maximum levels for certain contaminants in foodstuff such as heavy metal contaminants. Similar to MRLs for pesticides, the European Union has set limits for several contaminants for fresh fruit and vegetables such as lead, cadmium and nitrate.

(f) **Food Additives** Regulation (EC) No 1333/2008 on Food Additives contains a list of food additives permitted for use in the European Union at certain levels and on certain foods. Although EU legislation does not permit use of additives in unprocessed food, some

additives are allowed for unprocessed fruits and vegetables and these can be found in Additives Database that provides detailed information on which additives can be used in different food categories; and the database can be accessed at the following link: https://ec.europa.eu/food/safety/food_improvement_agents/additives_en

(g) **Traceability:** Traceability refers to the ability to follow the movement of a food through specific stages of production, processing, and distribution. **Regulation (EC) No 178/2002, Article 18**, provides a requirement for traceability of foods.

(h) **Phytosanitary certification: Regulation (EU) 2019/2072.:** Fruit and vegetables exported to the European Union must comply with European legislation on plant health, Regulation (EU) 2019/2072, to prevent the introduction and spread of organisms harmful to plants and plant products in Europe. The exporting country must have a National Plant Protection Organization (NPPO), or official IPPC contact point, who has the authority to declare a region pest-free or to perform checks on specific areas and product treatments.

The EU requirements are in line with the International Plant Protection Convention (IPPC) regulations which require exporting countries to issue phytosanitary certificates certifying compliance with the phytosanitary regulations of the importing country. The basic elements of the phytosanitary certification process include ascertaining the relevant phytosanitary requirements of the importing country, verifying that the consignment conforms to those requirements at the time of certification, and issuing a phytosanitary certificate.

4.2. NATIONAL FOOD SAFETY REQUIREMENTS FOR HORTICULTURAL PRODUCTS

4.2.1. THE LAWS AND INSTITUTIONS GOVERNING TRADE IN FRUITS AND VEGETABLES IN RWANDA INCLUDE:

(a) Law *N°16/2016 of 10/05/2016 on plant health protection* which specifies modalities for plant health protection in Rwanda as well as strategies meant to control and contain the establishment of pests or diseases and matters connected with living organism

(b) Law *Nº 31/2017 of 25/07/2017* establishes the Rwanda Inspectorate, Competition and Consumer Protection Authority (RICA) as the competent authority to carry out inspection of quality and standards conformity and promote healthy competition in the economy by prohibiting unfair business practices as well ensuring consumers protection.

(c) ***Article 10 of the RICA law provides for Phytosanitary inspection of a plant and plant product*** meant for importation into Rwanda or for exportation. RICA is the agency responsible for assessing the phytosanitary condition of agricultural products for export and issuing phytosanitary certificates for exports. The Director General, RICA is the International Plant Protection Convention **(IPPC) Official Contact Point**.

(d) Other institutions that support the horticultural sector are:

i. National Agricultural Export Development Board (***NAEB)***

NAEB is a government body which promotes and facilitates agricultural exports and provides support to the private sector players. NAEB registers and issues export licenses to all exporters of fruits and vegetables. NAEB also operates a modern pack house facility which is rented out to exporters who don't have such facilities. The pack house, which is operated under a quality management system based on HACCP principles, is a facility for postharvest handling and management of fruits and vegetables before export. Activities at the pack house include sorting, cleaning, grading, packing, cold storage of fruits and vegetables.

ii. The Rwanda Standards Board (RSB):

Rwanda Standards Board is a government institution with the overall mission of providing standards-based solutions for trade promotion and consumer protection. RSB undertakes all activities pertaining to the development of Standards, Conformity Assessment and Metrology services.

The Rwanda Standards Board provides laboratory quality testing services in line with ISO 17025, and has been accredited by **Raad Voor Accreditatie (Dutch Accreditation Council, RvA)** on food testing parameters.

RSB also provides certification for both products and management systems certification, in compliance to ISO 17021 on the requirements for bodies providing certification of management systems and ISO 17065 on the requirements for bodies providing products certification respectively.

RSB has also published the following standards which are applicable to the sector: **Organic production standard- EAS 456: 2019 and Good Agricultural Practice- Basic Requirements- RS 428: 2020**

4.2.1. REQUIREMENTS FOR EXPORT OF FRUITS AND VEGETABLES

The major requirements for fruits and vegetables destined for export is meeting the phytosanitary requirements and other import conditions of the importing countries.

Exports particularly to the EU market must comply to maximum limits of contaminants and pesticide residues; as well as microbiological limits contained in EU regulations. The FBOs conduct analysis for soil, irrigation and process water for contaminants on an annual basis.

