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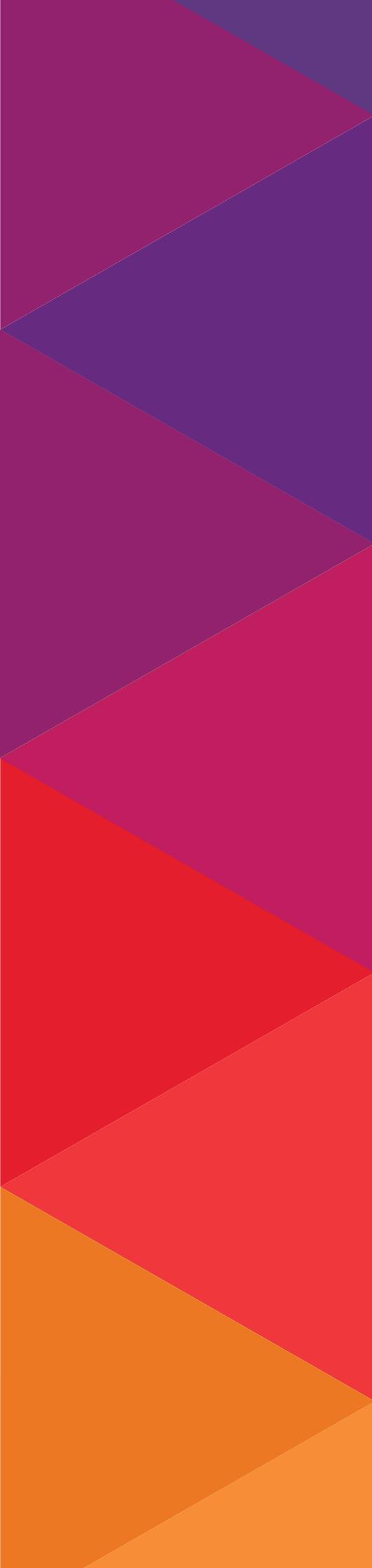
GLOBAL QUALITY
AND STANDARDS PROGRAMME



GEORGIA

**Strengthening conformity
assessment for fruits and
vegetables**

VALUE CHAIN STUDY



Value Chain Analysis of Fruits and Vegetables in Georgia

with focus on quality and compliance
infrastructure, economic, social and
sustainability requirements



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LIST OF ABBREVIATIONS

AA	Association Agreement
ACC	Agro Consulting Centre
AMMAR	Agriculture Modernization, Market Access and Resilience Project
AUG	Agricultural University of Georgia
AWPA	Almond & Walnut Producer Association of Georgia
BFH	Bern University of Applied Sciences
BFH-HAFL	School of Agricultural, Forest and Food Sciences, Bern University of Applied Sciences
BIPM	International Bureau of Weights and Measures
BRC	British Retail Consortium
BRCGS	Brand Reputation Compliance Global Standards
CAB	Conformity assessment body
CBI	Centre for the Promotion of Imports from developing countries
CEN	European Committee for Standardization
CENELEC	European Committee for Electrotechnical Standardization
CGF	Consumer Goods Forum
CIS	Commonwealth of Independent States
CMC	Calibration and measurement capability
CN codes	The Combined Nomenclature codes
CNFA	Cultivating New Frontiers in Agriculture
CoLLLab	Laboratory H&S LLL Courses for Youth in Western & Eastern Georgia
COOMET	Euro-Asian Cooperation of National Metrological Institutions
CoP	Communities of Practice
CRM	Certified reference materials
CSO	Civil society organization
CSRDG	Center for Strategic Research and Development of Georgia
DANIDA	Danish International Development Agency
DCFTA	Deep and Comprehensive Free Trade Area
EA	European Accreditation
EBRD	European Bank for Reconstruction and Development
EC	European Commission
e-COI	Electronic certificate of inspection
EDA	Export Development Association
EFSA	European Food Safety Authority
EFTA	European Free Trade Association
ENPARD	European Neighborhood Program for Agriculture and Rural Development
ENS	Entry Summary declaration
EORI	Economic operator registration and identification
EQCS	European Quality Certification Services
ERA	Accredited Provider of Cert. Ref. Materials, Proficiency Testing & Quality Control Standards
ETI	Ethical Trading Initiative
ETSI	A European Standardization Organization
EU	European Union
EURL	EU Reference Laboratory for Residues of Pesticides
EURL-FCM	EU Reference Laboratory for FCM
Eurostat	Statistical office of the European Union
EXS	Exit Summary declaration
F&V	Fruits and vegetables
FAO	Food and Agriculture Organization of the United Nations
Faostat	Food and Agriculture Organization Corporate Statistical Database
FBO	Food business operator
FCM	Food contact materials

FDI	Foreign direct investments
FLIS	Food Labelling Information System
FS	Food safety
FS&QMS	Food Safety and Quality Management System
FSA	Farm Sustainability Assessment
FSSC 22000	Food Safety System Certification 22000
FTA	Free trade agreement
GAC	Georgian Accreditation Center
GAP	Good agricultural practice
GC	Gas chromatography
GDA	Global Development Alliance
GDP	Gross domestic product
GeBa	Georgian Biotechnology association
GEF	Global Environment Facility
GeLab	Georgian Laboratory Association
Geostat	National Statistics Office of Georgia
GeoSTM	Georgian National Agency for Standards and Metrology
GFA	Georgian Farmers' Association
GFAAS	Graphite Furnace Atomic Absorption Spectroscopy
GFSI	Global Food Safety Initiative
G-HIP	Georgia Hazelnut Improvement Project
GHP	Good hygiene practice
GLOBALG.A.P.	Global Good Agricultural Practices
GMO	Genetically modified organism
GMP	Good manufacturing practices
GNI	Gross national income
GoG	Government of Georgia
GOST	Technical standards of the Euro-Asian Council for Standardization, Metrology & Certification
GQSP	Global Quality and Standards Programme
GRASP	GLOBALG.A.P Risk Assessment on Social Practice
GSP	Generalized System of Preference
GTU	Georgian Technical University
HACCP	Hazard Analysis and Critical Control Point
HAFL	School of Agricultural, Forest and Food Sciences of BFH
HPLC	High Performance Liquid Chromatography
HS code	Harmonized System code
HVMS	Harvesting Mobile Application System
IAEA	International Atomic Energy Agency
ICC	Information and Consultation Center (public agricultural extension body of Georgia)
IDH	Sustainable Trade Initiative
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IFS	International Featured Standards
ILC	Inter-laboratory comparisons
ILO	International Labour Organization
IRCA	International Register of Certificated Auditors
ISCC	International Sustainability and Carbon Certification
ISO	International Organization for Standardization
ITC	International Trade Centre
LC	Liquid chromatography
LEPL	Legal entity under public law
LIMS	Laboratory Information Management System
MC	Mass spectrometry
MEPA	Ministry of Environmental Protection and Agriculture of Georgia

MES	Ministry of Education and Science of Georgia
MoESD	Ministry of Economy and Sustainable Development of Georgia
MRL	Maximum residue level
NAPR	National Agency of Public Registry of the Ministry of Justice of Georgia
NCDC	National Center for Disease Control and Public Health
NFA	National Food Agency of MEPA
NGO	Non-Governmental Organization
OILM	International Organization of Legal Metrology
PHHM	Post-harvest Handling Management
PPP	Plant protection products
PT	Proficiency testing
QI	Quality infrastructure
QM	Quality management
R&D	Research and development
RASFF	Rapid Alert System for Food and Feed
RCA	Revealed Comparative Advantage
RDA	Rural Development Agency of MEPA
SAD	Single Administrative Document
SAI	Sustainable Agriculture Initiative
SDC	Swiss Development Cooperation
SECO	Swiss State Secretariat for Economic Affairs
SEEDEV	South-East Europe Development
SGF	Sure Global Fair
SGS S.A.	General Society of Surveillance (Société Générale de Surveillance)
SIFAV	Sustainability Initiative Fruit and Vegetables
SLA	Georgian State Laboratory of Agriculture
SME	Small and medium-sized enterprises
SMETA	Sedex Members Ethical Trade Audit
SPS	Sanitary and phytosanitary
SQF	Safe Quality Food
SRCA	Scientific Research Center of Agriculture of MEPA
SSCI	Sustainable Supply Chains Initiative
TBT	Technical barriers to trade
TC	Technical committee
TIC	Testing, Inspection and Certification
ToT	Training of trainers
Trade Map	Trade statistics for international business development
TSU	Tbilisi State University
UCC	Union Customs Code
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNECE-MQS	Minimum Quality Specifications for Fresh Fruit and Vegetables
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
VAT	Value added tax
VC	Value chain
VET	Vocational education and training
WFLO	World Food Logistics Organization
WTO	World Trade Organization



EXECUTIVE SUMMARY

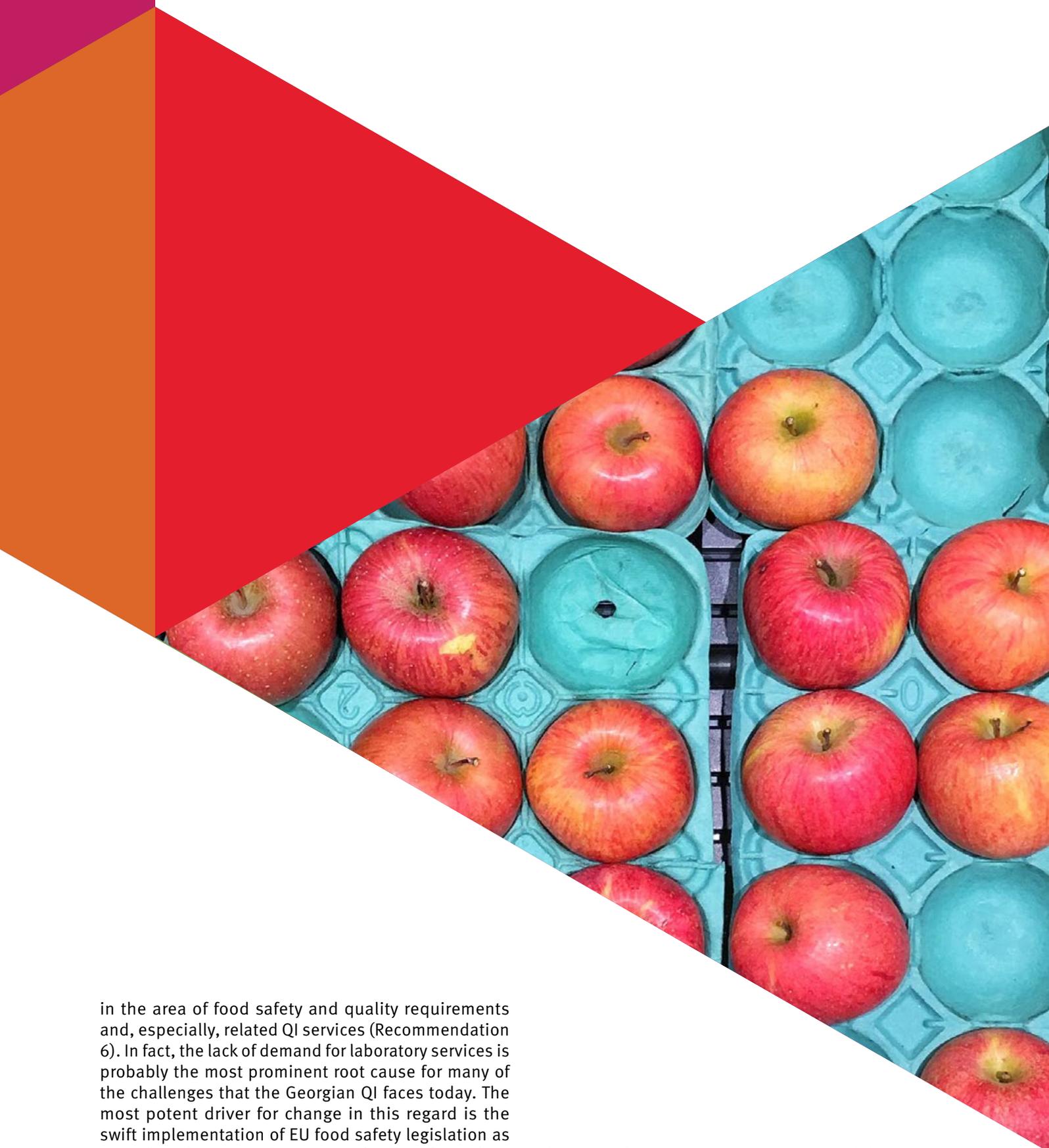
Global trade is growingly embedded within value chains and is increasingly governed by quality and standard requirements. Despite trade liberalization and globalization in recent years, many exporters still face substantial challenges to meet and prove conformity with market entry requirements, and face technical barriers to trade that hinder their ability to access markets. While Georgia's economy is steadily growing, agriculture is one of the key sectors of the country's economy, bearing a great potential for export. However, Georgia faces challenges in proving compliance with market requirements, which hinders it from engaging in cross-border trade.

This report presents the results of the “Value chain analysis of fruits and vegetables in Georgia with focus on quality and compliance infrastructure, economic, social and sustainability requirements”. The study was mandated to Bern University of Applied Sciences (BFH) by the Global Quality and Standards Programme (GQSP), an initiative led by the United Nations Industrial Development Organization (UNIDO). The GQSP project in Georgia aims at “Strengthening conformity assessment for the fruits and vegetables value chain”. The project is implemented in close collaboration with the Georgian Ministry of Environmental Protection and Agriculture (MEPA) and aims to strengthen the compliance capacity of the country with regard to quality and standards, thus facilitating market access for SMEs and ultimately increasing exports.

The study was conducted between December 2020 and March 2021 by a team of seven Swiss and Georgian experts in food safety and quality management, agricultural value chains and trade under the lead of the School of Agricultural, Forest and Food Sciences of the Bern University of Applied Sciences (BFH-HAFL), Switzerland. Based on detailed terms of references, the present study covered six topics, namely: global F&V production and trade; export requirements, especially to the EU market; the Georgian F&V sector in general; in-depth VC analysis of selected products; the Georgian Quality Infrastructure (QI); and the identification of leverage points for targeted capacity building. The main sources of information were literature, research team expertise and expert interviews. Overall, 49 interviews were conducted with representatives of different ministries/agencies, laboratories, research institutes, associations and companies (input suppliers, producers, processors and traders). Towards the end of the study, feedback was collected from 50 stakeholders in the frame of a validation workshop organized by UNIDO.

The bottom-line is straight forward: to enter the EU market – or any other high-end market – Georgian food products need to fulfil essential food safety and quality requirements. Conformity assessment is fundamental to prove compliance with these requirements and is thus one of the cornerstones of a well-functioning export-oriented economy. Georgia's QI and conformity assessment capacities are generally considered “poorly developed” for most agri-food export chains. This is where the GQSP Georgia project sees its main contribution, namely by strengthening conformity assessment bodies, especially testing and calibration laboratories, in view of enhancing the export potential of Georgian F&V. The present study aims to contribute to the GQSP Georgia's declared thrust by proving specific, relevant and feasible recommendations of high priority and with substantial leverage that have a fair chance to significantly improve conformity capacities in Georgia in the long run.

Recommendations 1 to 5 address the following: (1) the institutional development of the Georgian Laboratory Association; (2) technical, service and management capacity building for laboratories; (3) trainings on GFSI-recognized standards and certification schemes; (4) the high-quality translation of relevant documents for laboratories; and (5) the creation of a workable pesticide database. But QI alone is not the magic bullet to cure all ails of Georgian F&V exports: the non-conformity of food business operators and their products is a main constraint which limits Georgia's F&V exports at present. In this regard, GQSP Georgia may support and complement development projects, governmental support schemes and other potential multipliers focusing on food value chain development (including F&V) by providing them with advisory support and complementary capacity building formats



in the area of food safety and quality requirements and, especially, related QI services (Recommendation 6). In fact, the lack of demand for laboratory services is probably the most prominent root cause for many of the challenges that the Georgian QI faces today. The most potent driver for change in this regard is the swift implementation of EU food safety legislation as part of the Deep and Comprehensive Free Trade Area (DCFTA) Agreement. What is needed essentially is the enforcement this legislation and related official controls. GQSP Georgia can contribute to this end by means of lobbying, together with other actors (Recommendation 7). Currently, official control is much underperforming, for various reasons. Put differently, it needs an enabling environment to bring to full use the laboratory capacities envisioned. This is why there is a second recommendation to do with lobbying, namely to lobby for further QI development (Recommendation 8).

The voice of UNIDO is an important one. While UNIDO's commitment to this cause may lead some to think that such change is relevant only in terms of contributing to an increase in export, it will work also, of course, towards increased food safety on the domestic market. Thus, the enforcement of legislation in line with EU regulations and with it the much needed, increased testing, will benefit Georgian consumers. The focus on exports through the lens of QI needs to be understood also as both an important driver of and contribution to safer food and improved livelihoods in all of Georgia.





INTRODUCTION

Global trade is growingly embedded within value chains and is increasingly governed by quality and standard requirements. Despite trade liberalization and globalization in recent years, many exporters still face substantial challenges to meet and prove conformity with market entry requirements, and face technical barriers to trade that hinder their ability to access markets. Lengthy procedures and border rejections due to non-compliance with market requirements can result in major financial losses for the producers, particularly for small and medium sized enterprises (SMEs). In order to gain and maintain access to international trade and benefit from global markets, standards compliance and proof of conformity are essential. Like many other countries, Georgia faces similar challenges. While Georgia's economy is steadily growing, agriculture is one of the key sectors of the country's economy, bearing a great potential for export. However, Georgia faces challenges in proving compliance with market requirements, particularly those of the European market, which hinders it from engaging in cross-border trade. Although national laboratories are operational and well equipped, the technical staff lacks the knowledge and skills to perform internationally recognized conformity assessment. The report at hand presents the results of the value chain analysis of fruits and vegetables in Georgia with focus on quality and compliance infrastructure, economic, social and sustainability requirements. This study conducted within the framework of the Global Quality and Standards Programme (GQSP) and shall serve as a basis for further developing the quality infrastructure and quality and standards compliance capacity of the sector in view of sustainable industrial development in Georgia.

The GQSP is an initiative led by the United Nations Industrial Development Organization (UNIDO) and funded by the Swiss State Secretariat for Economic Affairs (SECO) with the objective to boost the competitiveness of selected economic sectors by supporting the improvement of the quality infrastructure (QI) of specific countries. The ongoing GQSP Georgia project is implemented in collaboration with the Georgian Ministry of Environmental Protection and Agriculture (MEPA). And aims "to strengthen the compliance capacity of the country with regard

to quality and standards, thus facilitating market access for SMEs and ultimately increasing exports." (ProDoc 2020:20) The project's intended outcome is: "Technical competence and sustainability of the conformity assessment bodies enhanced in view of facilitating market access for fruits and vegetables from Georgia." (ibid.) There are three outputs related to this outcome:

- » In-depth analysis of the fruit and vegetable (F&V) value chain (VC) considering market requirements of the European Union (EU), particularly looking at quality-related challenges, bottlenecks and capacity building needs.
- » Capacity building of conformity assessment bodies (CABs) and other relevant quality infrastructure (QI) institutions and stakeholders to provide internationally recognized services for the F&V sector.
- » Roadmap for the future development of Georgia's laboratory infrastructure. (ibid.)

The present study is a core contribution to output 1 and comprised the following tasks: i) assessment of the export potential of Georgian F&V, ii) VC analysis of selected products, iii) collection of the requirements for export, especially to the EU market, iv) appraisal of the compliance of the Georgian QI with these requirements, and v) identification of leverage points for targeted capacity building. The study was conducted between December 2020 and March 2021 by a team of seven Swiss and Georgian experts in food safety and quality management, agricultural VCs and trade under the lead of the School of Agricultural, Forest and Food Sciences of the Bern University of Applied Sciences (BFH-HAFL). More information on the team and schedule is available in Annexes 1 and 2.

The report is structured as follows: After the description of the methodology (2), key findings are presented regarding the global F&V production and trade (3), EU market requirements (4), the Georgian F&V sector (5), four in-depth value chain studies (6) and the Georgian quality infrastructure (7), followed by a conclusion and eight recommendations for further QI development (8).

2

METHODOLOGY

Table 1 provides an overview of the study's structure and methodology. Overall six topics were covered and the main sources of information were literature, own expertise and expert interviews. Overall, 49 interviews were conducted with representatives of different ministries/agencies, laboratories, research institutes, associations and companies (input suppliers, producers, processors and traders) – the detailed

list of interviews can be found in Annex 3. Towards the end of the study, feedback was collected from 50 stakeholders in the frame of a validation workshop which was organized by UNIDO on 25 March 2021.

As the entire study was done during the Covid-19 pandemic, all interviews, meetings and workshops were conducted online and no site visits were possible.

TABLE 1: OVERVIEW OF THE STUDY STRUCTURE AND METHODOLOGY

TOPIC	CHAPTER	METHODOLOGY
Global F&V production and trade	3	Literature review (main sources: Trade Map , Faostat , Fruit Logistica , fresh produce trend reports)
Export market requirements	4	Literature review (main sources: CBI , Access2Markets , EC, EUR-Lex , DCFTA Georgia , crop2shop)
The Georgian F&V sector in general	5	Literature review (main sources: Trade Map , Geostat , websites of Georgian ministries, previous studies)
In-depth VC studies of four selected products	6	Literature review, expert interviews, knowledge and experience of team members; product selection see below
The Georgian QI in general	7	Literature review, expert interviews, knowledge and experience of team members
Recommendations for QI and private sector development	8	Combination of findings from previous topics (chapters 3-7) plus feedback from stakeholder workshop

2.1 Selection of products for in-depth studies

For the selection of products for the in-depth VC studies, the research team conducted considerable research during the proposal phase and provided a list of pre-selected products based on the subsequent indicators: presence of the product on the lists of promising fresh and processed F&V of the [Centre for the Promotion of Imports from developing countries CBI](#) (yes/no); revealed comparative advantage (RCA) > 1 for eight years or more (yes/no); listing among top 50 products of the [ITC export potential map](#) and the [ITC product diversification map](#) for the EU and West Europe (ranked in 3 groups); present production in Georgia (high/medium/low, qualitative assessment by expert); and recent investments in production in Georgia (high/medium/low, qualitative assessment by expert).