Any person intending to export fresh fruits and vegetables must register as an exporter with National Agricultural Export Development Board (**NAEB**) and ensure that they are acquainted with the requirements of the market they intend to supply their products.

Before export of any consignment, the exporter must apply for a phytosanitary certificate from RICA. Inspectors from RICA inspect the farms as well as pack house for fruits and vegetable destined for export in accordance with the phytosanitary requirements of the importing country. Each farm site where fruits and vegetables are grown is issued location coordinates by RICA to support the process of traceability of the products to farm level.

Every export of fruits and vegetables must be accompanied with a phytosanitary certificate from

RICA.

RICA is also responsible for monitoring plant pests and diseases, pest Risk Analysis, regulating quality of locally produced seeds through inspection and certification; ensuring the quality of inputs used in agriculture, and inspection of agrochemicals.

4.3. OVERVIEW OF THE VTPA PROGRAMS IN THE HORTICULTURE VALUE CHAINS

4.3.1. GLOBAL G.A.P IFA FOR FRUIT AND VEGETABLES

The GLOBAL G.A.P IFA standard for fruit and vegetables is a global standard for responsible farming practices at primary production level, covering preharvest activities such as soil management and plant protection product application, to basic postharvest handling. The standard takes a holistic approach that covers responsible farming practices addressing the following: food safety; environmental sustainability and biodiversity; workers' health, safety, and welfare; animal health and welfare; legal, management, and traceability; production processes; integrated crop management (ICM) and integrated pest control (IPC); quality management system (QMS) and Hazard Analysis and Critical Control Points (HACCP)

The food safety requirements of IFA for fruits and vegetables are highlighted below:

(a) **Hygiene**: The farm should conduct and document hygiene risk assessment and put in place documented hygiene procedures based on the risk assessment to minimize food safety risks. These should address all GHP for personnel, environment, equipment, all facilities.

(b) **Specifications** for materials and services that are relevant to food safety should be available and documented.

(c) **Traceability:** All registered products should be traceable back to and from the registered farm where they were produced and handled (where applicable).

(d) **Recall and withdrawal:** Documented procedures are in place to manage the recall and withdrawal of products from the marketplace, and such procedures are tested annually.

(e) **Non-conforming products:** Procedures are in place to manage and handle non-conforming products.

(f) **Laboratory testing:** laboratories used to analyze parameters impacting food safety are operating in accordance with the requirements of ISO/IEC 17025. Analysis shall include water quality, soil, plant protection product residues, environmental monitoring samples, and microbial, chemical, and physical contamination.

(g) **Food defense:** A food defense system is in place to addressrisks associated with malicious attack or contamination- should include a risk assessment to identify potential threats to the safety of products, taking into account risks from deliberate

attempts to inflictcontamination or damage.

(h) **Food fraud:** A system is in place to address risksassociated with food fraud: A risk assessment shall be in place to identify ways in which aproducer may inadvertently purchase fraudulent supplies and materials,

(i) **Site management:** A documented risk assessment is completed for all registered sites; and A management plan that establishes strategies for minimizing the risks identified inthe risk assessment

(j) **Water management:** There is a risk assessment to assess foodsafety risks for pre- and postharvest water used and a water management plan to manage the risks

(k) **Integrated pest management:** Implementation of integrated pest management (IPM) is assisted through training or advice; The producer is informed about the relevant pests, diseases, and weeds that affect theirregistered crops.; The FBO must have an integrated pest management (IPM) plan describing the measures used at farm level to manage the relevant pests, diseases, and weeds that affect the registered crops

(l) **Plant protection products:** Only treatments with plant protection products(PPPs) authorized for the country of production are used.

(m) **Residue analysis**: Information regarding maximum residue levels(MRLs) is available for the destination markets inwhich products will be traded. A risk assessment for all registered products should be completed and the maximum residue level (MRL) requirements of the applicable market(s) are met.

Some European markets often have specific requirements in addition to food safety such as certification and compliance with social and environmental standards. This is the basis of the SMETA and Organic certification as highlighted below.

4.3.2 SMETA (SEDEX MEMBERS' ETHICAL TRADE AUDIT)

This is an audit methodology created by the Sedex members to address standards of labor, health and safety, environmental performance, and ethics within an organization. The certification helps business adhere to ethical trading requirements through social audits to assess working conditions at the supplier site. Audits focus on assessing the health and safety of workers and adherence to international human rights like zero tolerance to child labor.

Sedex (Supplier Ethical Data Exchange) is the name of the organization that owns the SMETA vTPA program. Sedex is not-for-profit, membership organization that leads work with buyers and suppliers to deliver improvements in responsible and ethical business supply chain standards.

SMETA uses the Ethical Trading Initiative (ETI) Base Code and the local law as its monitoring standards. The audit has majorly four pillars:

- Labor Standards
- Health and Safety
- Environment

- Business Ethics

The health and safety pillar provides for:

(a) A safe and hygienic working environment to be provided, bearing in mind the prevailing knowledge of the industry and of any specific hazards.

(b) Workers shall receive regular and recorded Health & Safety training and such training shall be repeated for new or reassigned workers.

(c) Access to clean toilet facilities and to potable water and, if appropriate, sanitary facilities for food storage shall be provided.

(d) Accommodation, where provided, shall be clean, safe, and meet the basic needs of the workers.

(e) The company observing the code shall assign responsibility for Health & Safety to a senior management representative.

As shown above, there is no direct correlation between the requirements of SMETA and food safety requirements. An indirect correlation may exist with the health and safety pillar as it may contribute to personnel and environmental hygiene.

The FBOs who are certified to SMETA also noted that there is no correlation between SMETA audits and food safety requirements of their products. They noted that this vTPA is majorly to ensure ethical trading and social responsibility approaches for the industry or sector. As such an in-depth assessment of this vTPA has not been conducted because it does not address food safety issues, but it is focused on social and ethical audit vTPA.

4.3.3. ORGANIC CERTIFICATION

Organic farming is an agricultural method that aims to produce food using natural substances and processes. This means that organic farming tends to have a limited environmental impact as it encourages:

- responsible use of energy and natural resources;
- maintenance of biodiversity;
- preservation of regional ecological balances;
- enhancement of soil fertility;
- maintenance of water quality.

Organic certification is majorly tailored to niche markets composed of consumers who prefer organic fruit and vegetables because of their natural and sustainable production methods and their connection to a healthy diet.
To market organic products in Europe, the FBO must use organic production methods according to the European *Regulation (EU) 2018/848* laying down the rules **on organic production and labelling of organic products**. An FBO must use the production methods for at least 2 years throughout a conversion period before applying for organic certification. **Organic Certification** allows a farm or processing facility to sell, label, and represent their products as

organic.

During the field visits it was found that there are currently no FBOs that have undertaken organic certification in the horticulture sector.

Just like SMETA vTPA program, the Organic Certification has no direct link with food safety outcomes. However, FBOs who would like to satisfy certain niche markets have an option of implementing these standards.

5.0. BENCHMARKING THE FOOD SAFETY REQUIREMENTS OF HORTICULTURE vTPA PROGRAMS AGAINST NATIONAL AND INTERNATIONAL REQUIREMENTS.

GLOBAL G.A.P IFA standard for fruit and vegetables uses a holistic approach that addresses food safety in addition to environmental sustainability and biodiversity; workers' health, safety, and welfare, among others.

National regulatory requirements for export of unprocessed fresh fruits and vegetables are majorly focused on meeting phytosanitary requirements (plant health, controlling and containing the establishment of pests or diseases) of the exporting country. International requirements particularly those for products destined to the EU market focus on both sanitary (e.g. maximum residue limits for pesticides & heavy metals; chemical and microbiological contamination limits) and phytosanitary requirements (plant health and diseases; and avoiding entry and spread of pests on their market).

The GLOBAL G.A.P standard for fruits and vegetables provides a comprehensive coverage on both sanitary (human health) and phytosanitary (plant health) requirements. This makes the IFA-GLOBAGAP for fruits and vegetable suitable for meeting both national and international food safety requirements. The food safety requirements in the standard meet international requirements, while exceeding national requirements. The requirements are summarized in table 3.

The standard has a well-structured format clearly stating the clause and the criteria to be fulfilled by the FBO thus making it easy for audits to be performed against specific requirements. As part of the GLOBAL G.A.P family of standards, GLOBAL G.A.P IFA- fruits and vegetables standard is developed in a transparent consultative process by engaging different experts and stakeholders in the sector. The governance structure in relation to setting of standards is governed by committees that are independent of the management of the vTPA program owner.

Further still, the governance arrangements and responsibilities are clearly defined, with oversight arrangements structured to avoid potential conflicts of interest; and modalities are in place for ensuring that only independent and accredited certification bodies perform audits of the FBO. They also require that CBs have sufficient expertise and experience to conduct the audits; and their performance is monitored by the accreditation body.