The assessment resulted in the following pre-selection of products (bold = suggested for in-depth analysis): **Berries** (in general or one berry type), **greens, citrus fruit** (in general or specific focus on tangerines), **hazelnuts OR almonds OR walnuts** (if nuts are considered part of F&V), peaches / nectarines, persimmon, pepper (Capsicum), onions, tomatoes, dried fruit OR concentrated juices (if processed F&V are considered).

The above approach and pre-selection were presented to a working group of MEPA during a meeting on 5 January 2021. After this meeting MEPA chose apples, blueberries, walnuts and greens.

2.2 Definition of gaps and potentials

Both in the analysis of the Georgian QI as well as in the in-depth VC studies the gaps and potentials of respective actors and systems are assessed. The two terms are defined as follows:

Challenges: this refers to both a specific actor's or system's weaknesses as well as harmful attributes of its environment, thus internal as well as external aspects

that are detrimental to achieving a set objective and holding back a specific actor from performing better.

Potentials: this refers to already present capacities of a specific actor or system which may translate into opportunities for the system overall. Potentials are not understood as possible future interventions.





GLOBAL FRUITS & VEGETABLE PRODUCTION AND TRADE

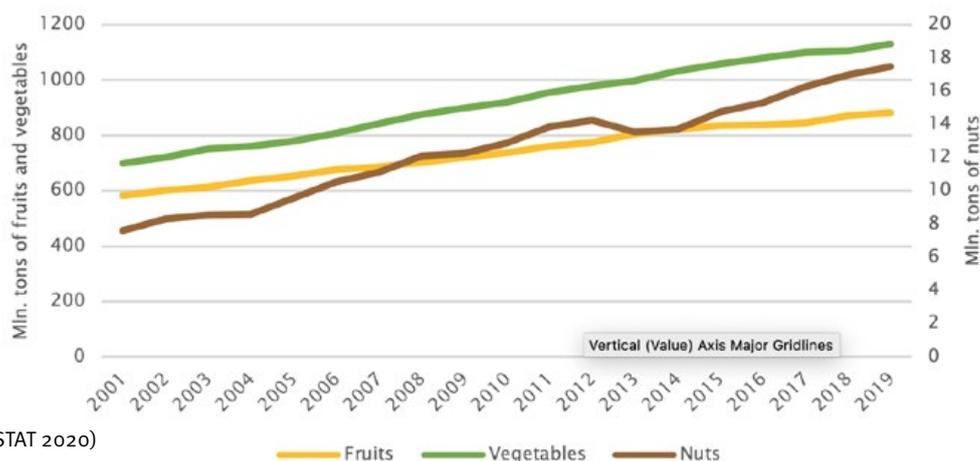


3.1 Global F&V production

This chapter presents key data on the worldwide production (3.1) and trade (3.2) of F&V and nuts, the EU production (3.3) and trade (3.4) of F&V and nuts

as well as general trends in the F&V sector (3.5). The global production of F&V and nuts has shown a strong increase over the past two decades (Figure 1).

FIGURE 1: WORLDWIDE PRODUCTION OF FRUITS, VEGETABLES AND NUTS 2001-2019 (SOURCE: FAOSTAT 2020)



(Source: FAOSTAT 2020)

In 2019, the following fruits topped the list in terms of worldwide production: bananas, watermelons, apples, oranges and grapes (Statista 2021a). The world's leading producing countries of fresh fruits in 2018 were China, India, Brazil, the USA, Turkey, Mexico, Indonesia, Spain, Iran and Italy (ibid.). In 2019, the following vegetables topped the list of worldwide

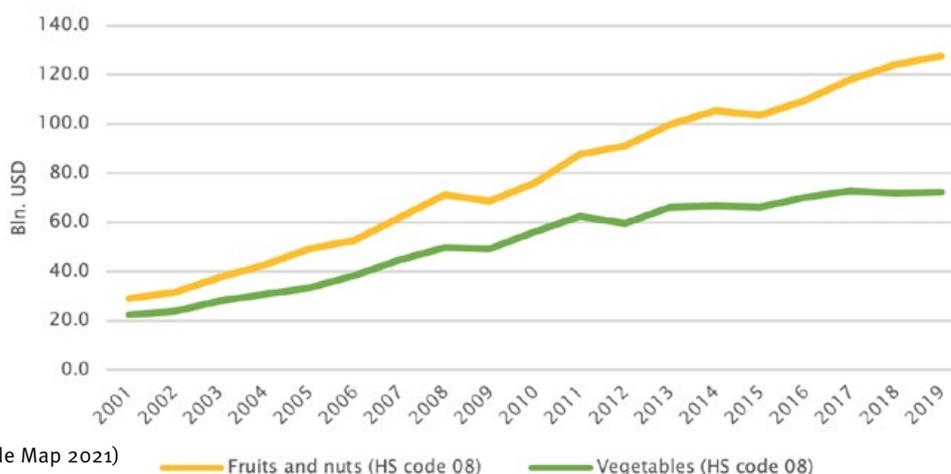
production: tomatoes, onions, cucumbers, cabbages and eggplants (Statista 2021a). The world's leading producers of fresh vegetables in 2018 were China, India, the USA, Turkey, Viet Nam, Nigeria, Egypt, Mexico, Russia and Spain (ibid.). A more detailed overview of the globally most produced F&V can be found in Annex 4.

3.2 Global F&V trade

The global trade of F&V showed a notable increasing trend over the last two decades (Figure 2). Between 2010 and 2019, annual growth rate of world exports

of fruits and nuts (HS code 08) was 6% on average. The same indicator stood at 4% for world exports of vegetables (HS code 07) (Trade Map 2021).

FIGURE 2: WORLDWIDE EXPORTS OF FRUITS AND VEGETABLES 2001-2019



(Source: Trade Map 2021)

Figure 3 to Figure 6 visualize the countries' shares in worldwide F&V exports and imports. More details can

be found in the [World Vegetable Map 2018](#) and the [World Fruit Map 2018](#) of RaboResearch (2018).

FIGURE 3: EXPORTING COUNTRIES OF FRUITS AND NUTS IN 2019



(Source: Trade Map 2021)

FIGURE 3: IMPORTING COUNTRIES OF FRUITS AND NUTS IN 2019



(Source: Trade Map 2021)

FIGURE 5: EXPORTING COUNTRIES OF VEGETABLES IN 2019



(Source: Trade Map 2021)

FIGURE 6: IMPORTING COUNTRIES OF VEGETABLES IN 2019



(Source: Trade Map 2021)

The leading exporters of fruits and nuts (HS code 08) are the USA (12%), Spain (8%), Mexico (6%), Netherlands (6%), China (5%), Chile (5%), Vietnam (4%), Turkey (3%), Thailand (3%) and Italy (3%). The following countries were leading importers of fruits in 2019: the USA (14%), China (9%), Germany (8%), Netherlands (6%), UK (5%), France (4%), Russian Federation (4%), Canada (4%), Hong Kong, (3%), and Italy (3%) (Trade Map 2021).

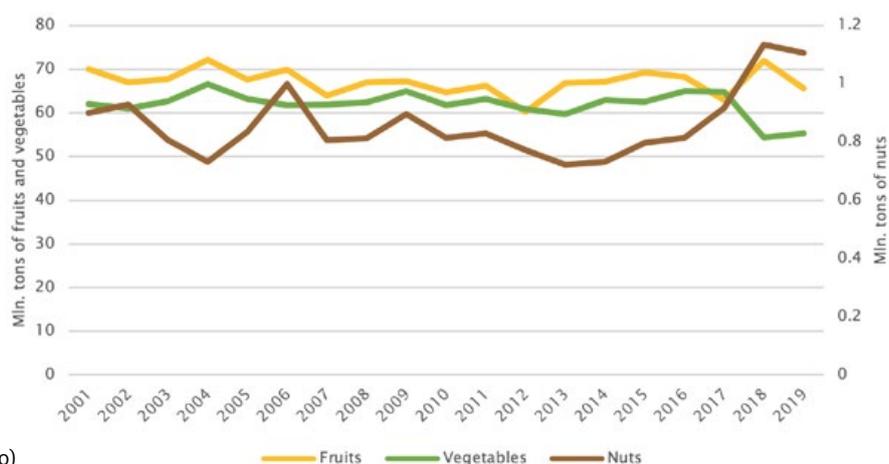
As for the worldwide exports of vegetables (HS code 07) the following countries top the list: China (14%), Netherlands (11%), Mexico (11%), Spain (10%), USA (7%), Canada (6%), France (3%), Belgium (3%), Italy (2%) and Poland (2%) (Trade Map 2020). The list of importers of vegetables is as follows: USA (16%), Germany (10%), UK (6%), France (5%), Canada (5%), Netherlands (4%), Japan (3%), Belgium (3%), and Italy (3%) (ibid.).

3.3 EU production

The production of F&V in the EU has been rather stable over the past two decades (see Figure 7), while the production of nuts was fluctuating quite strongly.

F&V contributed around 14% to the agricultural production of the EU in 2018. The main producers of fruits in the EU are Spain and Italy, followed by Poland, Portugal and Greece (eurostat 2021). The main producers of vegetables in the EU are Italy and Spain, followed by France, Poland and Romania (eurostat 2021).

FIGURE 7: EU PRODUCTION OF FRUITS, VEGETABLES AND NUTS 2001-2019



(Source: Faostat 2020)

3.4 EU trade

There are two main characteristics of the EU's F&V trade: i) the trade is dominated by intra-EU over extra-EU flows; and ii) the EU is a net-importer of F&V from non-EU countries (de Cicco 2019).

From 2009-2019, the most imported fruits (HS code 08) to the EU were citrus fruits, bananas, nuts, fresh berries, and grapes with the main non-EU suppliers being the USA, Costa Rica, Colombia, Morocco, Viet Nam, South Africa, Peru, Ecuador, Brazil, New Zealand, Turkey and Chile (Trade Map 2021). During the same time span, the most imported vegetables (HS code 07) to the EU were tomatoes, peppers, potatoes, onions and cucumbers and gherkins with the main non-EU suppliers being Egypt, Turkey, Canada, China, the USA, Peru, Kenya, India and Morocco (ibid.). This data is however flawed to a certain extent, as transit countries appear as the suppliers in trade statistics whenever a product passes a customs warehouse in the transit country (European Communities 2006). Germany, the Netherlands, the United Kingdom, France and Belgium have the highest total import value of fresh F&V (CBI 2020a).

The [Centre for the Promotion of Imports from Developing Countries \(CBI\)](#) to Europe provides a very good overview about the general demand, trends and product requirements in Europe for all kinds of product categories including fresh and processed F&V and nuts. According to CBI (2020b) the demand for fresh F&V is stable and the biggest opportunities lie in the production of off-season F&V as well as in the growing demand for berries, avocados, watermelons and sweet potatoes. While the European market generally offers a lot of opportunities for exporters, fierce competition, high standards and certifications as well as strong expectations in terms of transparency make it challenging for businesses to enter the market (ibid.). Providing reliable volumes is a key requirement from

large supermarket chains that dominate the markets in Europe. CBI offers specific information for a list of so called 'promising products' for export into the EU, which are namely (excluding the ones not produced in Georgia):

Fresh F&V: aubergine; avocados; beans, peas & other leguminous vegetables; blueberries; chilli peppers; fresh berries; fresh herbs; fresh melons; fresh peas; fresh persimmons; fresh strawberries; lemons; limes; plums & other stone fruit; pomegranates; roots & tubers; sweet potatoes; table grapes.

Processed F&V and nuts: superfruit juices; almonds; canned beans; canned F&V; canned olives; citrus juices; dates; dried grapes; dried mushrooms; edible nuts and dried fruits; frozen berries; frozen vegetables; fruit juices; groundnuts; jams and jellies; olive oil; pine nuts; pistachios; walnuts.



3.5 Trends

The following trends for fresh produce were listed in recent publications (CBI 2020a; CBI 2020c; FreshFruitPortal 2021; RaboResearch 2020; InspiraFarms 2020):

Sustainable sourcing is becoming mainstream, e.g. more and more attention is paid to sustainable use of water and energy, biological pest control, inclusion of smallholders, fair treatment of laborers, reduction of plastic packaging and food waste, local sourcing and seasonal eating.

- » Growing demand for **transparency** about the source of products and production circumstances which is met by making use of information technology.
- » Increased demand for **locally produced** products coinciding with a higher cost-competitiveness of local producers in the global North thanks to innovations such as vertical farms, hydroponics etc.
- » Demand for **convenience**, i.e. ready-to-eat or easy-to-process products. “Healthy snacking is on the rise, with ‘grabbing and going’ becoming the norm.” (InspiraFarms 2020)
- » Increasing consciousness regarding **healthy diets** and, linked to this, growing demand for pure and organic products, so called ‘superfoods’ (berries, ginger, avocados, pomegranates etc.), biofortified foods and biopharmaceuticals.
- » **Presentation and quality** of fresh F&V as a decisive aspect for choosing the preferred retailer.
- » Buyers are more focused on reducing risks and tend to impose **strict delivery terms** on their suppliers, e.g. the GLOBALG.A.P. (which has stricter requirements on maximum residue levels than the legal limits) has become a popular standard certification required by buyers.
- » **Omni-channel shopping** (inside shop, delivered to a box, at home or office) is becoming a new habit. This requires new / alternative strategic partnerships on the supply side.

Covid-19 has had a remarkable immediate impact on consumer behaviour (FreshFruitPortal 2021) but whether this will affect the consumer trends on the longer term remains to be seen:

- » Demand shift from restaurants and other food service providers to retailers.
- » More online shopping leading to less purchase of fresh produce and lower readiness to try out new products (FreshFruitPortal 2021; CBI 2020c).
- » Increasing sales of fruits with high vitamin C contents (for health reasons) and relatively long shelf life (due to less frequent shopping). Major decline in limes and exotic F&V.

- » Preference for packaged produce due to stronger food safety considerations coupled with continuous concerns for sustainability. This creates new branding opportunities but also raises packaging costs for suppliers.
- » Contrary to the above trend, there is also a trend of higher household spending on food and more cooking and eating at home due to closed restaurants and home office. This leads to an increased “cooking confidence” which may mean that people will eat out less even after the pandemic.
- » Need for inspiration such as new flavours and recipes, colourful meals, attractive packaging etc.







EU MARKET REQUIREMENTS

This chapter presents the key requirements for the export of fresh and processed F&V into the EU. The EU requirements are considered a benchmark, meaning that full compliance with these requirements generally allows export to most other markets – including any other “high-end” market – around the world.

After introducing some key terminology (4.1) and the EU food legislation in general (4.2), different mandatory requirements are described in detail with regard to food safety (4.3), plant health (4.4), marketing standards (4.5), food composition (4.6), food contact materials (4.7), labelling (4.8) and customs procedures (4.9). This is followed by an overview of common voluntary standards and certification schemes (4.10) which are often asked for by buyers.

The structure and information is mainly based on the website of the [Center for the Promotion of Imports](#)

[from developing countries \(CBI\)](#), [Access2Markets](#), the section on food safety of the [European Commission](#), [the summaries of EU legislation on food](#), [Georgia’s official website](#) on the DCFTA with the EU, Georgia’s export promotion website [Trade with Georgia](#) and the website [crop2shop](#).

An important disclaimer at the outset:

1. It is crucial to re-check and update information regularly, as regulations may become stricter based on new insights and periodical re-evaluations.
2. This report mainly covers the EU requirements at Community level. For many aspects there exist differences depending on the country of destination.
3. For exporters the most decisive requirements are the ones of the concrete buyer, which are very often higher than the legal standards.

4.1 Definitions

Food safety and food quality are key terms with regard to this chapter. FAO (2003) defines them as follows:

“**Food safety** refers to all those hazards, whether chronic or acute, that may make food injurious to the health of the consumer. It is not negotiable. **[Food] Quality** includes all other attributes that influence a product’s value to the consumer. This includes negative attributes such as spoilage, contamination with filth, discoloration, off-odours and positive attributes such as the origin, colour, flavour, texture and processing method of the food. Factors which contribute to potential hazards in foods include

improper agricultural practices; poor hygiene at all stages of the food chain; lack of preventive controls in food processing and preparation operations; misuse of chemicals; contaminated raw materials, ingredients and water; inadequate or improper storage, etc. Specific concerns about food hazards have usually focused on: microbiological hazards, pesticide residues, misuse of food additives, chemical contaminants, including biological toxins and adulteration. The list has been further extended to cover genetically modified organisms, allergens, veterinary drugs residues and growth promoting hormones used in the production of animal products.”

4.2 EU food legislation

After a number of food incidents in the late 1990s, the European Commission (EC) developed an integrated approach to food safety ‘from farm to fork’ – primarily set out in its [White Paper on Food Safety](#) – and formulated the [General Food Law Regulation \(Regulation \(EC\) No 178/2002\)](#) in 2002. The latter regulation sets out an overarching and coherent framework for the development of food and feed legislation both at Union and national levels. The main objectives of food and feed law are: i) to

protect human life and health as well as consumers’ interests; ii) to guarantee fair practices in food trade, considering animal health and welfare, plant health and the environment; iii) to ensure the free movement of food and feed manufactured and marketed in the Union; and iv) to facilitate global trade of safe food and feed by considering international standards and agreements when developing EU legislation.

The General Food Law Regulation also built the basis for the establishment of the [European Food Safety](#)

Authority (EFSA), an independent agency responsible for the development of specific food safety legislation and the creation of a framework for official food controls based on scientific evidence. It further creates the main procedures and tools for the management of emergencies and crises as well as the Rapid Alert System for Food and Feed (RASFF).

The subordinated legislation includes regulations, directives and implementing acts which can all be accessed on the website EUR-Lex:

» **Regulations** are legal acts that apply automatically and uniformly to all EU countries as soon as they enter into force, without needing to be transposed into national law. They are binding in their entirety on all EU countries.

» **Directives** require EU countries to achieve a certain result, but leave them free to choose how to do so. EU countries must adopt measures to incorporate them into national law (transpose) in order to achieve the objectives which are set by the directive. National authorities must communicate these measures to the European Commission. Transposition into national law must take place by the deadline set when the directive is adopted (generally within 2 years).

» **Implementing acts** are legally binding acts that enable the Commission – under the supervision of committees consisting of EU countries' representatives – to set conditions that ensure that EU laws are applied uniformly.

Currently a process is ongoing for the development of the Future Food Safety Budget 2021-2027 and the Future EU Food Safety and Nutrition Policy 2020-2050.

4.3 Food Safety

The following topics are presented in this chapter: traceability (4.3.1), food hygiene (4.3.2), contaminants (4.3.3) and novel foods (4.3.4).

4.3.1 Traceability

The General Food Law (Regulation EC/178/2002) defines traceability as the ability to trace and follow food, feed and ingredients through all stages of production, processing and distribution. Traceability is very important for the protection of consumers, especially when food is found to be faulty. To ensure traceability:

» Food businesses need a comprehensive system of traceability so that information can be easily accessed and targeted withdrawals can happen, if needed, without wider disruption of the system.

» Food businesses, including importers, must be able to identify at least the immediate supplier of a product and the immediate subsequent consignee (*one step back - one step forward* principle). Suppliers from outside the EU have to provide a proof of origin at customs clearance.

» Food needs to be adequately labelled and accompanied with information in accordance with the relevant requirements of more specific provisions. (Access2Markets 2021; CBI 2020d)

4.3.2 Food Hygiene

To avoid the contamination of food with unwanted substances, it is necessary to maintain excellent hygiene practices all along the supply chain. In this regard, Regulation (EC) 853/2004 on the hygiene of foodstuffs is the key act of EU legislation with relevance for the F&V sector. This regulation applies all along the food chain (from farm to fork) and places the main responsibility for compliance with the food business operators.

Part A of Annex I of the above regulation lists the general hygiene provisions for **primary production** (and associated operations) which - in terms of plant production - include the maximum avoidance

of contamination by means of clean facilities and equipment, hygienic production, clean water, healthy and trained staff, prevention of contamination by animals and pests, appropriate storage and handling of wastes and hazardous substances, correct use of plant protection products and biocides in line with the relevant legislation and consideration of analyses carried out on plants or other samples with importance to human health. Primary producers have to keep records, particularly on the use of plant protection products and biocides, the occurrence of pests and diseases that may affect food safety, and the results of any relevant analyses carried out. Annex II lists the

general hygiene provisions for all **other food chain operators**, with general guidelines on food premises and equipment, transport conditions, food waste, water supply, personal hygiene and training of food workers, wrapping and packaging and heat treatment processes.

All food chain operators except for primary producers are obliged to implement a Hazard Analysis and

Critical Control Point (HACCP) system. Besides this, the Regulation encourages the development of national voluntary guides to good hygiene practice (GHP) in line with HACCP principles and Codes of Hygienic Practice of the Codex Alimentarius. These guides are compiled in the Register of national guides on GHP.

4.3.3 Contaminants

The following contaminants have to be considered with regard to fresh and processed F&V (details can be found in Annex 5):

- » **Pesticides:** The list of EU-approved active substances - chemical or microbiological components of pesticides - is shown in Implementing Regulation (EU) No 540/2011. The maximum residue levels (MRLs) for pesticides are listed in Regulation (EC) No 396/2005. The MRLs of all pesticides for all food products can be easily downloaded from the EU Pesticide Database. The accepted sampling methods for the official control of pesticide residues are described in the Commission Directive 2002/63/EC. The accepted analytical methods are developed by the EU Reference Laboratory for Residues of Pesticides (EURL) for F&V. It is noteworthy that buyers in several EU member countries (e.g. Germany, the Netherlands) have stricter MRLs than the legal standard. The German discounter Lidl has the strictest policy with max. 5 active substances, max. 33% of the legal MRL per substance and max. 80% of the legal MRL for the sum of substances. More and more buyers ask for upfront information such as spraying records. (CBI 2020b)
- » **Heavy metals, nitrate and mycotoxins:** Commission Regulation (EC) No 1881/2006 on maximum levels for certain contaminants in foodstuffs lists the legal limits for heavy metals, nitrate, mycotoxins etc. For fresh and processed F&V there exist legal limits for the following contaminants: lead, cadmium, tin, nitrate, aflatoxin, patulin, ochratoxin A, polycyclic aromatic hydrocarbons and hydrocyanic acid. The following documents describe the sampling and analysis methods: Commission Directive 2001/22/EC for lead and cadmium, Commission Directive 2004/16/EC for tin, Commission Regulation (EC) No 1882/2006 for nitrate, Commission Regulation (EC) No 401/2006 for mycotoxins.
- » **Microbiological contaminants:** Commission Regulation (EC) No 2073/2005 on microbiological criteria for foodstuffs lists the legal limits for bacterial contaminants. For fresh and processed F&V there exist limits for the following bacteria: *L. monocytogenes*, *Salmonella* and *E. coli*. Microbiological contamination also often happens with viruses such as norovirus and Hepatitis A viruses. The accepted methods for sampling and analysis are the respective ISO standards and the Guidelines of the Codex Alimentarius.

- » **Radioactivity:** Regulation (Euratom) 2016/52 sets out the maximum permitted levels of radioactive contamination of food and feed following a nuclear accident or any other case of radiological emergency. Radioactivity contamination tests are often asked for by buyers of wild-collected mushrooms.
- » **Irradiation:** Irradiation is a physical treatment of food with high-energy ionising radiation to combat microbiological contamination, to prevent germination and sprouting of potatoes, onions and garlic, to slow down the ripening and ageing of F&V and to prolong the shelf-life of meat. In general, food irradiation is only allowed if there is a reasonable technological need, if it poses no health hazard and benefits consumers and if it does not replace hygiene, health or good production/manufacturing practice (European Commission 2021). Directive 1999/2/EC brings together all EU countries' laws on irradiation and Directive 1999/3/EC creates the basis for the establishment of a Community list of foods and food ingredients which may be treated with irradiation. There exist standard analytical methods for the detection of irradiated food and irradiated food must be labelled as such.
- » **Foreign matters:** It is recommended to apply physical sorting and eye-hand control as well as to use optical, metal and other detectors to identify and remove foreign matters such as metal parts, glass, plastic particles and dead insects (CBI 2020b).



4.3.4 Novel foods

Novel foods are defined as food not used for human consumption to a significant degree in the EU before 15 May 1997. This can be newly developed, innovative food, food produced using new technologies and production processes as well as food that has been traditionally outside of the EU (CBI 2020e).

With the aim to ensure that novel food is safe for

consumption, [Regulation \(EU\) 2015/2283](#) lays down the rules and procedures for their authorisation. Before placing novel food on the EU market, a novel food application / traditional foods notification has to be submitted online and approved by the European Commission. [Commission Implementing Regulation \(EU\) 2017/2470](#) lists the authorised novel foods.

4.4 Plant health

The EU dispose of the following possible protective measures against the introduction and/or spread of pests and other organisms harmful to plants or plant products based on [Regulation \(EU\) 2016/2031](#) (Plant Health Law) and [Regulation \(EU\) 2019/2072](#) (establishing uniform conditions for implementation):

- » **Import bans:** Some products from non-EU countries (listed in Annex VI of Regulation (EU) 2019/2072) are prohibited for introduction to the EU or defined protected zones. While some planting materials are banned (e.g. *Vitis* L. and *Citrus* L.), no fresh or processed F&V from Georgia are currently subject to such import bans.
- » **Phytosanitary certificate:** Most fresh F&V and also a number of packaging materials (e.g. wooden pallets and boxes) require a phytosanitary certificate prior to shipping which guarantees that they are properly inspected, free from quarantine pests, within the requirements for regulated non-quarantine pests and practically free from other pests. The plants and plant products which require such a certificate are listed with their Latin names in Annexes XI and XII of Regulation (EU) 2019/2072. The certificate has to be in line with Part A of Annex VIII of Regulation (EU) 2016/2031

and is issued by the exporting country's national plant protection authority.

- » **Inspections:** From the time of their entry into the EU, plants and plant products are subject to documentary checks, identity checks and plant health checks by the responsible official bodies. EU countries collect a fee for these checks which can happen at all stages of import and marketing but are mostly carried out at the points of entry (CBI 2020d).
- » **Importers register:** Importers must be included in an official register of a Member State under an official registration number.
- » **Emergency measures** in case of repeated non-compliance of specific products originating from particular countries.
- » The EU has established TRACES, a multilingual online platform for the digital exchange of documents related to sanitary and phytosanitary requirements. At non-EU level TRACES is used on a voluntary basis. There are more than 42'000 users from about 85 countries worldwide (so far excluding Georgia).

4.5 Marketing standards

[EU Implementing Regulation \(EU\) No 543/2011](#) outlines both the general marketing standard (in Part A of Annex I) which applies to any F&V product apart from a few exceptions (listed below), as well as specific marketing standards (in Part B of Annex I) for the following 10 products: apples; citrus fruit; kiwifruit; lettuces, curled leaved and broad-leaved endives; peaches and nectarines; pears; strawberries; sweet peppers; table grapes; tomatoes. The latter products require a certificate of conformity (as outlined in Annex III) which is issued by the European control bodies. The responsible authority for certification depends on the country of destination and can be found on the [Access2Markets](#) website when entering export details

under “Import requirements” - “Specific” - “Marketing standards for fresh F&V”.

The **general marketing standard** includes the following:

1. **Minimum requirements:** The products shall be intact, sound, clean, practically free from pests, free from damage caused by pests affecting the flesh, free of abnormal external moisture, free of any foreign smell and/or taste. The condition of the products must be such as to enable them to withstand transportation and handling and to arrive in satisfactory condition at the destination.
2. **Minimum maturity requirements:** The product must be sufficiently developed but not over-developed,

and fruit must display satisfactory ripeness but must not be overripe. The development and state of maturity of the products must be such as to enable them to continue their ripening process and to reach a satisfactory degree of ripeness.

3. *Tolerances*: 10% of the lot may deviate from the minimum requirements; not more than 2% may consist of produce affected by decay.
4. *Marking*: Visible, legible and indelible labelling with the country of origin and the name and physical address (or code mark) of the packer or dispatcher, or - in the case of pre-packages - the seller established within the EU.

Products exempted from the general marketing standard are: non-cultivated mushrooms, capers, bitter almonds, shelled almonds, shelled hazelnuts, shelled walnuts, pine nuts, pistachios, macadamia, pecans, other nuts, dried plantains, dried citrus, mixtures of tropical nuts, mixtures of other nuts, and saffron (Article 4.6; the respective CN codes are not listed here for the sake of readability).

The **specific marketing standards** contain information on the following aspects:

1. Definition of Produce
2. Provisions concerning quality (minimum requirements, maturity requirements and classification)
3. Provisions concerning sizing
4. Provisions concerning tolerances
5. Provisions concerning presentation
6. Provisions concerning marking

Substandard products can still be permitted for import into the EU if they are intended for processing, animal feed or other non-food use and are clearly marked with the words “intended for processing” or similar notifications.

The United Nations Economic Commission for Europe (UNECE) has also developed Minimum Quality Specifications for Fresh Fruit and Vegetables (UNECE-MQS), over 50 specific marketing standards for fresh F&V and over 30 specific marketing standards for dry and dried produce. Also the Codex Alimentarius published by the Food and Agriculture Organization of the United Nations (FAO) lists marketing standards for a large amount of fresh and processed products.

4.6 Food composition requests

In the processed F&V sector there are often issues occurring due to undeclared or excessive use of preservatives (e.g. sulphite in dried fruit, benzoic acid in pickled vegetables) and colouring (e.g. E110

in purees, E102 in spreads) (CBI 2021e). It is therefore important to be aware of the rules regarding food improvement agents (4.6.1), food supplements (4.6.2) as well as regulations for specific products (4.6.3).

4.6.1 Food improvement agents

Food improvement agents include the following substances:

- » Food enzymes, i.e. a products obtained from plants, animals or micro-organisms that can trigger a biochemical reaction and are used in the manufacture, processing, preparation, treatment, packaging, transport or storage of food. Food enzymes are mainly used in the baking industry, in wine- and cheese-making as well as for the production of fruit juices. The approved enzymes and conditions for their use and labelling are described in Regulation (EC) No 1332/2008.
- » Food additives, i.e. substances used in foods for different reasons such as sweetening, colouring or preservation (overall, EU legislation defines

26 “technological purposes”). The approved food additives and conditions for their use and labelling are described in Regulation (EC) No 1333/2008.

- » Flavourings, i.e. substances used to impart or modify the odour and taste of food. According to EU legislation there are six different types of flavourings. The approved flavourings and conditions for their use and labelling are described in Regulation (EC) No 1334/2008.

There exist databases on Food Additives and Food Flavourings where information can be extracted regarding approved agents and their maximum limits for different food categories, including fresh and processed F&V. It is important to check these databases regularly, as all agents are periodically re-assessed.

4.6.2 Food supplements

Food supplements are nutrients and ingredients such as vitamins, minerals, amino acids, essential fatty acids, fibre and various plant and herbal extracts. They

are added to foods in order to “enrich” or “fortify” the food so as to add or emphasise particular nutritional characteristics. (EC 2021a)

Regulation (EC) No 1925/2006 sets out the EU's rules concerning the addition of these food supplements. It contains a list of approved vitamins, minerals and other substances and the maximum amounts that may be added to foods. Vitamins and minerals may

not be added to unprocessed foodstuffs including fresh F&V. They can be used in the production of fruit juices and fruit nectars. Maximum levels have not been established yet but the European Commission is working on a proposal. (CBI 2021e)

4.6.3 Regulations for specific products

There exists product-specific legislation for the following processed F&V products:

- » **Fruit juices and similar products:** Council Directive 2001/112/EC lists, besides instructions on the labelling, the raw materials which may be used to manufacture fruit juices and similar products, the
- » **Fruit jams, jellies, marmalades and sweetened chestnut purée:** Council Directive 2001/113/EC lists, besides instructions on the labelling, a list of authorised additives in Annex II.

4.7 Food Contact Materials incl. packaging

Food Contact Materials (FCM) are materials and articles used along food supply chains such as transport containers, processing machinery and packaging materials. The main objectives of regulations linked to FCM are the protection of consumers' health and of the environment.

Regulation (EC) No 1935/2004 provides a general harmonized legal EU framework for FCM. This legislation states that, in general, FCM must be sufficiently inert so that their constituents neither adversely affect consumer health nor influence the quality of the food (e.g. unacceptable changes in composition, taste and odor). It identifies 17 groups of materials where specific measures such as purity standards or permitted substances may be formulated. Based on this, the majority of EU Member States has national legislation setting out individual rules. In addition to the general act, there exist legislations on:

- » Specific materials, namely new plastic materials (Commission Regulation (EU) No 10/2011), recycled plastic materials (Commission Regulation (EC) No 282/2008), active and intelligent materials and articles (Commission Regulation (EC) No 450/2009), ceramics (Council Directive 84/500/EEC) and regenerated cellulose film (Commission Directive 2007/42/EC); and
- » Specific substances, namely epoxy derivatives (Regulation (EC) No 1895/2005) and bisphenol A (Commission Regulation (EU) 2018/213), a

authorised additives, and the minimum content of fruit juice and/or fruit purée.

substance which is often used in plastic bottles and inner coatings of jar lids (CBI 2020e).

For plastic materials, regulations are becoming even stricter with Directive (EU) 2019/904 on the reduction of the impact of certain plastic products on the environment and the European Strategy for Plastics in a Circular Economy which led to the proposal for a new Directive on single-use plastics.

All FCM have to comply with the above regulations but the most risky and controlled element seems to be **packaging**. In terms of packaging, additional regulations need to be considered:

- » Directive 94/62/EC sets out the EU rules on the management of packaging and packaging waste. Recent amendments include new measures to prevent packaging waste and to promote the environmentally sound reuse and recycling of packaging waste without compromising food and consumer safety.
- » Council Directive 76/211/EEC states that the packer or importer is responsible for ensuring that prepacked goods are labelled with their nominal weight or volume and that the content corresponds with the indicated quantity. The responsible authorities of the EU Member States check the prepackaged goods by sampling on the packer's or importer's premises.

Currently a revision process is going on for the EU rules on FCM. Scientific and technical assistance is provided by the EU Reference Laboratory for FCM (EURL-FCM).

4.8 Labelling

Labelling rules are important to ensure that consumers get comprehensive information about the content and composition of food products which is not misleading and allows them to make informed decisions. There are two types of labelling provisions which are applicable

to food stuffs: General rules on food labelling (7.1) and specific rules for certain groups of products (7.2). The Food Labelling Information System (FLIS) allows to extract the mandatory EU labelling indications for any selected product.

4.8.1 General rules

Regulation (EU) No 1169/2011 establishes the EU's general principles, requirements and responsibilities on food information and food labelling for consumers. This includes rules on mandatory food labelling for

prepacked and non-prepacked foods, voluntary food labelling, nutrition and origin labelling as well as the language and presentation of food information. A good overview is provided on the Access2Markets website.

4.8.2 Specific rules for certain products

There exist specific labelling rules for the following products:

- » Genetically Modified food and novel food: Regulation (EC) No 1829/2003 and Regulation (EC) No 1830/2003. Operators must state on a label "This product contains genetically modified organisms".
 - » Foodstuffs for particular nutritional purposes (baby foods, dietary foods for special medical purposes, foods for weight reduction, foods for sportspeople, etc.): Regulation (EU) No 609/2013. These products must be suitable for their claimed nutritional purposes and must indicate their suitability.
 - » Food additives and flavourings: Regulation (EC) No 1333/2008 and Regulation (EC) No 1334/2008. Additives and flavourings must always be labelled on the packaging of food products by their category (anti-oxidant, preservative, colour, etc.) with their name or E-number.
 - » Particular foodstuffs - in terms of F&V the following are relevant: fruit juices and similar products (Council Directive 2001/112/EC); fruit jams and sweetened chestnut purée (Council Directive 2001/113/EC).
-

4.9 Customs clearance

The Union Customs Code (UCC), together with the respective implementing legislation, covers the principal customs matters concerning trade with countries outside the EU. Economic operators established outside the EU have to be assigned an Economic Operator Registration and Identification (EORI) number by a Member State, which can then be used all across the EU for lodging a customs declaration, an Entry Summary declaration (ENS) or an Exit Summary declaration (EXS).

The **Entry Summary declaration** is an advance cargo information that needs to be lodged in the first customs office of entry to the EU prior to arrival, usually by the carrier of the goods.

Once arriving at the EU border, all goods imported into the EU must be declared to the customs authorities of the respective Member State using the **Single Administrative Document (SAD)**. While the SAD set consists of eight copies, in the case of importation generally three copies are needed (one for the authorities, one for statistical purposes and one for the consignee). The following documents always have to be attached to the SAD (for more details see Access2Markets website under Import requirements → General):

- » Commercial invoice issued by the exporter
- » Customs value declaration if the value of the product exceeds 20'000 EUR
- » Packing list (P/L) prepared by the exporter

- » Freight document issued by the nominated carrier
- » Freight insurance

Depending on the nature of the imported product, other possible attachments to the SAD are:

- » Proof of origin, normally used to apply for a tariff preferential treatment (see Section 4.3.1)
- » Inspections certificates, e.g.:
 - » Phytosanitary certificate for the exported product and possibly packaging material (see Section 4.4)
 - » Certificate of conformity with specific EU marketing standards (see Section 4.5)
 - » Hygiene certificate, if asked for by the importer
- » Import licenses (according to Commission Implementing Regulation (EU) 2020/761 this is currently only the case for garlic and mushrooms of the genus *Agaricus*)
- » Community surveillance document
- » Documents to support a claim of a tariff quota
- » Document required for excise purposes
- » Evidence to support a claim to VAT relief

Goods are 'released for free circulation' when all the conditions relating to the import into the EU have been duly fulfilled, including the payment of various charges such as excise duties and Value Added Tax (VAT). The export from Georgia is tax-free.

4.10 Common voluntary standards and certification programmes

The EU legislation represents the minimum requirement for market access. However, many of the larger retailers and some wholesalers request compliance with independently verifiable private standards (Graffham 2006, 12). In the following, popular initiatives and

certification programmes regarding food safety and quality management, social, ethical, ethnical, environmental and sustainability standards are presented.

4.10.1 ISO standards

The International Organization for Standardization (ISO) is an independent, non-governmental organization uniting the national standards bodies of 165 countries. Different Technical Committees (TC) and Subcommittees (SC) develop consensus-based voluntary International Standards which are often used by private standards agencies as a basis (ISO n.a.).

Out of over 23'000 International Standards more than 1'600 are related to the food sector, with many more under development. The key standards are listed under 76 – Food technology, most of them coming from TC 34 on food products (ISO/TC 34). The latter include standards and guidelines on different processes in

the food industry including food hygiene, food safety management (ISO 22000), social responsibility and sustainable development (ISO/TS 26030); methods for testing and analysis of different substances and food products; food contact materials etc.

ISO also has a committee on conformity assessment (CASCO) which develops general standards and guidelines for different CABs such as ISO 17011 for accreditation bodies, ISO 17020 for inspection bodies, ISO 17025 for testing and calibration laboratories, ISO 17034 for reference material producers, ISO 17043 for proficiency testing, and ISO 17065 for certification bodies of products, processes and services.

4.10.2 GFSI-recognized food safety certification programmes

- » The Global Food Safety Initiative (GFSI) is a landmark initiative of the Consumer Goods Forum (CGF). It has developed Benchmarking Requirements in order to harmonize food safety programmes around the world. The GFSI Benchmarking Requirements were first created in 2001 and are frequently updated. GFSI recognition offers a “passport” to the global market both for the recognized certification programme owners (CPOs) as well as the certified companies. GFSI's summary table provides a good overview of the recognized CPOs and their scope of recognition along the food supply chain. At the moment there are twelve GFSI- recognized CPOs (currently undergoing the benchmarking process for V2020 of the GFSI criteria) including:
 - » Brand Reputation Compliance Global Standards (BRCGS) on Food (Issue 8), Storage and Distribution (Issue 3, Issue 4 undergoing benchmarking), Packaging and Packaging Materials (Issue 6), and Agents and Brokers (Issue 2). In addition, BRCGS has formulated standards for Retail, Gluten Free, Plant-Based as well as Ethical Trade and Responsible Sourcing.
 - » Food Safety System Certification 22000 (FSSC 22000), a complete scheme for the auditing and certification of Food Safety Management Systems (FSMS) including three components: ISO 22000, sector-specific pre-requisite programs and specific requirements of FSSC 22000. FSSC 22000 is recognized by GFSI in the area of processing, storage and distribution as well as packaging of food. There also exists an FSSC 22000-Quality option combining the FSMS certification with quality management by adding a full ISO 9001 audit.
- » International Featured Standards (IFS) on Food (Versions 6.1 and 7) for food processors and packers; on Logistics (Version 2.2) for companies involved in transportation and (un)loading of produce; on Brokers (Version 3) for companies involved in trading; and PACsecure (Version 1.1) for packaging material manufacturers. In addition, there exists an IFS standard for Wholesale / Cash & Carry (not recognized by GFSI).
- » Safe Quality Food (SQF) Codes on Food Safety in Primary Production, Manufacturing, Manufacturers of Food Packaging, Storage and Distribution. Version 8.1 of these Codes is recognized by GFSI, while Version 9 is currently undergoing the benchmarking process. In addition to the aforementioned Codes, SQF has formulated a Food Safety Code for Food Retail and Foodservice, Fundamental Codes for Primary Production and Manufacturing, a Quality Code and an Ethical Sourcing Code (not recognized by GFSI).
- » GLOBAL.G.A.P. (global standards for good agricultural practices) Integrated Farm Assurance for F&V and Harmonized Produce Safety Standard.

The members of GlobalG.A.P have further developed various add-ons (not GFSI-recognized) including the GlobalG.A.P Risk Assessment on Social Practice (GRASP), a widely requested module to assess social practices on farms.

» The CGF is currently developing a similar benchmarking system for sustainability standards through their Sustainable Supply Chains Initiative (SSCI).

4.10.3 Organic

Organic production is a voluntary scheme aimed at guaranteeing that agricultural products are produced in accordance with certain production methods laid down by Council Regulation (EC) No 834/2007 on organic farming. The aim of organic standards is the integration of environmental conservation into agriculture and the promotion of quality products. Products complying with EU rules are allowed to bear the EU organic farming logo, which assures consumers that the product has been manufactured according to organic standards. Organic farmers or exporters must be registered and

certified through a recognized control body and deliver the certificate with each product and each shipment. The control agency or body is responsible for verifying that the operator complies with organic rules. A yearly inspection and a set of checks make sure that they comply with the rules on organic production. All organic products imported into the EU must have the appropriate electronic certificate of inspection (e-COI). The exporter must also notice the authorities in the EU about their intention to export (CBI 2020d).

4.10.4 Fairtrade

Fairtrade international has developed specific sets of standards for fresh fruit, fresh vegetables, nuts and processed F&V for small-scale producer organizations, hired labor and contract production. These standards define protective measures for farmers and workers in processing facilities, terms of payment, Fairtrade Minimum and Premium Price for conventional and organic products from several countries and regions.

A producer alone cannot apply for a Fairtrade certification from the global certifier FLOCERT. Producers need to be organized in cooperatives, be a plantation or be a more or less organized group of producers supported by a trader, trader company or NGO (FLOCERT n.a.). The producers must comply to the small-scale producer organizations standards as well as to the standards specific to their product. Traders can also be certified when living up to the trader standard (Fairtrade International n.a.).

4.10.5 Other initiatives and standards

There are various other noteworthy initiatives standards which play a role for F&V supply chains:

- » The **Sustainable Agriculture Initiative (SAI)** is a non-profit network of over 120 members from the food and beverage industry aiming at sustainable practices in agriculture. It has developed Principles & Practices for Sustainable Fruit Production and for the Sustainable Production of Arable & Vegetable Crops (2009). In 2021 SAI will launch the latest version of its Farm Sustainability Assessment (FSA).
- » The **International Sustainability and Carbon Certification (ISCC)** focuses on the protection of land with high biodiversity and high carbon stock; good agricultural practices protecting soil, water and air; human rights, labor and land rights; and reduction of greenhouse gas emissions (ISCC n.a.).
- » The **Sustainable Trade Initiative (IDH)** is a social enterprise that works with businesses, financiers, governments and civil society to realize sustainable trade in global value chains. In the frame of IDH's

Food Crops & Ingredients program two initiatives with relevance for F&V have been launched: the Sustainability Initiative Fruit and Vegetables (SIFAV) and the Sustainable Juice Covenant.