As earlier mentioned, SMETA and Organic standards do not have any specific food safety requirements. As such these two standards have not been benchmarked for the horticultural sector with respect to food safety requirements.

Table 3. Summary of the food safety requirements in IFA- GLOBALG.A.P -fruits and Vegetables

a. **Hygiene**: Hygiene riskassessment and hygiene to minimize food safety risks. This addresses all GHP for personnel, environment, equipment, all facilities
b. **Specifications for materials and services** that are relevant to food safety are available
c. **Traceability:** All registered products are traceable back to and from the registered farm where they were produced and handled (where applicable).
d. **Recall and withdrawal:** managing recall and withdrawal of products originating from the marketplace
e. **Non-conforming products**
f. **Laboratory testing:** use accredited laboratories and analysis to include water quality, plant protection product residues, environmental monitoring samples, and microbial, chemical, and physical contamination.
g. **Food defense:** A system is in place to address if associated with malicious attack or contamination.
h. **Food fraud:** A system to address risks associated with malicious attack or contamination.
i. **Site management:** A documented risk assessment is completedfor all registered sites; and a management plan with strategies for minimizing identified risks.
j. **Water management:** There is a risk assessment to assess food safety risks for pre- and post-harvest water used and a water management plan to manage the risks.
k. **Residue analysis**: A risk assessment for all registered productshas been completed and the maximum residue level (MRL) requirements of the applicable market(s) are met.

6.0. ASSESSMENT OF THE EFFECTIVENESS AND EFFICIENCY OF THE PROMINENT VTPA PROGRAMS IN THE HORTICULTURE VALUE CHAIN

A similar approach used for the aquaculture value chain was used to assess the effectiveness and efficiency of the VTPA programs being implemented by FBOs in the horticulture value chain in Rwanda. The assessment was set to meet similar objectives of the aquaculture value chain namely: have an overview of the visibility of the vTPA program and how the FBOs are fulfilling the requirements of the vTPA programs; assessing adherence of the vTPA programs to their own processes and procedures; and the compliance of the participating FBOs to the requirements of the vTPA programs and regulatory requirements.

In Rwanda, four horticultural exporting FBOs implementing GLOBAL G.A.P were visited and these are: Sunripe farms Rwanda, Garden Fresh Rwanda, Proxifresh Ltd; and Bahage Foods Ltd. Two of these FBOs are certified to SMETA. None of the FBOs exporting fruits and vegetables had ORGANIC certification. The packhouse located at National Agriculture Development Board (NAEB) was also visited. The packhouse facilities are used by FBOs who are engaged in export of horticultural products for postharvest operations before export.

Information was obtained by interview- interface with key operational personnel particularly key process owners, review of operational documents related to vTPA program and national regulatory requirements, as well as observations of activities at the packhouse, green house and vegetable gardens visited.

Below are the findings of the field visits:

GLOBAL G.A.P certification audits are conducted annually using independent and approved certification bodies. The certification bodies used by FBOs include: DNV Business Assurance which is a foreign firm Control Union based in Rwanda.

The FBOs personnel (process owners) interfaced with included Production Managers, Farm Agronomist, Green house Specialist, and Cold Chain specialists. The personnel demonstrated knowledge in food safety and the requirements of the vTPA programs and they were articulate with the operations of the vTPA programs and their requirements.

The FBOS have put in place documents and records that are required by the respective GLOBAL G.A.P. as evidenced through independent random document check for key operational and process documents (procedures and records) required by GLOBAL G.A.P standards and these included: HACCP requirements, Pre-requisite programs or GMP/GHP; Traceability of products; parallel ownership, traceability and segregation; product recall and withdrawal; non-conforming products; laboratory test report; food fraud; food defense; and food allergens.

The FBOs use accredited laboratories for analysis of the food safety parameters which is a

requirement for the vTPA program. Majority of the FBOs in Rwanda submit their samples for analysis to Crop Nutrition Laboratory Services Ltd (CropNut) in Kenya. Some samples are tested by the Rwanda Standards Board.

The assessment also showed that the FBOs meet international food safety requirements as evidenced by the analysis results that were examined. Records or laboratory analysis reports examined included; residue analysis; heavy metals, chemical and microbial contaminants. Tests are performed on soil, irrigation water, and fruits and vegetables.

The findings of the field assessment exercise is summarized in tables 4. The names of the FBOs have been letter coded for purposes of maintain confidentiality.