- » **amfori** is a community of 2'400 retailers, importers, brands and associations from more than 40 countries aiming to improve the resilience and sustainability of global sourcing. They have a code of conduct for business social compliance (BSCI) and one for Sedex is a membership organisation providing one of the world's leading online platforms for companies to manage and improve working conditions in global supply chains. The Sedex Members Ethical Trade Audit (SMETA) is the most widely used social audit in the world.
- » **The Ethical Trading Initiative (ETI)** is a leading alliance of companies, trade unions and NGOs that promotes respect for workers' rights. All corporate members of ETI agree to adopt the ETI Base Code of labour practice which is based on the standards of the International Labour Organisation (ILO).

- » **Sure Global Fair (SGF)** is an NGO certifying the fruit juice value chain. The certification focuses on: authenticity, quality and traceability of products, hygiene conditions during production, sustainable and responsible company management, labelling of finished and semi-finished goods, and compliance with the rules of the SGF Voluntary Control System (SGF n.a.)
- » **Ethnic standards:** Islamic (Halal) and Jewish (Kosher) dietary laws propose specific restrictions in diets.





5

THE GEORGIAN FRUITS AND VEGETABLE SECTOR

This chapter describes the general business environment in Georgia (5.1), the production of F&V in Georgia (5.2), Georgia's F&V exports (5.3) and relevant support schemes to the F&V sector (5.5).

5.1 General business environment in Georgia

This section describes the general business environment of Georgia, namely the country's political and economic stability (5.1.1), the technological status and competitiveness of the private sector (5.1.2) and trade agreements of Georgia (5.1.3).

5.1.1 Political and economic stability of Georgia

Georgia is a small country in the South Caucasus region, located on a crossroad between Europe and Asia. The country occupies a land area of 69,700 km² and has a population of around 3.7 million people. With a GNI per capita of \$4,487 in 2019, Georgia is currently classified as an upper middle-income economy (World Bank's classification of countries). The largest contributors to Georgia's GDP in 2019 were trade (14%), real estate activities (12%), manufacturing (10%), construction (9%) and agriculture (7%) (GeoStat 2021).

After the independence from the Soviet Union, Georgia has started to develop institutions to move from a planned to a market-based economic system. Some positive results of the reforms from the early 1990s

were impeded by the overall political and economic instability of the country. Only after launching the second wave of reforms in 2004 (after the "Rose Revolution"), Georgia was successful in generating stable economic growth. The main principles of these latter reforms were to liberalize the country's economy, fight corruption, reduce regulatory and administrative burden and reform the tax system (GoG 2014).

The tax reform of Georgia resulted in a significant reduction in the number of taxes (from 21 to 6) as well as overall reduction of tax rates, improvement of transparency and removing bureaucratic barriers. The tax and customs systems were unified under one code - the Tax Code of Georgia. Currently, none of



the six taxes (corporate income tax, personal income tax, VAT, import tax, property tax, and excise duties) exceed 20%. Further, special tax incentives (e.g., Free Industrial Zone, Internal Processing Customs Regime) were introduced to foster the economic development of the country (MoF 2011; Enterprise Georgia 2021).

Political stability, attractive tax regimes, increased transparency and reduced bureaucratic burden led to an improved business and investment climate in Georgia. The inflow of foreign direct investment (FDI) has increased over the past decade and business performance has improved with notable increase in turnover, output and number of employees (GoG 2016). All this resulted in high GDP growth rates, with around 13% growth in 2007. While military invasion of the Russian Federation in 2008, coupled with the

global financial crisis slowed down this trend (only 3.2% growth in 2008 and a decline of -3.8% in 2009), Georgia recovered quickly, showing an average growth rate of around 5% between 2010 and 2019 (GeoStat 2021). Due to the COVID-19 pandemic, a 6% contraction of the country's economy is expected in 2020 (World Bank 2020a).

Success in economic policy reforms of Georgia is reflected in several rankings and evaluations of international organizations. In the World Bank's Ease of Doing Business 2020 ranking, Georgia took 7th place out of 190 countries (World Bank 2020b). The Economic Freedom Index of the Heritage Foundation ranked the country as 12th among 186 nations (Heritage Foundation 2021).

5.1.2 Technological status and competitiveness of private sector

Despite notable improvements, low competitiveness of the private sector, underdeveloped human capital and limited access to finance remain the main impediments in the economic development of the country (GoG 2014). The Global Competitiveness Index 2019 ranks Georgia on the 74th place out of 141 economies (World Economic Forum 2019). The main factor hindering private sector competitiveness in Georgia is the lack of innovation; both investments in R&D and absorption of new technologies are extremely low. Not diversified exports, low value addition and weak performance in terms of the penetration of new markets are listed as remaining problems in the strategic documents of Georgia (GoG 2014; GoG 2016). The transfer of knowledge and technology as expected in view of the increased FDI inflows have not materialized. Moreover, as most FDI went to capital intensive sectors, less was achieved in terms of reducing unemployment,

inequality, and poverty (GoG 2014). In short, while the reforms were successful in terms of generating investments and short-term growth, inclusive, long-term economic growth remains challenging.

In view of these challenges, the Social-Economic Development Strategy "Georgia 2020" outlined the importance of further improving investment climate, promoting innovation and adoption of new technologies, developing infrastructure, and promoting exports (GoG 2014). Further, the Program "For a Strong, Democratic and Untied Georgia" (GoG 2015) emphasizes the need to reduce unemployment by improving private sector competitiveness. A need to increase competitiveness of the agriculture sector through increased entrepreneurship and use of innovative technologies is also highlighted in the Agriculture and Rural Development Strategy of Georgia 2021-2027 (MEPA 2019a).

5.1.3 Trade agreements of Georgia

Georgia has a liberal foreign trade policy with low import tariffs, no import tariffs on 85% of goods, bound tariffs on all product, average applied MFN tariff of 2%, average MFN agriculture tariff of 6.3%, minimal non-tariff regulations and fast customs procedures (WTO, ITC, UNCTAD 2016).

Georgia became a member of the WTO in 2000. The country has bilateral Free Trade Agreements (FTAs) with Turkey, CIS countries (Azerbaijan, Armenia, Russia, Ukraine, Belarus, Moldova, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan and Turkmenistan), the EU and China. In June 2016, Georgia also signed an FTA with the European Free Trade Association (EFTA) countries: Iceland, Liechtenstein, Norway and Switzerland. An FTA between Georgia and China was signed in May 2017. The US, Canada, and Japan grant Georgia with

the Generalized System of Preference (GSP), applying lower tariffs on 3,400 goods exported from Georgia (MoESD 2020).

An Association Agreement (AA) and its integral part, the **Deep and Comprehensive Free Trade Area (DCFTA)** was signed by Georgia and the EU on June 27, 2014 and fully entered into force on July 1st, 2016. Under this agreement, Georgia commits itself to gradual approximation of Georgia's political, economic, social and legislative standards to the EU standards. To do this, Georgia is expected to achieve conformity of its legislation with the EU Acquis. This includes applying the EU practices in technical regulations and standards, accreditation, conformity assessment, metrology, among others. The DCFTA expands on GSP+ by setting zero duties on 100% of product categories. While many

agricultural products were previously covered by GSP+ trade scheme, some new products can be exported to the EU without tariffs. Such products include wine, cheese, live animals, sheep and goat meat, yogurt, chocolate, animal skins and wool (previously not covered by GSP+ preferences) as well as berries, fruit,

vegetables (including canned and processed), and fruit juices (previously enjoyed partial preferences under GSP+). The Georgian government, with support of EU4Business, runs a [website on the DCFTA](#) including information for the general public and SMEs about EU requirements and available services.

5.2 Georgian Fruits and vegetable production

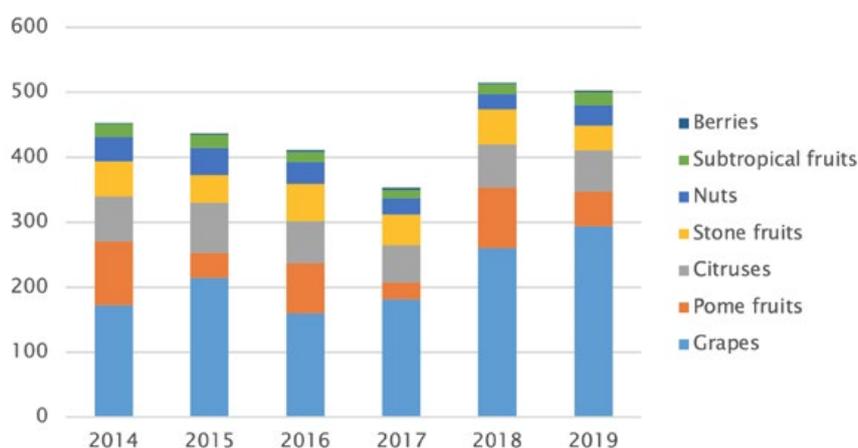
Agriculture is an important sector of Georgia's economy contributing 7.4% to GDP (in 2019) and around 40% to employment (GeoStat 2021). The sector is characterized by small-scale, subsistence farming, with extremely low productivity levels for most agricultural products. The productivity of Georgia's agriculture is three times lower compared to the developed EU countries (ProDoc 2020).

The diversity of soils (49) and climatic zones (12) in Georgia allows for the production of a wide range of F&V. In 2019, Georgia produced 502 thousand tons of

fruits and 536 thousand tons of vegetables. F&V are mostly produced by family holdings in Georgia: the share of family holdings is the production of fruits is 92% and in the production of vegetables 96% (GeoStat 2021).

GeoStat data distinguishes between the following fruit categories: grapes, citruses, and all other fruits. The latter includes pome fruits, stone fruits, berries, nuts, and subtropical fruits. Figure 8 shows production figures for the main types of fruits in Georgia in 2014-2019.

FIGURE 8: PRODUCTION OF FRUITS IN GEORGIA (THS. TONS)

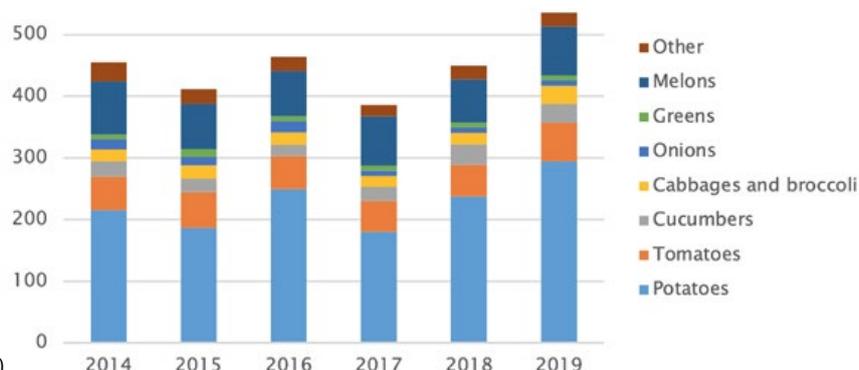


(Source: GeoStat 2020)

The share of grapes of total fruit production is highest (48%), followed by citruses (15%), pome fruits (14%), stone fruits (11%), nuts (7%), subtropical fruits (4%) and berries (0.5%). In the category of citruses, tangerine is the main crop with an average share of 93%. In the category of berries, strawberry is the main crop having an average share of 72% for the last 6 years. Grapes are mainly produced in Kakheti (around 70%) and Imereti (around 10%). Adjara AR and Guria are citrus fruits producing regions, with production shares of around 70% and 20%, respectively. Nuts are mainly produced in Samegrelo, Guria, Adjara and Kakheti regions. Shida Kartli is the leading region in terms of pome fruits production (around 65%). As for the production of stone fruits, around 55% of it happens in the Kakheti region and around 20% in Shida Kartli region (GeoStat, Agriculture of Georgia, Statistical Publications 2017-2019).

Figure 9 shows the main vegetables produced in Georgia in 2014-2019. Potato is the leading vegetable with a share of 50% on average, followed by melons (17%), tomato (12%), cucumber (6%), cabbages and broccoli (5%), onions (3%) and greens (2%). Watermelon is the leading crop (84%) in the category of melons.

FIGURE 9: PRODUCTION OF VEGETABLES IN GEORGIA (THS. TONS)



(Source: Geostat 2020)

Potato production is mainly concentrated in Samtskhe-Javakheti (60-65%) and Kvemo Kartli (around 20%) regions. Other vegetables are mainly produced in Kvemo Kartli (around 30%) and Shida Kartli (30%).

Greens are produced in Imereti (63%) and Kvemo Kartli (14%). As for melons, around 80% are produced in Kakheti and 15% in Imereti (GeoStat, Agriculture of Georgia, Statistical Publications 2017-2019).

5.3 Georgian F&V exports

5.3.1 Overview of Georgian F&V exports

Agriculture is a significant contributor to the country's exports: between 2014 and 2018 agricultural exports accounted for 25-30% of Georgia's total exports (Deisadze et al. 2019). For the last two decades, both agricultural exports and agricultural imports of Georgia showed an upward trend. The trade balance for agricultural products has been negative. In 2018, the top export destinations of Georgia's agricultural exports were Russia, Azerbaijan, Ukraine, Kazakhstan and Armenia. The CIS countries account for a large share of total agricultural exports of Georgia; in 2018 this share was 59% for all CIS countries and 25% for the Russian Federation. The existence of traditional ties, proximity, lower competition, and relatively low

requirements on quality in the CIS markets contribute to this trend (Mamardashvili et al. 2020).

In 2020, Georgia had a positive trade balance for fruits (Product code 08: Edible fruit and nuts; peel of citrus fruit or melons), with around 116 million USD. The trade balance was negative for vegetables (Product code 07: Edible vegetables and certain roots and tubers) and amounted to around 29 million USD. Georgia has exported fruits in value of 157.2 million USD and vegetables in value of 8.7 million USD in 2020. Georgia ranked as number 78 in world exports of fruits and 107 in world exports of vegetables in 2019 (Trade Map 2021). Table 2 shows Georgia's F&V trade statistics (exports, imports and trade balance) for 2010-2020.

TABLE 2: EXPORTS, IMPORTS AND TRADE BALANCE OF GEORGIAN F&V IN 2010-2020

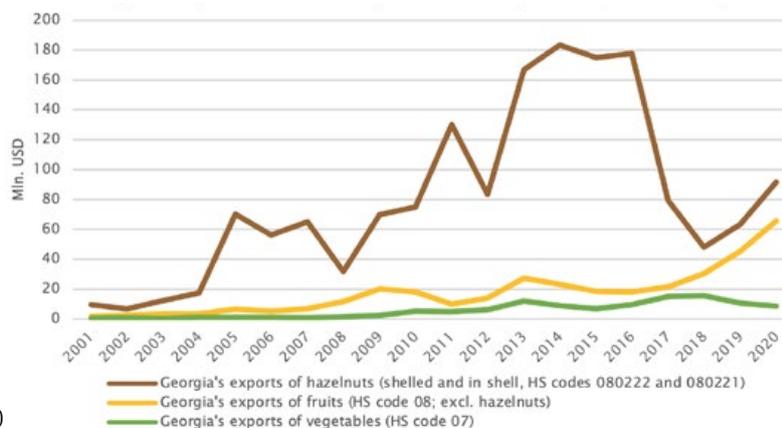
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Fruits exports (mio USD)	93.4	140.0	97.7	194.0	206.6	193.6	195.8	100.8	78.6	108.7	157.2
Fruits imports (mio USD)	26.0	38.4	36.9	48.4	55.5	40.0	40.0	46.3	56.5	48.7	40.7
Trade balance fruits (mio USD)	67.3	101.6	60.9	145.6	151.1	153.7	155.8	54.5	22.1	60.0	116.5
Vegetable exports (mio USD)	5.2	4.9	6.1	11.9	8.9	6.8	9.6	15.1	15.6	10.8	8.7
Vegetable imports (mio USD)	32.6	60.4	43.5	47.7	59.5	45.8	46.0	37.7	52.8	38.0	38.1
Trade balance veg. (mio USD)	-27.6	-55.5	-37.3	-35.7	-50.6	-39.1	-36.4	-22.6	-37.2	-27.2	-29.4

(Source: Trade Map 2021)

Figure 10 shows an increasing trend of Georgia's fruit exports with fluctuations from year to year. The value of exported fruits was 13.5 times higher in 2020 vs. 2001 (11.6 million USD in 2001 / 157.2 million USD

in 2020). The increasing trend is also pronounced for Georgian vegetable exports. In 2020, the value of exported vegetables was 18.5 times higher vs. 2001 (0.47 million USD in 2001 & 8.7 million USD in 2020).

FIGURE 10: GEORGIA'S EXPORT OF FRUITS (INCLUDING NUTS) AND VEGETABLES (THS. USD)



(Source: Trade Map 2021)

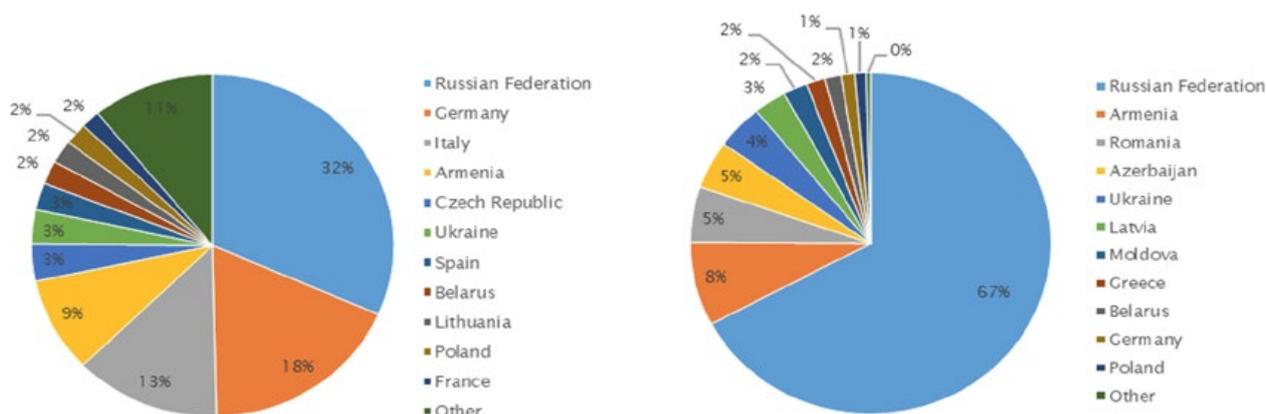
In 2020, Georgia's fruit exports were led by shelled hazelnuts (82.8 million USD; 52.7% of all exports in this category), followed by peaches/nectarines (21.3 million USD; 13.5%), tangerines (16.6 million USD; 10.6%), hazelnut in shell (9 million USD; 5.7%), persimmons (6 million USD; 3.8%) and fresh apples (4.4 million USD; 2.7%). As for vegetable exports, the list was topped by greens (3.2 million USD 36.8%) and followed by tomatoes (1.7 million USD 19.5%), potatoes (1 million USD 11%), mushrooms (0.8 million USD 9%), cucumbers (0.7 million USD 8.4%) and eggplants (0.3 million USD 3.4%) (Trade Map 2021).

In 2020, Georgia has exported fruits to 56 different countries and vegetables to 15 different countries. Figure 11 shows main destination countries for Georgia's exports of fruits and vegetables in 2020. Large shares of both fruits and vegetables were exported to CIS countries and particularly to the Russian Federation. The latter accounted for 32% of fruit exports and 67% of vegetable exports of Georgia in 2020. It is noteworthy

that in 2020 47% of fruits and only 12% of vegetables were exported to EU countries. Between 2011-2020 (average shares between 2011 and 2020), fruit exports of Georgia were led by Kazakhstan (20%), followed by Germany (19%), Italy (17%), Russian Federation (14%) and Ukraine (6%), while the vegetable exports mainly went to Russian Federation (33%), Azerbaijan (24%), Belarus (14%), Ukraine (12%) and Armenia (3%) (Trade Map 2021).

Georgia's imports for fruits and vegetables have been also showing an increasing trend over the last 20 years. When comparing 2020 with 2001, fruit imports increased 16 times and vegetable imports increased 6 times (Trade Map 2021). In 2020, Georgia imported fruits mainly from the following countries: Ecuador, Turkey, Iran, Netherlands, and Germany. As for vegetable imports, Georgia's main import partners were Turkey, Uzbekistan, Russian Federation, Azerbaijan, and Kazakhstan (Trade Map 2021).

FIGURE 11: : DESTINATIONS OF GEORGIA'S EXPORTS OF FRUITS AND VEGETABLES, 2019



(Source: Trade Map 2021)

5.3.2 Georgia's F&V exports to the EU

The share of EU countries in agricultural exports of Georgia has been moderate in 2002-2018, varying between 9%-38%. A sharp decrease of agricultural exports to the EU was observed in 2017, reflecting decreased production of hazelnuts, mainly due to Asian Stink Bug invasion (Mamardashvili et al. 2020). In 2020, Georgia's exports of fruits and vegetables to the EU (EU 28) accounted for 74.2 million USD and 1.1 million USD, respectively. The main EU partner countries for Georgia's fruit exports were Germany, Italy, Czech Republic, Spain and Lithuania. As for vegetable exports of Georgia, the EU partner countries were Romania, Latvia, Greece, Germany and Poland. In the category fruits, the main product exported to the

EU is hazelnut (shelled and in shell), following by dried peaches/pears, dried apples, and peel of citrus fruit or melons. Between 2017 and 2020, the average share of hazelnuts of the total fruit and nuts exports to the EU was 97%, while the exported amounts of the latter three subcategories were very small. At the same time, Georgia's hazelnuts made up only an average of 0.5% of the EU's imports. The small amounts of vegetables exported to the EU were "fresh or chilled vegetables n.e.s. (includes greens)" and "Dried vegetables and mixtures of vegetable". Overall, EU countries amounted to 47% of fruit exports and 12% of vegetable exports of Georgia in 2020 (Trade Map 2021).

5.3.3 Georgian F&V export potential

The Revealed Comparative Advantage (RCA) index (Balassa index) allows for an ex-post evaluation of a country's competitiveness for a specific sector's products. The index represents the ratio of two parts: that is, the share of a specific product in the country's total export, divided to the share of that specific product to the world's export. The interpretation of this index is the following: if the export of the specific product of a country has similar characteristics of the export of the same good in the world, then the RCA index is equal to one. Consequently, an RCA index of more than one shows a country's advantage in the production of that specific product. As for Georgia, the following F&V products have continuously had an $RCA > 1$ over the past 6 years (Trade Map 2020): fresh or chilled vegetables n e s (incl. greens), spices,

tangerines, apples (dried), peaches and nectarines, persimmons, hazelnuts (shelled), hazelnuts (in shell), fruits, nuts and other edible parts of plants (prepared or preserved), fruit juices (unfermented), jams, fruit jellies, marmalades, fruit or nut purée and fruit or nut pastes.

The International Trade Center (ITC) has developed two indicators to identify a country's untapped export potential for currently exported products as well as potential products for export diversification to the world or specific sub-regions or countries. The method is explained [here](#). Table 3 shows the F&V listed among the Top 50 products for export to the world market in general and to the EU & West Europe in particular, while the original outputs are shown in Annex 6.

TABLE 3: GEORGIAN F&V EXPORT AND PRODUCT DIVERSIFICATION POTENTIAL FOR WORLD AND EU & WEST EUROPE, RANK IN BRACKETS

Georgian export potential to...		Georgian export product diversification potential to...	
WORLD	EU & WEST EUROPE	WORLD	EU & WEST EUROPE
» Hazelnuts, shelled (8)	» Hazelnuts, shelled (3)	» Cherries, fresh (6)	» Avocados, fresh (6)
» Citrus fruits, fresh or dried (9)	» Citrus fruits, fresh or dried (10)	» Peppers (Capsicum or Pimenta), fresh (7)	» Peppers, fresh (7)
» Peaches & nectarines, fresh (13)	» Peaches & nectarines, fresh (11)	» Avocados, fresh (10)	» Cherries, fresh (8)
» Nuts & other seeds, prepared or preserved (22)	» Nuts & other seeds, prepared or preserved (16)	» Onions & shallots, fresh (12)	» Onions & shallots, fresh (9)
» Fruits, fresh (34)	» Fruits, fresh (29)	» Oranges, fresh or dried (13)	» Oranges, fresh or dried (11)
» Tomatoes, fresh (40)	» Juice of fruit or vegetables, unfermented (36)	» Lemons & limes, fresh or dried (21)	» Fresh or dried almonds, shelled (12)
» Potatoes, fresh (43)	» Medicinal plants, herbs etc. (39)	» Grapes, fresh (22)	» Grapes, fresh (17)
» Juice of fruit or vegetables, unfermented (47)	» Vegetables, fresh or chilled (41)	» Fresh or dried almonds, shelled (24)	» Lemons & limes, fresh or dried (18)
» Hazelnuts, in shell (50)	» Hazelnuts, in shell (44)	» Melons, fresh, excl. watermelons (25)	» Walnuts, shelled (20)
» Fresh apples	» Tomatoes, fresh (48)	» ZApricots, fresh (31)	» Melons, fresh, excl. watermelons (21)
	» Potatoes, fresh or chilled	» Prunes, dried (35)	» Prunes, dried (23)
		» Walnuts, shelled (38)	» Apricots, dried (28)
		» Plums & sloes, fresh (43)	» Beans “Vigna spp., Phaseolus spp.”, fresh (30)
		» Strawberries, fresh (45)	» Raspberries, blackberries, etc., raw, steamed or boiled, frozen (37)
			» Apricots, fresh (45)
			» Strawberries, fresh (46)
			» Fruits & nuts, raw, steamed or boiled, frozen (48)

5.4 Associations

There are various local associations with relevance to the Georgian F&V sector. Below the key associations with general scope and those with focus on the four selected crops are listed. Contact information for each association is available in Annex 7 and a separate excel file.

- » **Georgian Farmers Association (GFA):** GFA was founded in 2012 and currently has about 4000

members (farmers from all regions of Georgia). Its main activities are advocacy, capacity building and networking. The association is committed to strengthening the agricultural sector in Georgia, fostering Good Agricultural Practices through the local certificate GeoGAP and sharing information on various topics including factsheets on crop production, export market analyses etc. through their website and the mobile application Agronavti.

- » **Association “Farmer of Future”:** The association was established in 2007 with the purpose of establishing innovative technologies in Georgian agriculture. It unites farmers, veterinarians and veterinary pharmacists and scientists of different fields of agriculture. The organization has a representative in almost all regions of Georgia.
- » **Biological Farming Association Elkana:** Elkana was founded in 1994 and currently counts over 900 members including farmer groups, associations, cooperatives, enterprises etc. which aim at fostering organic farming in Georgia. Their philosophy / strategy includes: modern thinking in keeping with the national traditions; active drawing of the rural population in the country’s life and development; morality; participation in training and practical activities; environmental ethics and professionalism.
- » **Georgian Seeds and Saplings Association (GEOSSA):** GEOSSA was established in 2021 in the frame of the “EU Innovative Action for Private Sector Competitiveness in Georgia” project. The main idea of the association is to unite seed and sapling producers, to boost the production of high-quality seeds and planting material and to comply with the upcoming certification system aligned to the international standards (emerging EU legislation).
- » **Georgian Fruit Growers Association:** The association was founded in 2019 and currently counts only several members but membership and activities shall be increased in the coming years. The aims of the association are to identify farmers’ needs and corresponding support for the sustainable development of the Georgian horticulture sector and exports. As several active members are apple producers, a considerable focus is currently on apples.
- » **Georgian Berry Growers’ Association (GBFA):** The association was established in 2017 and currently unites 70-100 members. The association’s main activities are: introduction and popularization of berry production and processing; lobbying for agricultural promotion legislation; protection of consumer rights; establishment of a qualified advisory service for farmers; promotion of the establishment of a berry products market; identification of the problems faced by berry farmers; consultative training sessions to help farmers on farm and quality management, food safety principles, regulations; networking and cooperation with farmers’ unions, associations, state bodies and donor organizations; (export) market studies. The association won grant from USAID to implement and improve the aforementioned activities.
- » **Georgian Blueberry Producers Council:** The council was founded in 2020 and currently consists of the six biggest blueberry producers of Georgia including “Blue Valley”, “Blueberry”, “Agrolane”, “FCO” and “Agritouch”. Their services are consultation by an agronomist, recommendations for proper soil cultivation and arrangement of drainage canals.
- » **Almond and Walnut Producer Association (AWPA):** AWPA was established in 2018 and currently unites up to 200 out of the around 500 almond and walnut producers of Georgia. The association’s main functions are to promote the industry locally and internationally, to support knowledge exchange and the adoption of best practices, to facilitate coordination between producers, to provide networking opportunities, and to create a local industry development plan including research priorities, export market and sales strategy.
- » **Greens Producers’ Association of Georgia:** The association was founded in 2017 and unites 13 founders including “Herbia”. Only few producers are members of the association. Main services include organizing joint events, providing training courses as well as info on new programs.
- » **Georgian Packaging Cluster (PMAG):** PMAG was established in 2020 in the frame of the “EU Innovative Action for Private Sector Competitiveness in Georgia” project. It unites actors involved in the packaging industry and aims to enhance competitiveness and upscaling through collaboration across the value chain.

5.5 Relevant support schemes

5.5.1 SME support in Georgia

A strong private sector (particularly SMEs) is one of the main priorities of Georgia’s economic policy, as emphasized in several strategic documents of GoG (GoG 2014; GoG 2015; GoG 2016). In 2016, GoG formulated the SME Development Strategy of Georgia 2016-2020 that aims at enhancing SME’s competitiveness in domestic and international markets, developing entrepreneurial skills, and supporting technological upgrade of SMEs. The Ministry of Economy and Sustainable Development

of Georgia (MoESD) coordinates activities outlined in the strategy. The main national institutions supporting SME development are Enterprise Georgia and Georgia’s Innovation and Technology Agency (GITA). Enterprise Georgia is implementing the governmental program “Produce in Georgia” that was launched in June 2014. The overall objectives of this program are to improve entrepreneurship, facilitate the establishment of new enterprises and support the expansion of new

businesses. Both Enterprise Georgia and GITA help SMEs in establishing international trade relations by supporting their participation in international fairs and networks (e.g., European Enterprise Network) (GoG 2016). Further, Enterprise Georgia operates an online trade platform ([Trade with Georgia](#)) that provides information on Georgian exporter companies, their products, existing and potential destinations. The

platform allows for a direct exchange of information between traders. Some information (e.g., about trade agreements, financial and legal considerations, statistics and news) from this platform are rather scarce or old. In addition, Enterprise Georgia offers an [online course](#) on export management. Georgia's SMEs engaged in exporting are also supported by the [Export Development Association](#).

5.5.2 Governmental support schemes to food value chains

Production and post-harvest handling of fruits is supported by several governmental programs: The “Plant the Future” program that started in 2015 supports planting of perennial crops, with the goal of substituting respective imports and increasing potential for exports. Three different components are co-financed: i) perennial orchards, ii) nurseries and iii) installing anti-hail systems or arranging a well/borehole pumping station. The governmental support includes financial and technical assistance to beneficiaries. The financial support is provided for conducting soil analysis, buying seedlings, and installing drip irrigation systems. Based on soil and climatic conditions, the program uses a list of fruits that are suitable for different regions of Georgia. While co-financing is required for most perennial plants, planting berries (by type and region) is eligible for 100% financial support. The total investment between 2015 and 2019 has been 61.9 million GEL (co-financing - 34.2 million GEL). As of June 30, 2019, 7,473 intensive orchards have been planted under this program (MEPA 2019a).

There are no specific state programs supporting the vegetable sector in Georgia. In spring 2020, a new support scheme – “Program of Agro-Production Promotion” was introduced alongside other measures to mitigate potential negative impact of the COVID-19 pandemic on Georgia's agriculture. Annual crops (including vegetables) were part of this program and arranging new greenhouses and modernizing the existing ones was co-financed by the state. The budget for this new program was exhausted very quickly (in a couple of days after the announcement).

Other projects of MEPA such as preferential agro-credit program, crop insurance program, program for co-financing of agro-processing and storage enterprises as well as the state program “Produce in Georgia” also contribute to the development of fruit and vegetable value chains in Georgia. For example, around 70 fruit dryer businesses and more than 20 fruit processors (e.g., fruit juices, sea buckthorn oil, etc.) were co-financed under the “Produce in Georgia” program between 2016 and 2018.

5.5.3 Development projects

There are various past and ongoing development initiatives to do with Georgia's food value chains (including F&V), agricultural exports (to the EU), SME and QI development. Table 4 and Table 5 provide a brief description of the ongoing and recently completed projects and outline potential synergies with GQSP Georgia.

Besides the aid information management system ([eAIMS](#)) where projects are documented (but not coordinated or capitalized on), no relevant and continuous coordination mechanisms could be identified.

TABLE 4: : ONGOING PROJECTS RELATED TO GEORGIA’S F&V VALUE CHAINS AND QI DEVELOPMENT

PROJECT	DESCRIPTION
<p><u>Agriculture Modernization, Market Access and Resilience Project (AMMAR) (2014-2021)</u> Implementer: MEPA with service providers (incl. Elkana) Funding: IFAD, GEF, GoG, DANIDA</p>	<p>Fostering climate resilience and market access of selected value chains through:</p> <ul style="list-style-type: none"> » Infrastructure improvement, landscape restoration; » Policy dialogue; » Capacity building by means of demonstration plots, training and training materials (focus on production and marketing in general, seem not to explicitly mention product standards and requirements); » Grants for producers, processors, young entrepreneurs; » Facilitation of market linkages by connecting project beneficiaries with potential buyers, supporting participation in fairs etc. <p>The selected value chains include several F&V: berries, bay leaf, apples, peaches, greenhouse vegetables.</p>
<p><u>FAO Agricultural Trade Expert Network in Europe and Central Asia (since 2014)</u></p>	<p>Network bringing together experts who conduct research, carry out training programmes and advise governments and the private sector on issues related to trade and trade policy.</p>
<p><u>FAO Regional Initiative on transforming food systems and facilitating market access and integration (since 2016)</u></p>	<p>Supporting member countries in enhancing the agrifood trade policy environment for small- and medium-sized agricultural enterprises. Three components: trade agreements, global standards, market access.</p>
<p><u>Technical assistance to the Georgian NFA for meeting of the EU Association Agreement priorities (FAO Georgia) (2019-2021)</u></p>	<p>No further information found.</p>
<p><u>Developing MEPA’s Capacity for Extension Services (FAO Georgia) (2021-2022)</u></p>	<p>No further information found.</p>
<p><u>European Neighbourhood Program for Agriculture and Rural Development (ENPARD) (Phase III: 2018-2021)</u> Implementer: FAO in collaboration with other service providers (CARE International, Mercy Corps, UNDP etc.) Funding: EU</p>	<p>Strengthening the competitiveness of Georgian agriculture through:</p> <ul style="list-style-type: none"> » Support to MEPA in effective policy-making; » Farmers’ capacity building through demonstration, information dissemination, trainings; » Matching grants for farmers, rural entrepreneurs, cooperatives, other SMEs and municipalities.
<p><u>EU Innovative Action for Private Sector Competitiveness in Georgia (2019-2023)</u> Implementer: UNDP, FAO Funding: EU, UNIDO</p>	<p>Enhancement of entrepreneurship and business sophistication through:</p> <ul style="list-style-type: none"> » Strengthening capacities of policy-makers and other stakeholders to identify and develop clusters; » Development and functioning of the clustering approach in packaging and seeds/seedlings sectors; » Support of strategic investments in companies to improve the cluster; » Mainstreaming migration in SME development.

<p>Twinning project “Ensuring further progress of SPS and food safety system in Georgia”</p>	<p>Three major components:</p>
<p>Implementer: NFA, no information found on twinning partner</p>	<ul style="list-style-type: none"> » Supporting the administrative and operational capacity of the NFA to ensure efficient approximation of the relevant legislation (on food improvement agents, food contact materials, quick-frozen food, pest management etc.);
<p>Funding: EU</p>	<ul style="list-style-type: none"> » Supporting capacities at the central and regional levels for food safety, veterinary and phytosanitary issues and implementation of hygiene and safety standards in primary production;
<p>Funding: EU</p>	<ul style="list-style-type: none"> » Supporting the enforcement of the newly approximated food safety, veterinary and phytosanitary legislation in the country.
<p><u>Laboratory H&S LLL Courses for Youth in Western & Eastern Georgia (CoLLLab) (2020-?)</u></p>	<p>Supporting young professionals’ health and safety laboratory skills development through:</p>
<p>Implementer: TSU, Georgian Biotechnology association (GeBa), NCDC, State Laboratory of Agriculture (SLA)</p>	<ul style="list-style-type: none"> » Market-oriented and demand-driven lifelong learning courses on laboratory health and safety;
<p>Funding: EU</p>	<ul style="list-style-type: none"> » Training of trainers’ (ToT) programme to ensure the sustainability of the initiative.
<p><u>Horizon 2020 DEMETER, Pilot 5.1: Disease prediction and supply chain transparency for orchards/vineyards (2019-2023)</u></p>	<p>Leading the digital transformation of Europe’s agri-food sector through the rapid adoption of advanced Internet of Things technologies, data science and smart farming.</p>
<p>Implementer (in Georgia): GFA</p>	<p>Pilot Project 5.1 focuses on pesticide usage optimization in vineyards and orchards and strengthening transparency along the supply chain using the agroNET platform and the blockchain-based data exchange protocol OriginTrail.</p>
<p>Funding: EU</p>	
<p><u>Herbs for Growth (HEGO) (2020-2022)</u></p>	<ul style="list-style-type: none"> » Modernization of enterprises associated with herb cultivation;
<p>Implementer (in Georgia): GFA</p>	<ul style="list-style-type: none"> » Promotion of diversified, sustainable, value added herb products;
<p>Funding: EU</p>	<ul style="list-style-type: none"> » Enhancement of cross-border trade opportunities for herb enterprises of Greece, Moldova, Georgia and Armenia.
<p><u>Improving High-Value Trade Opportunities in Horticulture (2017-?)</u></p>	<ul style="list-style-type: none"> » Value chain analyses to identify investment opportunities along horticultural value chains
<p>Implementer: ?</p>	<ul style="list-style-type: none"> » Capacity development along the horticultural value chains in support of the DCFTA implementation in Georgia
<p>Funding: EBRD</p>	<ul style="list-style-type: none"> » Knowledge exchange and trade linkages with other actors in the region (such as Ukraine)
<p><u>Improving (WTO) Sanitary and Phytosanitary (SPS) Transparency in Georgia (2019-?)</u></p>	<p>The program aims to:</p>
<p>Implementer: Rural and Agricultural Policy and Development Institute (RAPDI)</p>	<ul style="list-style-type: none"> » Increase SPS transparency and effectiveness in notifying SPS measures to the WTO;
<p>Funding: USDA</p>	<ul style="list-style-type: none"> » Enhance private sector engagement;
	<ul style="list-style-type: none"> » Strengthen the capacity of the regulatory laboratory network to support the science needed for risk-based rule setting and verification of the effectiveness of the rules;
	<ul style="list-style-type: none"> » Develop a laboratory workforce capable of developing the laboratory infrastructure and human capacity required for regulatory enforcement and effectiveness verification;
	<ul style="list-style-type: none"> » Train core groups of individuals on the process of risk-based rule making and WTO notification.

<p><u>Enhancing Implementation and Efficiency of National SPS Capacity through Training & Education (2020-?)</u></p>	<p>Supporting the design and implementation of Georgia’s national phytosanitary policy based on its Integrated Pest Management (IPM) Roadmap in order to meet the International Standards for Phytosanitary Measures.</p>
<p>Implementer: California State University, Farmer of Future Association, Fresno</p>	
<p>Funding: USDA</p>	
<p><u>Improving Georgian Food Safety Legislation and Regulations (2019-?)</u></p>	<ul style="list-style-type: none"> » Identification of potential hazards & development of a food safety risk assessment management system; » Improvement of phytosanitary & veterinary control; » Electronic Certification and Good Regulatory Practices, including a case study on ePhytos; » Laboratory capacity/network development, engagement in regulatory reforms.
<p>Implementer: ?</p>	
<p>Funding: USDA</p>	
	<p>This information is derived from ProDoc (2020), nothing new could be found on the Internet.</p>
<p><u>Georgia Safety and Quality Investment in Livestock SQIL (2019-2024)</u></p>	<p>Activity II: Improving Sanitary and Phytosanitary Standards through the promotion of food safety across the country, the evaluation of food testing laboratories’ capabilities and conducting corresponding capacity building to fill revealed gaps.</p>
<p>Implementer: Land O’Lakes Venture 37, GFA</p>	
<p>Funding: USDA</p>	
	<p>This information is derived from ProDoc (2020), nothing new could be found on the Internet.</p>
<p><u>The USAID Agriculture Program (2018-2023)</u></p>	<p>Acceleration of the growth of agricultural sub-sectors that show strong potential to create jobs, grow incomes, and increase micro, small, and medium enterprise (MSME) revenues through:</p>
<p>Implementer: South-East Europe Development (SEEDDEV); World Food Logistics Organization (WFLO)</p>	
<p>Funding: USAID</p>	
	<ul style="list-style-type: none"> » Productivity enhancement; » Technical assistance to meet international standards and certifications; » Strengthening market linkages; » Innovation grants for value chain actors, cooperatives, extension providers, associations etc.
<p><u>Plant Safety System Initiative (duration?)</u></p>	<p>Capacity building of NFA to plan and implement a country-wide integrated pest management strategy and to help Georgian farmers earn internationally recognized certifications that allow them to sell their products on international markets.</p>
<p>Implementer: NFA</p>	
<p>Funding: USAID</p>	
<p><u>Strengthening QI within the countries of the South Caucasus (2019-2021)</u></p>	<p>The project has two foci:</p> <ul style="list-style-type: none"> » Consultation and support during the ongoing creation of national reference laboratories in Georgia, Armenia and Azerbaijan in order to enhance institutional capacities and performance and to achieve international recognition; » Fostering the exchange between the national metrology institutes and the private sector.
<p>Implementer: Physikalisch-Technische Bundesanstalt Germany, GEOSTM</p>	
<p>Funding: Federal Ministry for Economic Cooperation and Development of Germany</p>	

<p><u>Farming Support Initiative FSI (2018-2021)</u> Implementer: GFA Funding: Austrian Development Agency</p>	<p>Higher incomes and improved market position of small-scale businesses in the agricultural sector through:</p> <ul style="list-style-type: none"> » Demand-driven training for agricultural cooperatives and business-oriented farmers; » Award of assets to farmers incl. specialised training; » Linkages to high-end buyers such as contracts with distribution companies like GFDC; » Demonstration plots and cross-visits; » Awareness campaign and demonstration plots on pasture management.
<p><u>Improving farm productivity in Georgia through dual vocational education and training (Phase II: 2018-2022)</u> Implementer: UNDP Funding: SDC</p>	<p>Increasing productivity, incomes and jobs in the agricultural sector through vocational education for farmers and students. The focus of phase II is on improved coordination between vocational education and extension services, the promotion of public-private partnerships to combine theoretical and practical training and increased use of digital media.</p>
<p><u>Multi-Country Investment Climate Programme MCICP (2017-2024)</u> Implementer: International Finance Corporation (IFC) Funding: SECO</p>	<p>Investment climate reforms in order to improve the competitiveness and sustainable growth in SECO partner countries. The reforms include, among others, the reduction of compliance costs for firms, improvement of transparency and reduction of corruption.</p>
<p><u>IAEA Country Programme Framework (2020–2025)</u></p>	<p>One priority area of the 2020-2025 Country Programme Framework is: Ensuring food safety, improving food control systems, and improving agricultural practices.</p> <p>According to the GQSP Georgia ProDoc IAEA provides technical support to the State Laboratory of MEPA for the purchase and installation of LC-MS-MS and its use in animal husbandry.</p>

TABLE 5: RECENTLY COMPLETED PROJECTS RELATED TO GEORGIA’S F&V VALUE CHAINS

PROJECT	DESCRIPTION
<p>EU support to NFA (2012-2019) Implementer: NFA Funding: EU</p>	<p>The programme provided support for NFA’s institutional strengthening and for the legal approximation process as well as the capacity development of food safety inspectors. It also helped the NFA (central and regional offices), the Revenue Service (responsible for border inspection posts), and the State Laboratory of Agriculture (SLA) to improve their physical infrastructure and become better equipped for undertaking inspections in accordance with EU standards.</p>
<p>Support to Further Strengthening Accreditation in Georgia to Meet EU Best Practices (2015-2017) Implementer: Funding: EU</p>	<p>The objective of the project was to strengthen legal, technical and administrative capacities of the Georgian Accreditation Center (GAC) along the implementation of the AA and DCFTA especially in: development of proficiency testing in the field of accreditation.</p>

<p>NFA Quality Management System (QMS) development Implementer: NFA, ? Funding: Dutch Development Agency</p>	<p>No further information found.</p>
<p>Establishment of National Phytosanitary Control System in Georgia (2018-2020) Implementer: Czech Plant Protection Agency, NFA Funding: Czech Development Agency</p>	<p>No further information found.</p>
<p><u>Twinning Project for Georgian National Agency for Standards and Metrology (2017-2019)</u> Implementer: British Standards Institution, Danish National Metrology Institute, Latvian Standard, GEOSTM Funding: EU</p>	<p>Fostering quality metrology and standardisation services of international standards through:</p> <ul style="list-style-type: none"> » Capacity building of employees; » Upgrading of technical infrastructure; » Improvement of work procedures and processes.
<p><u>ZRDA (2016-2020)</u> Implementer: Chemonics and partners Funding: USAID</p>	<p>Promotion of inclusive and sustainable economic growth in the agriculture and tourism sectors of five target regions. Agriculture development:</p> <ul style="list-style-type: none"> » Demonstration pilots of greenhouse production and berry nurseries; » Co-funding of cold storage facilities and drying facilities; » Support to ICCs and private Farm Service Centers; » Access to new markets through mobile application Agronavti, Enhanced Agriculture Platform kalo.ge, GeoGAP certification, partnership with Georgian Agro House and Post-harvest Handling Management (PHHM) training course
<p><u>Georgia Hazelnut Improvement Project G-HIP (2015-2020)</u> Implementer and funding: Global Development Alliance GDA (USAID, Ferrero, CNFA)</p>	<p>Development of the Georgian hazelnut value chain through:</p> <ul style="list-style-type: none"> » Capacity building for beneficiaries such as the Georgian Hazelnut Growers Association, producer groups and the Hazelnut and Processors Association; » Post-harvest quality incentive system; » Technology upgrades to post-harvest infrastructure; » Improved access to finance for value chain stakeholders; » Improved traceability and soil testing to enhance product quality.