Table. 4 . Assessment of the performance GLOBAL G.A.P, SMETA and ORGANIC VTPA program in the horticultural value chain in Rwanda.					
No.	**Name of the facility**	**A**	**B**	**C**	**E**
1.	Site management records – site map showing fields and facilities (fields, storage areas, Irrigation)	Site map available	Site map available	Site pap available; Site risk assessment plan; Newland risk assessment plan (physical, chemical, microbiological, allergens)	Map available, lay out and movement plan
2.	Hygiene requirements	Training procedures available	Training record, personnel hygiene procedures; establishment hygiene procedures present	Training records of employees; Daily hygiene checklist; hygiene procedures	Hygiene procedures & instructions present for personnel and entire establishment
3.	Traceability of products (farm and harvest) (records /procedure)	Product traceability and segregation plan present; products are traced from farm code, block, truck, trays until packing with labeling codes	Traced from the farm, block, crop labels, color coded crates, truck with delivery note, stickers on packed products; Labels indicate farm code, variety, date of production, GGN	Traceability and segregation procedure from farm to dispatch; has a traceability code (farm code, farm lock, delivery truck,	Traced from farm, truck delivery note, to package for export.
4.	Parallel ownership, traceability, and segregation, if any (records /procedure)	Non- have own farms	Color coding to segregate non-certified products	GGN for certified products	Not applicable
5.	Recall/withdrawal (records /procedure)	Mock recalls once a year	Mock trials performed once a year	Product withdrawal/recall procedure; Incident management form; Mock recalls once a year	Procedures in place
6.	Non-conforming products: (records /procedure)	Procedures are present	Non-conforming products rejected and sold on local market	Rejected at packhouse and sold on local market	All non-conforming products rejected at reception and returned to owner
7.	Food fraud: (records /procedure)	Food fraud mitigation plan	Food fraud policy	Food fraud and vulnerability risk assessment	Food fraud policy in place

Table. 4 . Assessment of the performance GLOBAL G.A.P, SMETA and ORGANIC VTPA program in the horticultural value chain in Rwanda.					
No.	**Name of the facility**	**A**	**B**	**C**	**E**
8.	Food defense (records /procedure)	Food defense plan	Food defense policy	Food defense and risk assessment form	Food defense plan in place
9.	food allergens		Has a flora/fauna list of area surrounding our farms; Restriction on visitor access, visitor's logbook	Allergen policy	Allergen Check List for Suppliers and Manufactures; allergen management and risk assessment procedure; allergen policy
10.	Laboratory reports: water analysis, microbiological agents, heavy metals, MRLs	Conduct Soil analysis annually, MRL for irrigation water once a year; microbiology (salmonella, staphylococcus, E. coli) for product by RSB	MRL once a year, soil analysis, water analysis	MRL quarterly, soil annually, contaminants in irrigation water (E.coli, salmonella) annually, heavy metals in irrigation water analysis, and drinking water	Microbial (E.coli. salmonella, listeria, staphylococcus)
11.	How the certification body was identified	Choose from GLOBAL G.A.P Approved CBs	Choose from GLOBAL G.A.P Approved CBs	Choose from GLOBAL G.A.P Approved CBs	Choose from GLOBAL G.A.P Approved CBs
12.	How does the facility prepare for certification audits	Conducts internal pre-certification audits	Internal audit one or 2 month prior to external audit	Performs internal audits	N/A
13.	What is the key national food safety regulatory requirements (by the Competent Authority) e.g pesticide residues, pests, heavy metals, microbiological contaminants etc	Farm inspection and farm code from RICA; Inspection of exports for phytosanitary certificate; Registration with NAEB as exporter	Phytosanitary certificate from RICA; use approved plant protection products; Use approved seeds and packaging; inspection by RICA and issue phytosanitary certificate	Register with RICA, farm & packhouse inspection by RICA; market requirements; register with NAEB; phytosanitary certificate from RICA	Phytosanitary requirements by export market; inspection of pack house by RICA
14.	What are the key international/export food	MLRs, microbiological analysis, heavy metals;	EU and UK requirements;	EU requirements; true variety of crops;	MLRs, microbiological

Table. 4 . Assessment of the performance GLOBAL G.A.P, SMETA and ORGANIC VTPA program in the horticultural value chain in Rwanda.					
No.	**Name of the facility**	**A**	**B**	**C**	**E**
	safety requirements (destination/export markets)-	soil analysis; analysis of irrigation and process water	MLRs, microbiological analysis, heavy metals; soil analysis; analysis of irrigation and process water	MLRs, microbiological analysis, heavy metals; soil analysis; analysis of irrigation and process water	analysis, heavy metals; soil analysis; analysis of irrigation and process water
15.	How do you ensure food safety at farm level (personnel, equipment, PPP, fruits & vegetables)	Training employees; use of approved suppliers for fertilizers, pesticides	Have SOPs for each activity on farm, risk assessment conducted	Food safety instructions, hygiene instruction, training, waste management	N/A
16.	How do you ensure food safety at pack-house level (personnel, equipment, PPP, fruits & vegetables)	Hygiene rules for packers	Sanitation and hygiene rules	Training of workers on hygiene; hygiene and cleaning instructions	Cleaning procedures; hygiene instructions; cleaning schedule followed.
17.	How do you ensure food safety during transportation	Use ordinary trucks since farm is near packhouse		Use ordinary trucks for short distance and refrigerated trucks for long distance	Refrigerated or ordinary delivery trucks
18.	Where are the laboratory tests conducted? (in-house or outsourced laboratory)	Outsourced: Rwanda Standards Board for microbial tests and Crop Nutrition (Kenya)	Outsourced	Outsourced, RSB, Crop Nutrition, Kenya	Outsourced, RSB, crop nutrition Kenya
19.	How does certification to GLOBAL G.A.P facilitate you in meeting national and international food safety regulatory requirements	It's a requirement by our customers	Helps in self-assessment, consistency in following procedures, easier to meet national and international requirements	Opens markets, awareness and exposure to employees and farmers	Creates confidence of the export market
20.	Are differences/gaps between the food safety requirements specified by GLOBAL G.A.P and national and international regulatory requirements	GLOBAL G.A.P has exhaustive requirements beyond what is required by the competent authority		similar	
	How do you manage the following (documentary evidence where applicable)				

Table. 4 . Assessment of the performance GLOBAL G.A.P, SMETA and ORGANIC VTPA program in the horticultural value chain in Rwanda.					
No.	**Name of the facility**	**A**	**B**	**C**	**E**
21.	Parallel ownership, traceability, and segregation if any	Not applicable	Color coding of crates to segregate non-certified produce	GGN for certified products	
22.	Any challenges of implementing VPTA?	High cost of certification; There is no incentive of certification at national level. i.e. consumers on the local market do not demand for certified products due to lack of awareness	Costs are high because analysis is conducted outside the country; Updating list of plant protection products by CA is three years yet international requirements (EU) change frequently.	Conforming to procedures by staff	
23.	Is there any formal process to share data/information obtained from GLOBAL G.A.P certification with the competent authority	There is no formal arrangement, but the competent authority can get any information on request	No. But competent authority conducts audits and can get information from the FBO whenever they want it	No.	No
24.	How does SMETA requirements contribute to food safety	Not applicable	SMETA is about labor and workers' rights. It has an indirect contribution to food safety when it addresses worker health and safety, as well as environmental hygiene	There is no relationship between the two standards	Not applicable
25.	Are there any synergies between SMETA audits and GLOBAL G.A.P audits	Not applicable	No. The audits are done separately. Although it is possible to have a dual audit	No	

Table. 4 . Assessment of the performance GLOBAL G.A.P, SMETA and ORGANIC VTPA program in the horticultural value chain in Rwanda.					
No.	**Name of the facility**	**A**	**B**	**C**	**E**
26.	Recommendation	Government subsidies are needed for farmers; Project should support awareness creation of benefits of certification at national level to create demand for certified fruits and vegetables	Establish national accreditation laboratories; Allow traders to import EU approved chemicals		

7.0. OPPORTUNITIES AND SYNERGIES OF USING THE VTPA PROGRAMS IN THE AQUACULTURE FISHERIES AND HORTICULTURE VALUE CHAIN

Regulators at national level cannot give up their regulatory role of establishing and maintaining legal requirements, as well as verifying that FBOs comply with them to ensure consumer protection and fair practices in the food trade. Likewise, the cardinal role of ensuring that only safe food is placed on the market lies with the FBOs. The clear roles and responsibilities for regulators and FBOs notwithstanding, there are apparent benefits to both the regulators and FBOs and/or vTPA program owners if the operations of the vTPA program and the national Food control system are harmoniously integrated.

The assessment has indicated that there are opportunities and synergies in integrating data or information obtained from vTPA programs in the national food control system in the fisheries and horticulture value chain.

The assessment has further highlighted four vTPA programs namely: BRCGS, GLOBAL G.A.P for aquaculture, BAP- Seafood Processing Standard; and GLOBAL G.A.P for horticulture as being structured in a format that can be easily audited in addition to having detailed requirements and assessment criteria. These four standards are therefore recommended for the respective value chains and the synergies/opportunities are discussed below:

(a) Similarity in regulatory requirements:

The national food safety requirements and those set by vTPA programs are similar. This is an area of complementarity between the national competent authority and the vTPA program owners. The similarity in requirements provides an opportunity to reduce the cost of doing business for the FBOs by minimizing duplicity in conformity assessment. By establishing a clear collaboration mechanism, both the national competent authorities and the vTPA program owners can agree on how to revise their monitoring regimes (frequency of audits/inspections) through risk profiling.