IN-DEPTH VALUE CHAIN STUDIES

6.1 Apples

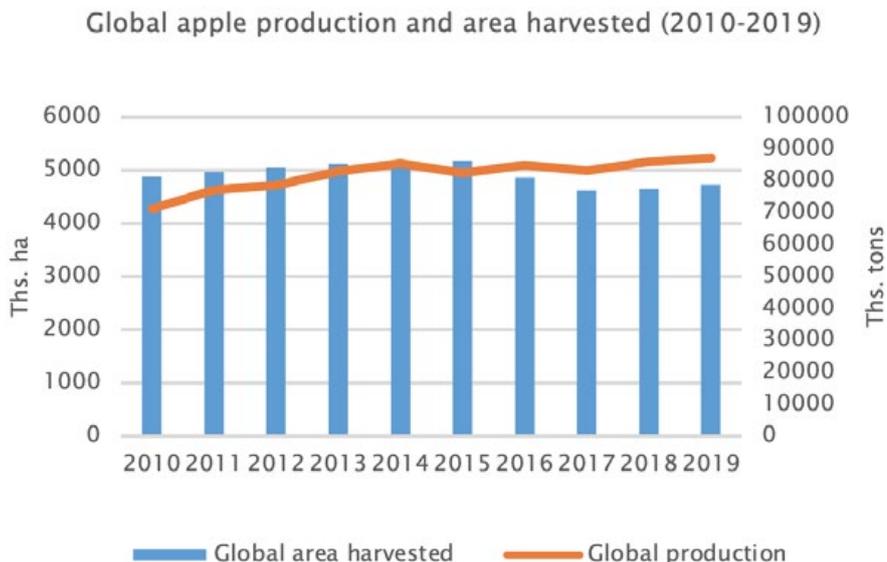
Global production and trade

Global apple production has more or less steadily increased over the past 20 years; the harvested area showed a slight decrease indicating a small productivity increase (Faostat 2021). The top 10 producers are China, the USA, Poland, Turkey, Iran, Italy, India, France, Chile, and Russia (based on average production 2010-2019; Faostat 2021).

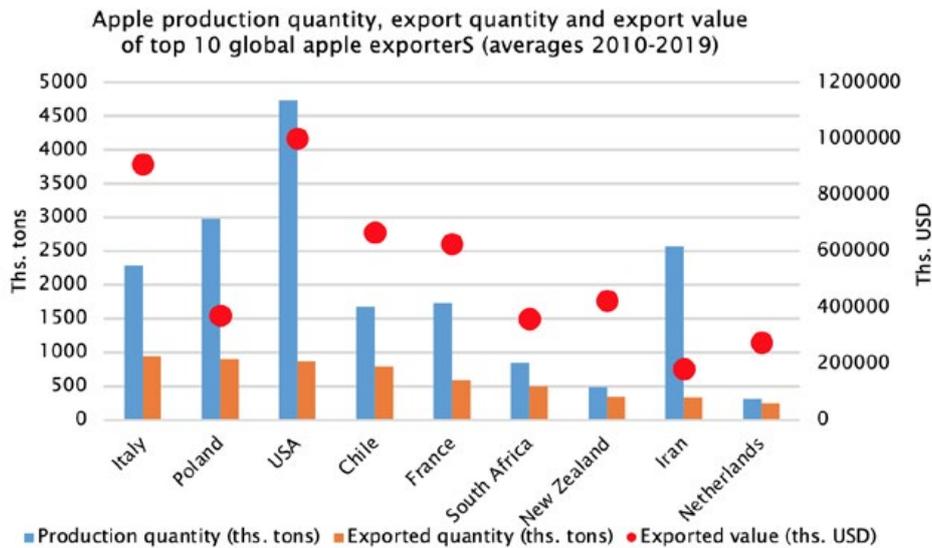
The top 5 varieties produced globally (excluding China) are: Golden Delicious, Gala, Red Delicious, Fuji and Idared. Varieties expected to show increased production by 2025 are Gala, Fuji, Jonagold, Pink Lady, Jonagored and Honeycrisp. So called club varieties such as Pink Lady®, Kanzi®, Cosmic Crisp® and Jazz®

are also gaining prominence but are still of minor importance in terms of cultivated area. A large number of breeding programs is ongoing with red flesh and scab-resistance being among the main foci (Produce Report 2018).

The top 10 apple exporters are China, Italy, Poland, the USA, Chile, France, South Africa, New Zealand, Iran, and the Netherlands (based on average export quantities 2010-2019; Trade Map 2021). The top 10 importers are Germany, Russia, United Kingdom, Netherlands, Mexico, Egypt, the USA, Indonesia, Canada, and India (based on average import value b 2010-2019; Trade Map 2021).



Source: Faostat 2021

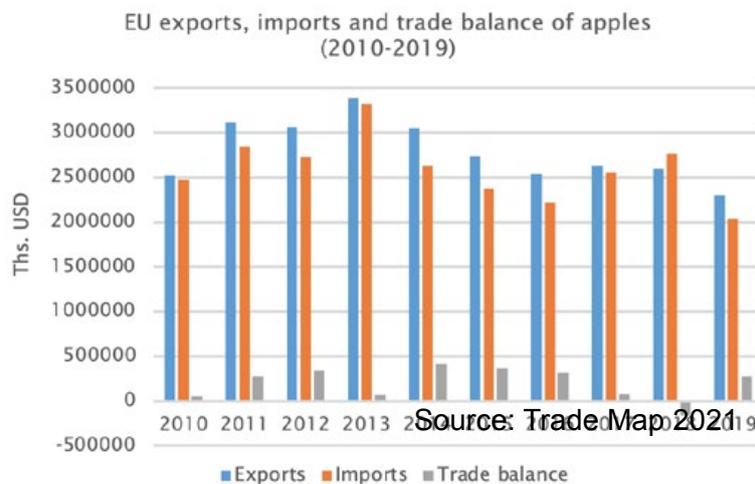


Source: Faostat 2021; Trade Map 2021 – China is excluded from the graph due to extremely high production quantity of almost 40000 ths. tons

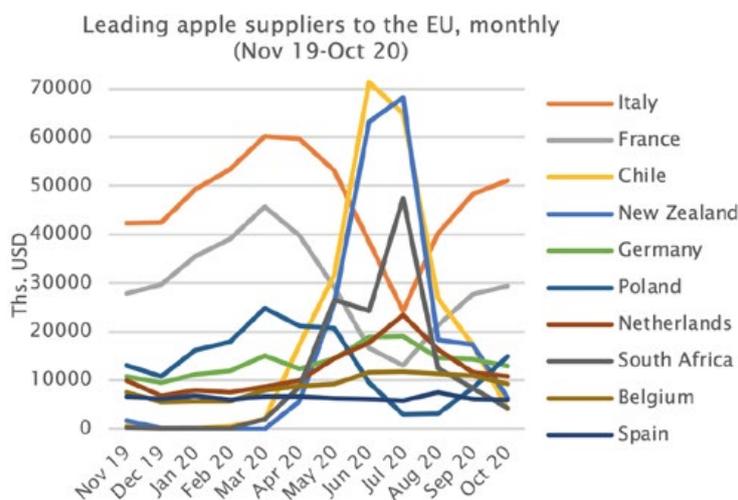
EU trade

The EU's trade balance for apples has been positive over the past 10 years except for 2018 (Trade Map 2021). Both exports as well as imports show a slightly decreasing trend. The top 10 apple suppliers to the EU are Italy, France, Chile, New Zealand, Germany, Poland, Netherlands, South Africa, Belgium, and Spain (ranking based on total supplied quantity between Nov 2019

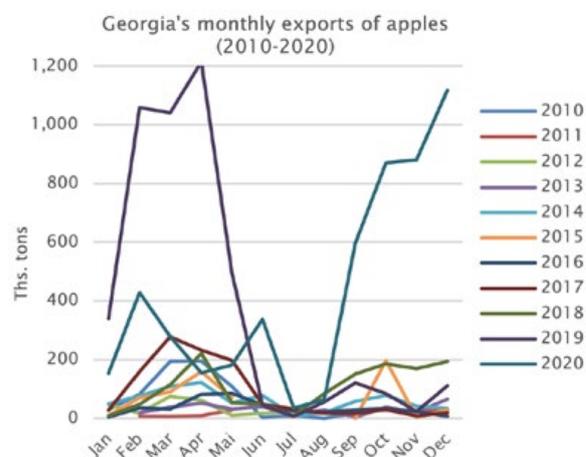
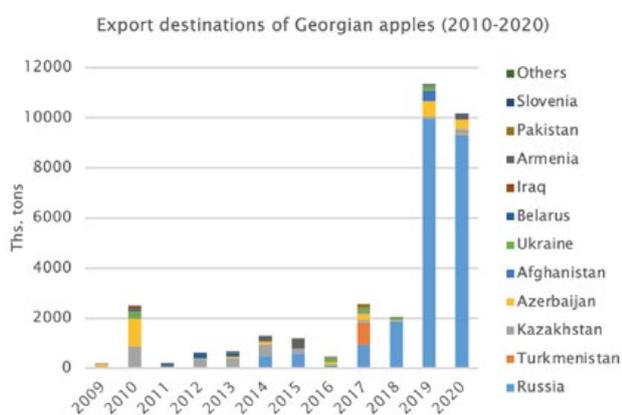
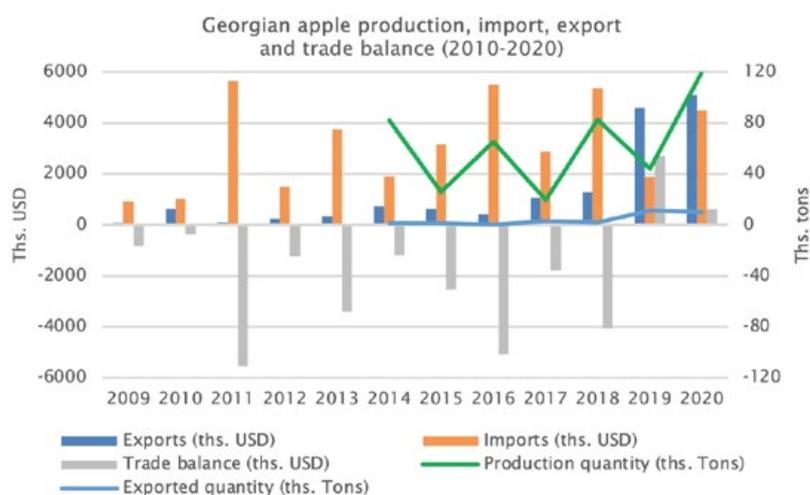
and Oct 2020; Trade Map 2021). There are pronounced seasonal differences in terms of suppliers: from August until April the apple imports are dominated by intra-EU flows, from May until July the supply is mainly coming from countries in the southern hemisphere. Apples are not listed as a promising F&V product for export to the EU on CBI's website (CBI 2020b).



Source: Trade Map 2021



Source: Trade Map 2021



Georgia's export potential

Production: Georgia ranks 62nd in terms of apple production (Faostat 2021) and 60th in terms of apple export quantities (Trade Map 2021). The production fluctuated quite strongly, and exports increased considerably over the past seven years. The share of total produce exported varied between 1% (2016) and 26% (2019). The trade balance has been negative except for 2019 and 2020 with apple imports mainly coming from Turkey, Iran, Poland, and Ukraine (Geostat 2021; Trade Map 2021).

Exports and export destinations: During the past years, main export destinations of Georgian apples have been Russia, Kazakhstan, Ukraine, Azerbaijan, and Turkmenistan. In these countries, Georgian apples are mainly supplied to the low-price segment (FAO 2017). Very small amounts were exported to the EU during the past years, namely to Slovenia, Germany, Hungary and Latvia (Trade Map 2021; EastFruit 2020a; EastFruit 2020b; EastFruit 2021a).

Georgia's Revealed Comparative Advantage (RCA) for apples has not been > 1 during the past 10 years (Trade Map 2020) and apples do not occur among the top 50 products with export potential or export diversification potential of Georgia to the EU & West Europe (ITC 2021a; ITC 2021b).

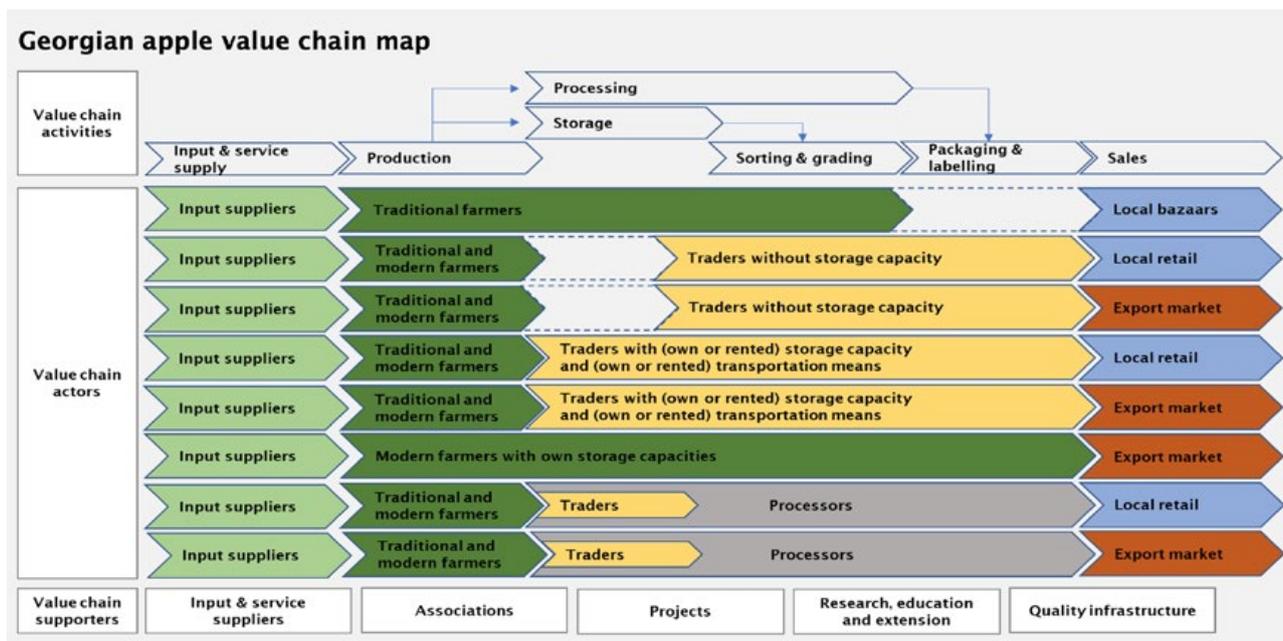
According to interview partners, Russia is the most important but also the most unstable, unpredictable

market and it is important to diversify export destinations. They however do not consider the EU market to be a promising destination because of internal overproduction and competition, entry price (Association Agreement, Annex II-B) and insufficient conformity with quality requirements. In their opinion more promising markets for Georgia are the Gulf States (e.g. Saudi Arabia), countries around the Indian Ocean (e.g. Pakistan, India, Indonesia) and Central Asia (e.g. Kazakhstan). There also seems to be a potential to substitute imports on the domestic market.

EU requirements for export

General requirements for the export of F&V to the EU are listed in Chapter 4. Specificities for apples:

- » Pesticide MRLs for apples
- » Marketing standards: there exist a specific EU marketing standard for apples (EU Implementing Regulation (EU) No 543/2011 in Annex I Part B), a UNECE standard for apples and a Codex Alimentarius standard for apples.
- » Packaging: Apples must be packed in a manner that ensures proper protection of the product. In particular, retail packages weighing more than 3 kg should be sufficiently stiff in order to ensure appropriate protection (Time for apples from Europe n.a.). Examples are: cardboard boxes of 13-18 kg and wooden boxes of 8-16 kg. (Codru n.a.)



Georgian apple production

Georgian apple production is characterized by strong fluctuations (see graph under “Georgia’s export potential”). Main reasons for this are variable climatic conditions (especially frost in April approx. every 10 years) which amplify alternate fruit bearing, suboptimal cultivation methods and diseases, but also some inconsistencies in statistical data. (FAO 2017; Interviews). The major production region is Shida Kartli (Gori and Kareli municipalities) with an average share of total production of 77% (2014-2019; Geostat 2020). The main harvesting season is from September until early November.

Production systems can roughly be categorized as follows (FAO 2017; Interviews):

- » Traditional: established before 2005, traditional cultivation methods, old varieties/strains, low density, owned by “regular farmers”. Many of these orchards will probably be uprooted during the coming 10-25 years and corresponding traditional knowledge / practices will get lost.
- » Modern intensive: established after 2005, modern high input production, high density, dwarf rootstocks (M9), new varieties, owned by “non-agricultural investors”;
- » Modern semi-intensive: established after 2005, modern medium input production, medium density, semi-dwarf rootstocks, new varieties, owned by wealthier “regular farmers” or less wealthy “non-agricultural investors”.
- » Modern orchards became popular due to pilot plots (since 2005) and government subsidies, especially Plant the Future (since 2015). In 2019, roughly 80% were traditional orchards and 20% modern orchards (FAO and EBRD 2019).

Varieties (FAO 2017)

- » Traditional orchards: Winter Banana, Kekhura, Tsarski, Antonovka, Brotski, Sinap, Yellow Belflor, Canadian Renette, Champagne Renette, old strains Golden Delicious
- » Modern orchards: Golden and Red Delicious, Granny Smith, Gala, Fuji etc.

Most promising varieties for the Georgian context according to SRCA (2019): Red Kani / Red Delicious, Pinova, Topaz, Astramel, Granny Challenger.

Some big, modern producers (Interviews)

- » Tiriphoni Gardens, Kvarkhiti Agro and AgroGori (Shida Kartli, since 2014, 28 ha)
- » GU Fruit (Kvemo Kartli, since 2012, 33 ha, 7 varieties)
- » Khichateli (Mtskheta-Mtianeti, 50 ha, 12 varieties)
- » Chirina / Pomono (Kakheti, 10 varieties)
- » Agromax Décor (Kakheti)
- » Agro-Com (Shida Kartli)
- » Georgian Fruit Company, New Horizon, Sachino (no websites found)

In terms of overall quantity, the most apples are however still coming from “regular farmers”.

Wholesale markets

The most important wholesale markets for apples are located in Gori and Tbilisi (“Dezertirebi”, “Navtlughi”, “Gldani market”).

Domestic retail

In Georgia there operate many small grocery shops and a number of bigger supermarkets, namely: Carrefour, Goodwill, Spar, Fresco, Nikora,

Ori Nabiji, Magniti, Zgapari. Covid-19 has also strengthened online-shopping, at least in Tbilisi, e.g. through Glovo, momitane.ge or Soplidan.ge.

Processors

Overview of processors identified through Trade with Georgia, Global Companies, bia.ge, FAO (2017), Google and Interviews (order according to year of establishment; information on processed volumes, export orientation and quality standards can partly be found on the linked websites):

Around 40% of the apple harvest is usually processed (Interview). The main processed product is apple concentrate/juice but there seems to be a trend of diversification towards other processed products such as dried / freeze-dried apples, jam etc. (see list above). Georgian apple concentrate achieves comparatively good prices because of the high acidity level of traditional apple varieties. At the same time, FAO (2017) concludes that the utilization rate is often far below optimum, and the business is rather unprofitable.