(b) Detailed regulatory information:

The food safety requirements for the vTPA programs though similar to national requirements with regards to the food safety objective to be addressed, vTPA programs have more detailed or in-depth processes, procedures, and documentation requirements. This presents an opportunity for the competent authorities to benefit from such elaborate information provided by vTPA programs.

(c) Broader scope of requirements:

The vTPA programs as earlier mentioned provide for food safety requirements which are recently embraced in modern food safety management. Such food safety requirements like food defense, food fraud, risk analysis and food safety culture are missing in national food safety legislations.

Competent authorities can take advantage of these current advances in food safety information by collaborating with vTPA program owners as their national governments update and incorporate them into the national legislations.

8.0. CRITERIA FOR UNDERTAKING A COST-BENEFIT ANALYSIS OF IMPLEMENTING VTPA APPROACHES AS PART OF THE OFFICIAL CONTROL SYSTEM BY GOVERNMENT REGULATORS IN UGANDA AND RWANDA

Considering available opportunities and synergies for incorporating vTPA programs in NFCS by competent authorities, there are further considerations that need to be made by the competent authority to ensure that the cost of implementation does not outweigh the associated benefits for such a program to be sustainable.

Below are some of the criteria the competent authority can take into consideration when considering implementing vTPA approaches as part of the official control system.

(a) Conformance to CXG 93-2021) criteria

First and foremost, assessment of any vTPA program should be performed against the six criteria as provided by the Codex Principles and Guidelines for the assessment and use of voluntary third-party assurance programmes (CXG 93-2021) namely: Standard setting; Compliance and certification; Assessment process; Assessor authorization/competence; Standard mapping and Data sharing and communication.

The vTPA must be able to score highly on the six criteria to ensure long term benefits to the CA for engaging the vTPA program in its national food control system. There are however other cost benefit considerations that should be taken note off as explained below

(b) Cost of regulation considering logistical requirements needed to operationalize the data sharing system:

Incorporating vTPA programs in NFCS is meant to lower the regulatory costs of the CA in terms of data sharing and reduced inspections for low-risk establishments while targeting resources to high risk FBOs. There are, however, additional operational costs that may accompany such as arrangement. This may include sophisticated IT equipment and systems set up to ensure data privacy and security, as well as data collection and analytical tools. Other costs may arise in form of expert personnel needed to manage the IT soft wares among others. There is therefore need for an in-depth analysis for any additional costs that may accompany such a program.

(c) The public health costs that would arise from adoption of a reduced inspection regime by the competent authority:

For instance, a food safety crisis or incidence associated with a particular participating FBO may occur because the oversight role of the competent authority over that FBO could have been

reduced in form of reduced inspections due to prior history of compliance. In such a case, reduced inspection and monitoring of the food businesses may be more costly in terms of the impact public health if the data required at that time is not available. Competent authorities therefore need to balance the level of reduced inspections that will not cause public health crisis in the event of a food crisis or incidence.

(d) The reliability of the data/information obtained from the vTPA program:

This will highly depend on the competency of the human resource employed by the FBO; the facilities used to generate the data (e.g. accredited laboratories) among others. Its not enough for FBOs to have procedures/documents that support the vTPA program, but how these procedures are implemented and the quality of data that is generated is critical. The CA may have to assess the minimum type or quality of facilities available to the FBO (personnel and equipment) necessary to provide reliable data before relying on any FBO data.

9.0. RECOMMENDATIONS ON HOW TO IMPROVE THE USE OF VTPA PROGRAMS WITH REFERENCE TO THE CODEX "PRINCIPLES AND GUIDELINES FOR THE ASSESSMENT AND USE OF VOLUNTARY THIRD-PARTY ASSURANCE PROGRAMS", CXG 93-2021

One of the ways national competent authorities can benefit from vTPA programs is to be able to use information/data from vTPA programs to better target official controls through improved risk-based inspection and enhanced risk profiling of food businesses

The assessment of food safety environment at national level for the horticulture and aquaculture value chain highlighted the following issues:

- National legislations do not have a provision for use of data/information from vTPA programs in the NFCS.
- There is no formal data sharing arrangement between the competent authorities and the FBOs or vTPA program owners
- All the vTPA programs and majority of approved certification bodies are owned by international entities. This makes certification to these programs costly for the FBO in terms of hosting external auditors
- The national quality infrastructure does not fully support the operations of vTPA programs in terms of availability of a national accreditation body, certification bodies and laboratories having a full scope of accreditation for the required certifications and testing parameters.