Specialized packers, traders, exporters

Except for the modern companies who have the capacity to store, sort and package at least part of their

produce on-farm, farmers either sell their apples on local open markets or directly from the field to traders. There are three types of **traders** (FAO 2017; Interviews):

- » Traders working on low-grade apples and selling to processors;
- » Traders working on high quality apples, exporting or selling on wholesale markets, without storage;
- » Traders working on high quality apples and selling on local open markets, to supermarkets or export markets, with (own or rented) storage. These companies often do the sorting, grading and packaging - with the help of daily labour from the region – and sometimes possess their own refrigerated lorries.

In most cases **sorting and grading** is done by hand, (appropriate) machinery is so far very limited. An example of a company which seems to be fully equipped with modern machinery is the Georgian Fruit Company. The predominant **packaging** material is plastic boxes, as the eco-friendlier cardboard or wooden boxes are too expensive. (Interviews)

The identification of concrete (fruit) trading/exporting companies is challenging, as many of them do not have a website. Some examples found online are: Fruitilia (Angel Logistics) and Momavali.

NAME	LOCATION	YEAR	PRODUCTS
Samegobro	Shida Kartli	1980	Currently suspended
Georgia's Natural Aromaproduct	Tbilisi	1985	Organic pumpkin-apple juice, paradise apple syrup
Bio Juice	Shida Kartli	2005	Concentrates, flavourings
Georgian Nectar	Shida Kartli	2007	Apple-beetroot juice
Marneuli Food Factory	Kvemo Kartli	2007	Jam
Natural 7	Shida Kartli	2007	Concentrates, flavourings
Geo Concentrate	Shida Kartli	2007	Compote and juice
Geo-Flower	Racha-Lechkhumi	2007	Dried fruit
Campa	Mtskheta-Mtianeti	2008	Juice and nectar
Kula / Chiruka	Shida Kartli	2009	Juice, jam, dried apples
Zedazeni / Chero	Mskheta-Mtianeti	2011	Juice and flavoured water
Gemuani	Samegrelo	2011	Freeze-dried apples
Sobisuri	Shida Kartli	2012	Juice (pure; with quince, sour cherry, plum, beetroot)
Achinebuli LLC / Alali	Kakheti	2015	Juice
Kareli Fruits / Chikori	Shida Kartli	2015	Dried apples
Georgian Fruit Company / Kind&Noble	Kakheti	2016	Juice, fruit puree
Geo Organic	Kakheti	2018	Dried apples
August Fruit Factory	Mtskheta-Mtianeti	2019	Juice and jam
Cooperative Roots	Kakheti	2019	Juice, chips, cider
Caucasus Organic Fruits	Tbilisi	NA	Dried apples

Input suppliers:

- » **Saplings:** There are different indications on the number and location of nurseries depending on the source (PMC Research 2020). “Plant the Future” lists [13 nurseries](#) producing apple saplings (10 in Shida Kartli, 2 in Kakheti, 1 in Tbilisi) and [15 companies](#) supplying imported saplings. FAO (2017) lists 19 nurseries in Shida Kartli region. A large majority of the saplings for intensive orchards (M9 dwarf rootstocks) are currently imported, mainly from Spain, Netherlands, Serbia and Turkey (Interview).
- » **Irrigation systems:** “Plant the Future” lists [28 companies](#) supplying drip irrigation systems.
- » **Anti-hail systems:** Due to climate change there have regularly occurred major damages from hail. Therefore, anti-hail systems are becoming standard in modern orchards. Suppliers of anti-hail systems are [Agro-Com](#), [Agrosphere](#), [AgroNova](#) etc. Farmers who cannot afford anti-hail systems, often make use of the governmental [AgroInsurance Program](#) instead. (Interview)
- » **Fertilizers and plant protection products:** The majority of producers apply chemical fertilizers and plant protection products which constitute a considerable share of total costs. There are several larger companies supplying smaller shops in cities and villages. Major players are [AgroKartli](#), [Agro-Com](#) and [Cartlis Agrosystems](#) (FAO 2017).
- » **Mechanisation:** Special machines such as harvesters are offered by [Agro-Com](#), [Agrosphere](#), [Agromotors](#) etc. There is a [governmental co-financing project](#) for harvesting machinery.

Associations

Georgian Fruit Growers Association, Georgian Seed and Sapling Association (GEOSSA), Georgian Farmers Association (GFA), Elkana (in the case of organic production), PMAG. For more details see Section 5.4.

Projects

Governmental schemes:

- » [Plant the Future](#): co-financing for the establishment of nurseries and orchards (saplings and irrigation), anti-hail systems and bore wells; apple plantations are listed for all regions.
- » [AgroInsurance Program](#) for hail, flood, storm and autumn frost.
- » [Preferential Agrocredit Project](#) for primary production, processing and storage.
- » [Co-financing Harvesting Machinery](#)
- » [Co-financing of Agro-processing and Storage Enterprises](#)
- » Subsidies for substandard apples in [2014](#), 2016 and [2020](#) (FAO 2017; Agenda.ge 2020)

Development projects: No ongoing apple-specific development projects were found. But most projects listed in Section 0 are to a certain extent relevant for the apple value chain. For instance:

- » The [Agriculture Modernization, Market Access and Resilience Project](#) (2014- 2021, funded by IFAD, implemented by MEPA & partners) which supports infrastructure improvement, capacity building, entrepreneurship and market linkages. Apples are one of their selected products.
- » The [EU Innovative Action for Private Sector Competitiveness](#) (2019-2023) which focuses on the seeds/seedling sector and packaging (implemented by FAO and UNDP, respectively).

Education, research, and extension

Important actors and sources of information are:

- » Friends / partners from countries (e.g. Poland, Italy) who provide advice based on their own experiences in apple production (Interviews);
- » Private input suppliers and consultants such as [Agro-Com](#) and [Kalo](#) (FAO 2017);
- » The Scientific Research Centre for Agriculture (SRCA) with its Perennial Crop Research Base in Jiagura/Mtskheta which evaluates foreign apple varieties for the Georgian context, conduct open field days and training seminars and produce publications (e.g. [factsheets](#) and book «[Georgian Fruits: New Varieties and Their Peculiarities](#)»)
- » Information and Consultation Centres (ICCs), the state extension service at municipality level;
- » Georgian videos on Youtube about apple production, e.g. of [Agro Library](#).
- » Horticulture, including apple cultivation, is a subject at various universities, e.g. at the Agricultural University of Georgia (AUG) and the Technical University of Georgia. AUG runs an [Institute of Horticulture](#) which was established in 2013. The head of the Institute is a pomologist (Assoc. Prof. PhD Zviad Bobokashvili).

«[Ilia Tsinamdzgvrishvili College](#)» implements a professional program in horticulture

Quality infrastructure

Georgia’s general QI for F&V is described in Chapter 7. As the main apple producing region is quite close to Tbilisi, FBOs to do with apples, are mainly using the available QI services in the capital. STAR Consulting has implemented GLOBALG.A.P. with one of the biggest apple producers (Tiriphoni Gardens) and is well placed to provide services to other producers.

CHALLENGES:

- » Absence of a seedling certification system (FAO 2017)
- » Absence of a laboratory identifying infected seedling stocks (FAO 2017)
- » High costs and low quality of fertilizers and plant protection products (FAO 2017)
- » Soil and water pollution (FAO 2017)
- » Suboptimal cultivation methods (e.g. unfavorable pruning methods, excess use of “nitre” leading to faster rotting, no fertilizer application after harvest affecting next year’s bud formation) (FAO 2017)
- » Strong fluctuations in production quantity over the years (Geostat 2021)
- » Low level of cooperation between producers (FAO 2017)
- » Insufficient storage capacities (FAO 2017; Interviews)
- » Lack of appropriate sorting and grading equipment (Interviews)
- » Lack of investment in post-harvest technologies (sorting, grading, packaging) (Interviews)
- » Lack of suppliers of appropriate packaging material; high price of cardboard and wooden boxes (EastFruit 2021b; Interviews)
- » Old processing equipment and low utilization rate (FAO 2017)
- » So far low outreach of Georgian Fruit Growers Association (no website, few members)
- » Underdeveloped food safety control, e.g. lack of MRL testing capacities (FAO 2017; Interviews)
- » Lack of information on export market requirements all along the supply chain (FAO and EBRD 2019)
- » Lack of awareness about local export support services (own observation)
- » Lack of marketing on target markets highlighting the peculiarities of Georgian apples (e.g. taste) (FAO and EBRD 2019)

POTENTIALS:

- » Development of a National Sapling Certification System, establishment of a Georgian Seed and Saplings Association and improvements in the packaging sector in the frame of the project Innovative Action for Private Sector Competitiveness
- » Awareness of and efforts to comply with export market requirements (incl. EU standards) among some “modern” apple producers
- » Local value addition by traditional and newly established processing companies which comply with internationally recognized food safety and quality standards
- » Connections of Georgian apple value chain actors with their counterparts in Europe (e.g. Poland, Netherlands), e.g. for learning on new production methods, purchasing equipment etc.
- » Crucial role of established traders/exporters
- » Availability of information material on apple production from different sources (SRCA, Elkana, Youtube, input suppliers etc.)
- » Bottom-up formation of the Georgian Fruit Growers Association hinting at its potential to become a sustainable organization
- » Presence of committed experts in / advocates of apple production (researchers, consultants, producers)
- » Strong governmental support for production, processing and logistics of apples and other fruits
- » Demand for apples in Arab and Asian countries

6.2 Blueberries

Global production and trade

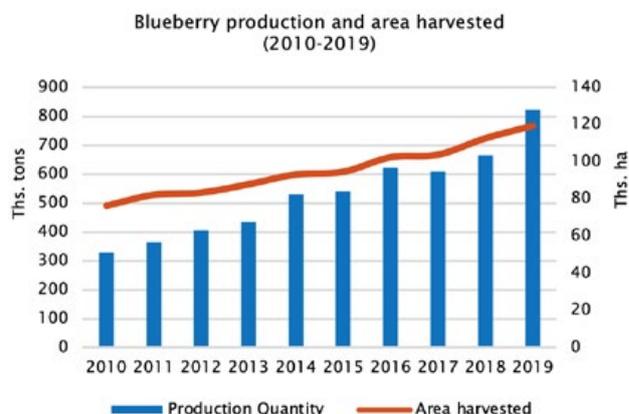
Global production of blueberry has shown an increasing trend and amounted to 823,328 tons in 2019, which is 24% higher compared to 2018. Moreover, a strong positive trend is observed in harvested area (Faostat 2021). The interest in growing blueberries has aroused in many countries as the price of blueberries is high - on average 4\$ per kg in 2019 (Faostat 2021).

USA is the leading blueberry producer in the world with 308,760 tons production volume in 2019. Canada comes the second with 179,127 tons, followed by Peru with 142,427 tons production volume. US, Canada, and Peru together produced 76% of the World's total in 2019 (Faostat 2021).

The worldwide average yield per ha in 2019 was 5.1 tons. This figure is much lower than the average yields for the leading producing countries. The average yield per ha was 16 tons in Peru in 2019, followed by Spain and Mexico with 13 and 11 tons, respectively (Faostat 2021).

The blueberries are utilized in various value-added products: such as juices, dried blueberries, desserts, yogurts, and concentrates. More than half of the produced blueberry is used for processed ingredients (The Express Wire 2021).

Trade Map statistics do not provide separate figures for blueberry trade and it is united under the HS Code 081040 (Fresh cranberries, bilberries, and other fruits of the genus *Vaccinium*). The total export of blueberries has an increasing trend, and it has gone up by 17% in 2019, compared to 2018. The top largest blueberry exporting countries are Chile, Canada, US, Spain, Peru, Netherlands, Poland, Morocco, Mexico, and South Africa (ranked by average export quantities 2010-2019).

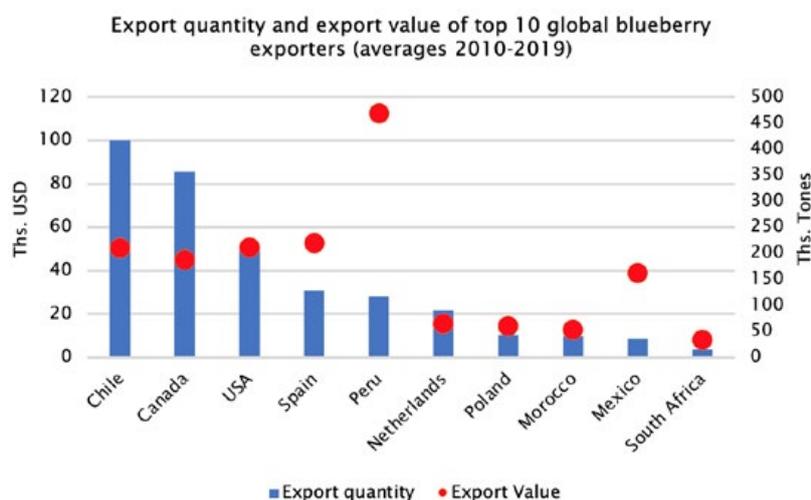


Source: Faostat 2021

In 2019 the second-largest exporter was Peru and blueberry export volume had reached 122,449 tons. Interestingly, the export of Peruvian blueberries has gone up markedly in the last 10 years, from 7 tons in 2011 (Trade Map 2021).

The success of blueberry production in Peru is associated with good climate conditions, light soil, good quality water, and relatively few rainy days during harvest time. Furthermore, it all is combined with the workforce and logistical facilities allowed blueberries to grow year-long for distribution in the international market (The Business Year 2017).

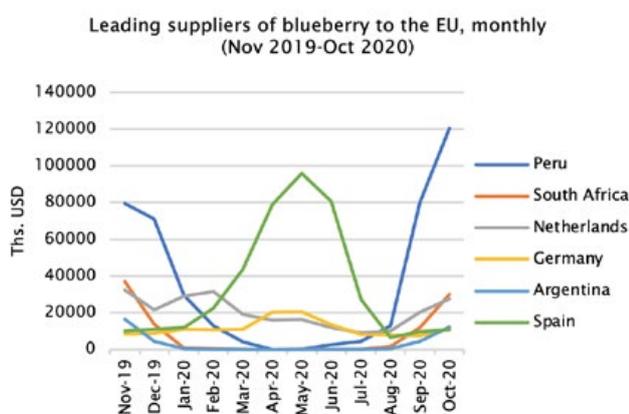
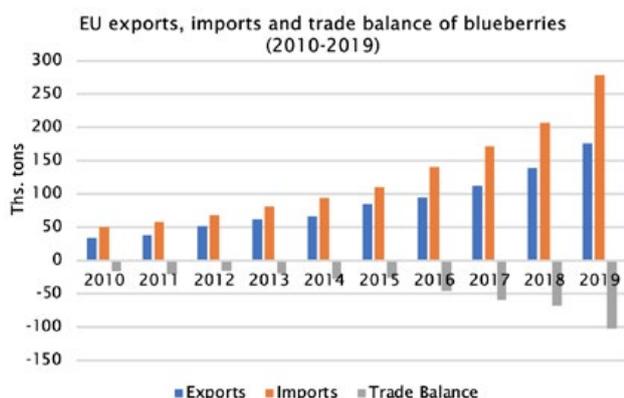
As for the imports, the top 10 importers of blueberries are the USA, Canada, United Kingdom, Netherlands, Germany, Spain, China, Hong Kong, China, France, and Poland (ranked by average import quantities 2010-2019).



Source: Trade Map 2021

EU Trade

Blueberry imports from developing countries to the European market have doubled over the past years and are continuing to grow. Blueberries are mainly imported to the European Union from Chile, Peru, and South Africa in 2019. The blueberry import in the EU has gone up by a 37% from 2018 to 2019 (Trade Map 2021). A negative trade balance was observed in all years during 2010-2019 period. EU is importing a higher quantity of blueberries every year. The major suppliers of blueberries to the EU are Peru, South Africa, Netherlands, Germany, Argentina, and Spain.



Source: Trade Map 2021

Trends

There is **no certainty** about the true potential of the blueberry market in the EU, however, both demand and supply are expected to continue to grow. Compared to other countries per capita consumption of blueberries in the EU lags far behind. The UK is the leading country as the consumption of blueberries is estimated to be 0.8 kg per capita, which is two times bigger than EU average. Therefore, it is estimated that if the consumption in the EU grows in the coming years, there will be a need for up to a total of 600,000 tons of blueberries (CBI 2021a).

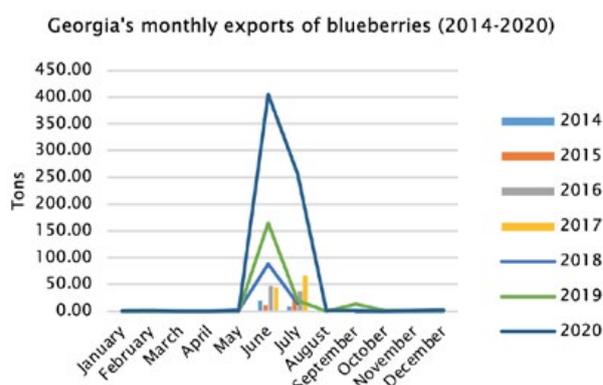
Europe almost exclusively requires **minimum Class I blueberries**. Large blueberries with sweet taste are currently the most demanded. In the future, as the market for blueberries further matures and end

clients become more knowledgeable, specific variety preferences and focus on flavor may also develop (CBI n.a.a). Furthermore, consumers in the EU prefer fruits that are easy to consume or easy to use. Blueberries can be packed in different sizes and are an excellent option **as a snack or as an ingredient in desserts**, for example (CBI 2021a). It is very likely that price of the blueberry in EU market **will decrease**, because of the increased production. Production of blueberries is expected to grow in Spain by 50% in 2021, compared to 2020. Ukraine may even double production in 2021 (EastFruit 2021c).

Georgia's export potential

Production: Unfortunately, there are no official statistics available for blueberry production. According to respondents, a very small portion of blueberry production is sold locally, and the rest is exported. Accordingly, from the export statistics, it can be assumed that blueberry production has an increasing trend in Georgia. According to FAO estimates, 750 tons of blueberries were produced in Georgia in 2020 (EastFruit 2021c).

Exports and export destinations: Georgia started to export blueberries in 2014. Blueberry's export volume has gone up by almost four times in 2020 compared to 2019. There are almost no imports of fresh blueberries to Georgia. Only 15 tons of blueberry were imported in Georgia in 2020. Therefore, the trade balance is positive for all years 2014-2020 (Geostat 2021).



Source: Trade Map 2021

Georgia ranked 48th by the export quantity and 46th by export value among 92 blueberry exporter countries in 2019 (Trade Map 2021). The biggest share of produced blueberries was mostly exported in June and July and there were almost no exports in other months of the year until 2019. In 2020 blueberries were exported from May to December, suggesting improvements in storage capacities (Geostat 2021).

The Georgian export market of blueberry is not diversified. The main export destination is Russia and the share of exports in Russia was 95% in 2020. The very small amount of blueberry was exported to EU (12 tons in Poland) in 2020 (Trade Map 2021).

According to EastFruit (2021c), Georgia has an excellent export potential, because of the harvesting period which starts at the end of May. This is the period when Spain stops mass blueberry export and before the harvest starts in Ukraine and Poland.

ICT's export potential and export diversification potential indicators: In this tool, blueberries export potential to the world ranks 138th place and 109th in the EU. Georgia's export potential of this product category to the world is 613 thousand USD. The untapped export potential is the highest in the US market.

EU requirements for export

General requirements for the export of F&V to the EU are listed in Chapter 4. Specificities for blueberries:

- » [Pesticide MRLs for blueberries](#)
- » Marketing standards: there exist a [UNECE standard for berry fruits](#) and a [Codex Alimentarius standard for quick frozen blueberries](#).

- » **Packaging:** The type of packaging depends on the buyer. The contents of each package must be uniform and contain only berry fruits of the same origin, variety and quality. Typical packaging includes (CBI n.a.a): 3-4 kg bag-in-boxes for bulk packaging; clamshells or punnets of various sizes (e.g. 12 x 125 g) and shakers or buckets of 250 g or 5000 g for direct marketing.

Production

In previous years, berries were produced only for self-consumption. Households were mainly engaged in collecting wild blueberries and selling them in local open bazaars. The growing demand for blueberries increased interest in starting blueberry farms commercially 5-6 years ago (Interviews). It is estimated that 200 to 300 hectares of blueberries are planted in Georgia every year (EastFruit 2021c).

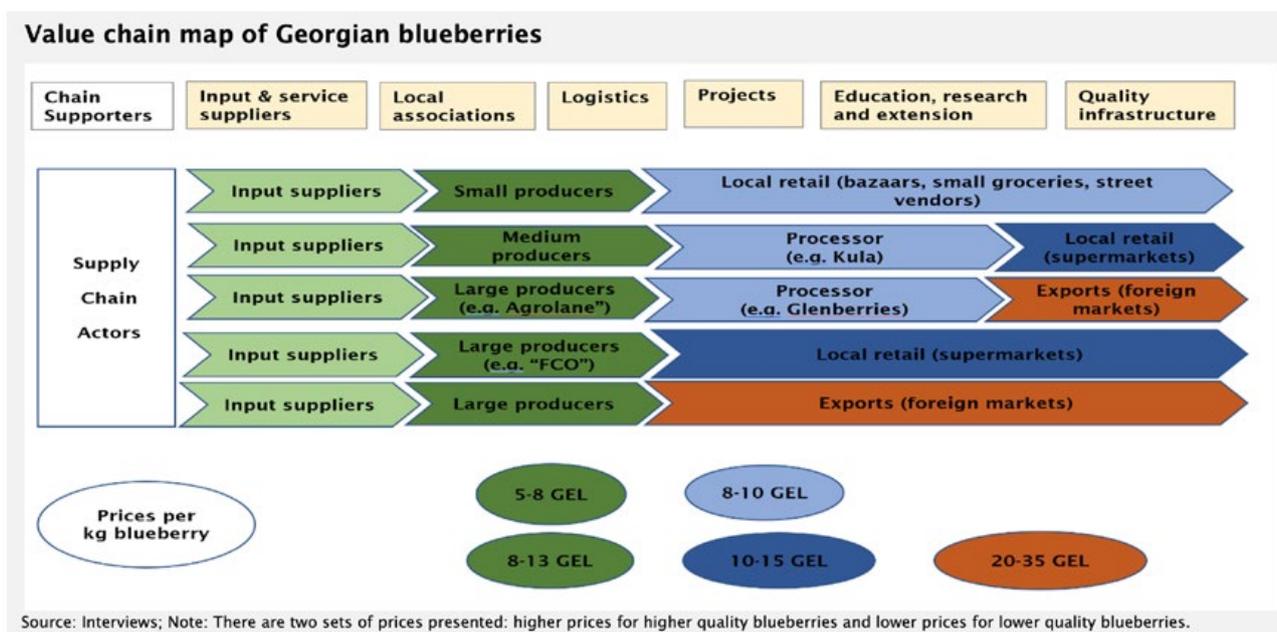
Harvested blueberries are extremely perishable without a refrigerator and decline rapidly in quality, therefore, it is sold rapidly after the harvest. It is important to pre-cool berries directly after harvest and to maintain a perfect cold chain all along (CBI n.a.a). Georgian producers are mostly selling fresh blueberries (Interviews).