Four recommendations with action points are being proposed to address the gaps and improve the use of vTPA programs in supporting the competent authorities in meeting national and international food safety objectives.

I. ESTABLISH A LEGAL BASIS FOR RECOGNITION OF VTPA PROGRAMS IN THE NFCS

A legal framework is needed at national level to recognize and operationalize the use of information/data from vTPA in the NFCS. This should take into consideration the roles and responsibilities of competent authorities and FBOs, data privacy and protection rights.

(i) The following actions should be undertaken at national level:

(ii) Develop a national policy on private sector-led vTPA certifications and how vTPA programs can be used to support the NFCS

(iii) Amend existing laws and/or regulations to recognize vTPA programs in the NFCS; and

(iv) draft implementation strategies for operationalization of the data sharing approaches

II. ESTABLISH A NATIONAL FOOD SAFETY ASSURANCE RECOGNITION SCHEME OR FRAMEWORK FOR DATA/INFORMATION SHARING:

Competent authorities need to put in place formal arrangements at national level that facilitate use of information from vTPA programs in the NFCS. Since all the vTPA program owners are foreign, competent authorities should consider establishing a data sharing arrangement with individual FBOs.

The following actions are proposed:

(i) Competent authorities should set up a food safety assurance recognition scheme (FSARS) with a framework that spells out the following:

- criteria for recognizing a FBO that implements vTPA program onto the FSARS
- type of data to be shared
- frequency of data sharing
- Reduced inspection regime for the FBO
- Rights, obligations, and responsibilities of the competent authority and FBO

(ii) Competent authorities to establish memoranda of understanding with participating FBOs to operationalize the data/information sharing mechanism.

III. BUILDING THE NATIONAL CAPACITY OF AN INTERNATIONALLY RECOGNIZED QUALITY INFRASTRUCTURE SYSTEM THAT SUPPORTS OPERATION OF VTPA. PROGRAMS

A national quality infrastructure which is internationally recognized is vital for the effective operation of domestic markets as well as enabling access to international markets. Effective operation of vTPA programs at national level can be improved by building the capacity of standardization, accreditation, and conformity assessment (testing and certification) infrastructure. This will also reduce the cost of business for FBOs by reducing reliance on foreign QI services.

National Standards bodies (Rwanda Standards Board and Uganda National Bureau of Standards) certification and testing services are accredited to certify management systems and perform certain tests respectively. However, the accreditation scope of the testing laboratories does not cover all the parameters needed by the FBOs to be able to export to international markets. Similarly, the scope of accreditation for the certification function in both standards bodies does not cover the prominent vTPA programs being used by FBOs.

The following actions are proposed:

(i) Build the capacity of testing and certification services of national standards bodies and by expanding the scope of accreditation for testing and certification divisions to cover all test parameters and certification scopes required for the products to meet market requirements respectively. This capacity can also be harnessed in other conformity assessment bodies at national level,

(ii) Build the competence of auditors at national or regional level. The competence of auditors has implications on the trustworthiness of audit outcomes and how such audit results can be recognized internationally.

(iii) Establish, in the medium to long term a national or regional accreditation body, that is internationally recognized, to provide accreditation services to the national and regional conformity assessment bodies. It is a requirement that certification bodies certifying vTPAs should be accredited and monitored by a national accreditation body, with MLA provisions.

IV. ESTABLISH A REGIONAL VTPA PROGRAM

The cost of business by the FBOs can be mitigated by putting in place a regional vTPA program. This is also in line with EAC regional harmonization initiatives in standardization and conformity assessment procedures, and the objectives of the African Continent Free Trade Area.

Since vTPA programs are private sector driven and owned, the following is proposed for establishment of a regional vTPA program.

(i) The private sector in collaboration with government should develop a regional framework for enhancing the use of vTPA programs in the two sectors of aquaculture and fisheries (each sector to have its own framework due to the peculiarity of operations). The framework will provide guidance on the set-up and ownership of the vTPA program, governance, administration of the program, coordination at national and regional level, the program standard including compliance requirements, and certification approaches for the vTPA program.

Develop a regional vTPA standard: The requirements of the standard can be benchmarked from national and international requirements. RSB published a standard on Good Agricultural Practices (RS 428-2020) which can be used as a reference for benchmarking the requirements of the standard.