Production regions

Blueberries can be grown in all parts of Georgia however it is mainly produced in four regions of Georgia - Samegrelo, Imereti, Guria and Adjara. Samegrelo region is the leading producer (47% of total gardens built within the program "Plant the Future" in 2018).

Farm types and yields

There are several large blueberry producers in Georgia and a relatively large number of small growers. The average yield of blueberry plantations is less than



Source: Interviews; Note: There are two sets of prices presented: higher prices for higher quality blueberries and lower prices for lower quality blueberries.

1 ton/ha, however most of the plantations have not reached their maximum fruiting, which happens in the fifth year after planting (EastFruit 2021c).

Produced varieties

The most recommended species for Georgia's climate and area are Legacy and Bluecrop. They both go under Northern Highbush blueberry varieties (AYEG, 2015).

Big Producers

- » One of the largest producers of blueberries is "FCO", which was established in 2015. The blueberries are harvested on 160 ha of land. The company has an ISO certificate.
- » Another large producer - "Blue Valley" was founded in 2015 in Guria (West Georgia). The company was supported by the Rural Development Agency (RDA) and own 20 ha plantations with 3 varieties of blueberries. The company has a GLOBALG.A.P. certificate.
- » "Agritouch" is also one of the leading producers of blueberry, which was established in 2018. The company owns 100 ha blueberry plantation in Guria. The company also offers agro consultations and full management of blueberry plantations. It owns cold storage facilities with a capacity of 600 sqm. The company exports both-fresh and frozen blueberries.

Wholesale markets

Relatively small amounts of fresh blueberries are sold in main open bazaars in big cities. Wholesale markets (open bazaars) in Tbilisi such as "Dezertirebi", "Navtlughi", "Gldani market", and "Avlabari Bazaar".

Domestic retail

Large blueberry producers sell their produce to local supermarket chains: Carrefour, Goodwill, Spar, Agroh. Mostly supermarkets are supplied with Georgian fresh blueberries. In off-season only imported, frozen blueberries are sold in the markets.

Processors

- » One of the largest processor companies in Georgia is "Kula", which was established in 2009. Kula is producing jams, juices, compotes and est. It is located in the Shida Kartli region, Georgia. Kula is producing juice and compote with blueberry.
- » LLC Glenberries is a processing company founded in 2018. The company profile includes freezing and producing F&V. The company was supported (600,000 GEL) by MEPA under the preferential agro credit program. The company is mainly importing raw materials (frozen blueberries) from Chile. The imported products are sorted, fan dried. After that comes calibration and final product is placed in shock freezers at minus 40 C for an hour. Products are mainly exported to the USA and Israel.

Specialized packers, traders, exporters

The transpiration cost of exporting blueberries is very high because in many cases road transport is not feasible and blueberries have to be transported by air. Furthermore, cargo planes are not available, and the product is exported by regular passenger airliners and the transportation cost of 1 kg blueberry is 3 USD. The airlines also have restrictions on the volume of the product and temperature regimes are not properly set for the product (Interviews). Similarly, the transportation cost to export products in the EU by air is very high. The competition in the EU market is relatively high, thus high transportation cost makes Georgian blueberry less competitive. Another alternative is road transport, which needs 5-6 days to reach the destination. However, in this case, the product quality is compromised (Interviews).

Considering all these aspects, many producers consider exports to Russia as the best strategy. This is the closest market and transportation requires less time. However, exporters realize risks associated with the Russian market and they are trying to diversify their export destinations (Interviews).

All the largest producers of blueberries are exporting the products. One of the largest exporting companies is "Agro+". The company is located in Samtredia, Georgia. "Agro+" received state support 100,000 GEL from the project "Plant the Future". The company has its own plantations, equipped with refrigerator and storage equipment which was funded by USAID. The "Agro+" is cooperating with "Agrolane" to achieve homogeneous quality and sufficient volumes. They are mostly exporting fresh blueberry in Gulf countries and Russia (Interviews).

Input suppliers and equipment

Seedlings

There are several seedling growing companies in the countries. Producers also import certified seedlings from abroad. The following three companies provide blueberry seedling, and they are registered in the "Plant the Future" program: LTD "Stalker" (Batumi), LTD "Agrora-Agora" (Zugdidi and Tbilisi), LTD "Georgian Agrarian Union" (Gurjaani).

Fertilizers and plant protection

Fertilizers and plant protection products are available at input shops in all the regions of Georgia. However, as blueberry is a new crop in Georgia, there is less knowledge about its care and cultivation. One of the largest input suppliers is "Cartlis". The company is operating in almost all regions of Georgia. Apart from selling inputs, the company has blueberry demo plots and agronomists provide consultations to farmers.

Irrigation systems

Irrigation systems: state-supported program "Plant the Future" provides the list of suppliers of drip irrigation systems along with their contact information (e.g. LTD "Agrobest", LTD "Gvaza" etc.)

Associations

Georgian Blueberry Producers' Council, Georgian Berry Growers' Association, Georgian Seed and Sapling Association (GEOSSA), Georgian Farmers Association (GFA), Elkana (in the case of organic production), PMAG. For more details see Section 5.4.

Logistics

- » The storage and refrigerator capacity are currently rather underdeveloped, causing farmers to sell their product immediately after the harvest (Interviews).
- » All the large producers have their own storage and refrigerator installed (Interviews).
- » If blueberries are stored in regular refrigerators, their shelf life is one week. However, if it is stored properly it can last 13 weeks (Interviews).

Projects

Under this program “Plant the Future: production of the perennial crops is co-financed, including blueberry orchards. Interestingly, if the blueberry orchards are between 0.15 ha to 0.5 ha 100% of costs are financed, including purchase and arrangement of seedlings, drip irrigation system and other necessary materials for the cultivation. The blueberry production is financed in the following regions: Imereti, Racha-Lechkhumi Kvemo Svaneti, Samegrelo-Zemo Svaneti, Guria and Adjara

Education, research, and extension

- » In October 2020, in the framework of dual education program Georgian “Blueberry Growers Association” together with Education Development and Employment Center provided practical and theoretical training course for students. The program was financed by EU4Youth program. The successful participants were offered three-month paid internship by “Blueberry Growers' Association”.
- » Trainings on blueberry production technics are also provided by “Cartlis Academy”.
- » “Agritouch” has a consultation agency, which provides different services to the farmers.
- » Institute of Subtropical Crops and Tea Industry Anaseuli, Ozurgeti, Georgia. The institute that has been functioning since 1930 also works on berries, among other crops.
- » Crop2shop website developed by Export Development Association (EDA) provides information on main export markets for blueberries



Quality infrastructure

Georgia's general QI for F&V is described in Chapter 7. The following QI actors and services are especially relevant for blueberries: Laboratorial Research Centre LLC in Batumi and Agro Lab LTD in Zugdidi are the laboratories which are closest to the main production

region of blueberries; STAR CONSULTING LTD, ISO CONSULTING LTD, GDCI LTD are consultancy companies with experience in facilitating the acquisition of certifications in blueberry production.

CHALLENGES:

- » Lack of knowledge and experience in blueberry production as the crop is relatively new to Georgia (non-traditional crop)
- » Lack of commercial orchards, therefore low production level
- » Lack of intensive gardens
- » Poor quality seedlings and inputs
- » Lack of sorting machines
- » Lack of infrastructure to achieve a complete so called "cold chain" (cooling berries with moving air will increase shelf life of blueberries)
- » Lack of proper refrigerators
- » Poor management of harvest and post-harvest
- » Poor hygiene practices during the harvesting and packaging processes
- » Poor food safety and hygiene practices in bazaars
- » High transportation cost
- » Lack of contract farming (sporadic trading) in wholesale trading
- » Low financial sustainability of state-supported orchards after the end of the state support program
- » Lack of qualified agronomists
- » Lack of cooperation
- » Lack of research and relevant literature regarding blueberry production

POTENTIALS:

- » Growing demand in international markets
- » Favorable climate condition and comparative advantage in production period
- » Cheap resources - electricity, water, labor
- » State support to small and medium farmers with different programs
- » Existence of leaders in the sector (recently established big producers using modern production technologies)
- » Formation of Georgian Blueberry Growers' Association by big modern producers
- » Blueberry season is relatively short in most producing countries; as production season in Georgia only coincides with Netherlands, Germany, Poland, Canada, and USA (Gelashvili 2019), cheap resources provide a cost advantage for Georgian producers
- » Favorable geographical location: easily accessible European, CIS and Asian markets
- » Deep and Comprehensive Free Trade Agreement (DCFTA) with the European Union

6.3 Walnuts

Global production and trade

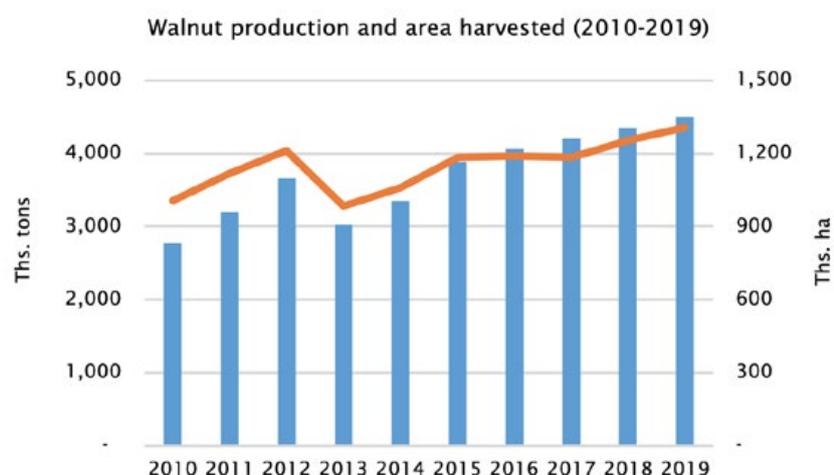
During the last 10 years (2010-2019) global production of walnut is characterized with increasing trend (Faostat 2021). During this period the production has increased by 63% from 2.8 mln. tons in 2010 to 4.5 mln. tons 2019. The most popular walnut tree species globally are: black walnut (*Juglans nigra*), butternut (*Juglans cinerea*) or white walnut trees, and english walnut (*Juglans regia*) trees (Worldatlas 2018).

In terms regional distribution, 71% of walnuts is produced in Asia, 20% - in Americas, 8% - in Europe, 1% - in Africa and 0.1% - in Oceania (Faostat 2021).

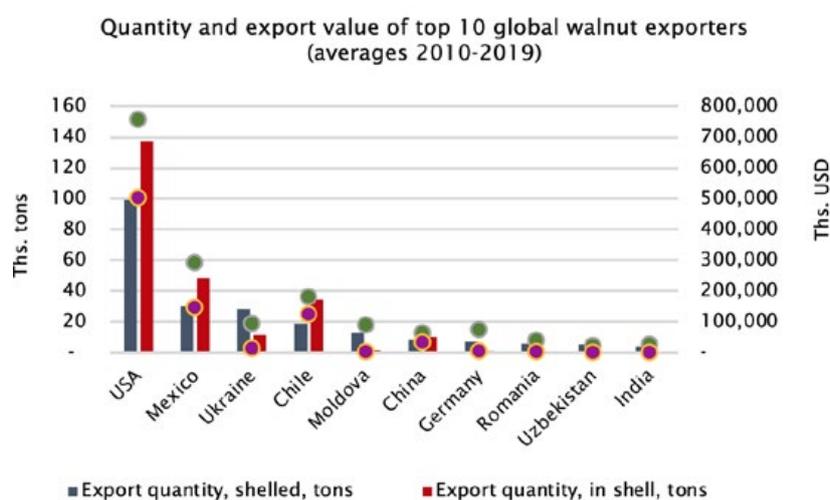
World's top 10 producers of walnut in 2019 were China (56.1% of global production), United States of America (13.2%), Islamic Republic of Iran (7.1%), Turkey (5.0%), Mexico (3.8%), Ukraine (2.8%), Chile (2.7%), Uzbekistan (1.1%), Romania (1.1%) and France (0.8%). Georgia's share is 0.1% and with a production of 6600 tons, it ranked 26th (Faostat 2021).

Walnuts are traded both in shell and shelled. Traded quantity of in shell walnut is higher than of shelled walnut, however the latter has higher value.

Main exporters of shelled walnut globally by quantity are United States of America, Mexico, Ukraine, Chile, Republic of Moldova, China, Germany, Romania, Uzbekistan, and India. United States of America, Mexico and Chile are leading exporters of in shell walnut (by quantity) as well. In terms of export values, United States of America leads both in case of shelled and in shell walnut exports. As to imports, in 2019 while main importers of shelled walnut were Germany (16.5%), Spain (7.5%), Japan (7.1%), Republic of Korea (5.3%) and Netherlands (4.9%) (Trade Map 2021).



Source: Faostat 2021



Source: Faostat 2021

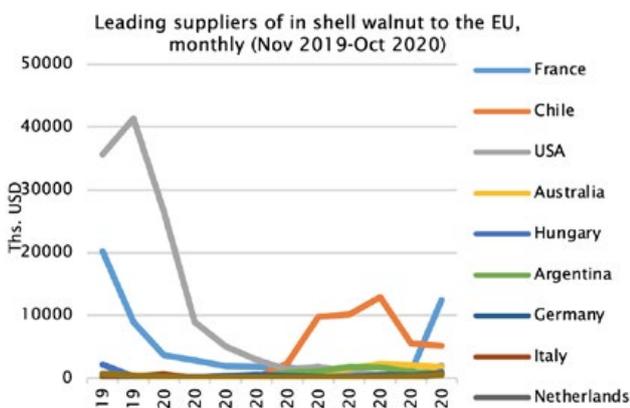
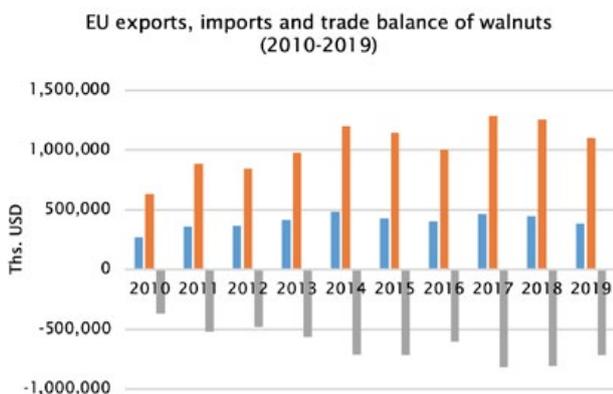
■ Export quantity, shelled, tons ■ Export quantity, in shell, tons

EU trade

EU is a large importer of walnuts. Its trade balance is negative, and imports show increasing trend. Major importers of shelled walnut in the EU are Germany, Spain, Netherlands, UK and France. In shell walnut is imported mostly by Italy, Spain, Germany, Belgium and Netherlands.

The major suppliers of shelled walnut to the EU are Chile, United States of America, Germany, Netherland, Ukraine, China, France, Republic of Moldova, Viet Nam and Romania.

While in shell walnut is mostly supplied by the United States of America, France, Chile, Australia, Argentina, Germany, Netherland, Italy, Hungary, and Spain.



Source: Trade Map 2021

Trends

The following trends have been observed on the EU market of walnut for the last few years (CBI 2021b):

- » Walnut consumption is growing as tendency for healthy eating habits becomes more prominent.
- » Producers focus more on diversification of walnut products, rather than increase in quantity of supplied walnut. Such products like walnut oil (increasingly used in the cosmetics industry), walnut milk, walnut butter, walnut snacks, walnut meat alternatives and walnut spreads similar to

hummus become more popular at European and international markets.

- » Leading nut-trading companies from Europe opt for vertical integration and consider investments in orchards in Central Asia and Eastern Europe.
- » Product competition for walnuts on the European market includes all other types of edible nuts. Almonds, pistachios and cashew nuts are more frequently used as a salty snack, while walnut is used mostly as an ingredient.
- » Major competitors originate from leading walnut producer countries and developing countries such as the United States, Chile and France, but also from emerging walnut producing countries, such as China, India, and countries in Central Asia and Eastern Europe.
- » Given high growth rates in harvested area and production (15-20%), Chile is expected to become the major competitor at international market.
- » Importers and intermediaries play significant role in walnut value chain. While the producer can supply to the market directly. In most cases importers and wholesalers “make the first entry point” in the supply chain for walnuts from developing countries. Examples of European walnut importers include Besana, Märsch, Nutwork, Global Trading, Catz International, Chelmer Foods, Community Foods and Free World Trading.
- » In practice, quality and price of walnuts are usually determined by a combination of the style of the product (whole, mixtures or pieces), the look of the kernel, the grade and the variety. Generally, higher prices are achieved with light-coloured kernel varieties, such as Chandler, and bigger sizes. (CBI n.a.c)

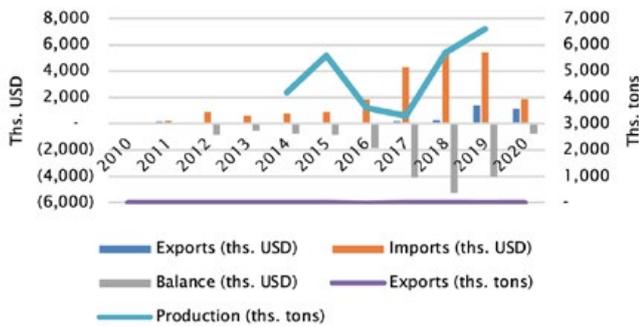
Georgian export potential

Production: Georgia’s production over the last six years is characterized with increasing trend.

Exports and export destinations: Georgia has negative trade balance and walnut imports were particularly high in 2017-2019. Similar to imports, exports also started to increase but declined in 2020.

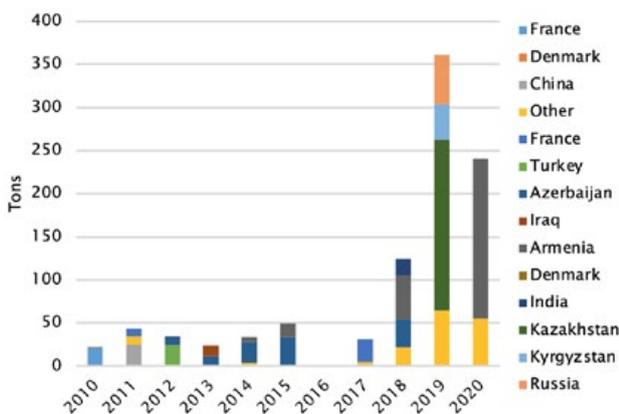
Exports are quite volatile with a lot of spikes and zero values in some periods like March and August. Notably, in 2019 Georgia exported walnuts every month which was not the case in any other year. This might be driven by increased production.

Georgia walnut production, import, export and trade balance (2010-2020)

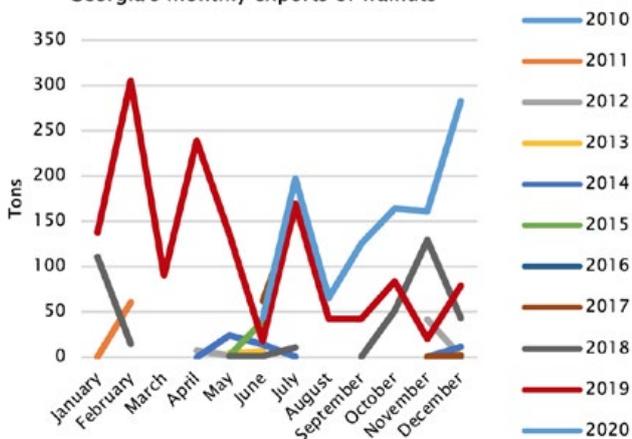


Source: Geostat 2021

Export destinations of Georgian walnut (2010-2020)



Georgia's monthly exports of walnuts



Source: Trade Map 2021

Georgia is mainly focused on the exports into CIS countries, however occasionally (once or twice since 2010) it also exports small quantities to the following EU countries: Bulgaria, Czech Republic, Denmark, Finland, Greece, Germany, Sweden, Finland, France, and Italy.

As to Georgia's position at international export market, Georgia ranks 57th by export value of in shell walnut, 61st- for shelled walnut export value, 51st – in shell walnut export quantity and 57th for export quantities of shelled walnuts.

Ukraine and Turkey are considered to be the major competitors of Georgia.

RCA: Georgia's RCA for shelled walnut was 2001-2019 is on average less than one implying that Georgia does not have revealed comparative advantage for shelled walnut. Although RCA for shelled walnut in 2019 was 4.1 which a promising indicator. RCA for in shell walnut was higher than one only once during the last 20 years. Therefore, Georgia does not have revealed comparative advantage for in shell walnut.

ICT's export potential and export diversification potential indicators: In this tool, shelled walnut is listed among the top 50 products with export potential to World and ranks as 38th. It is also listed among top 50 products with export potential to the EU & West Europe and ranks as 20th.

EU requirements for export

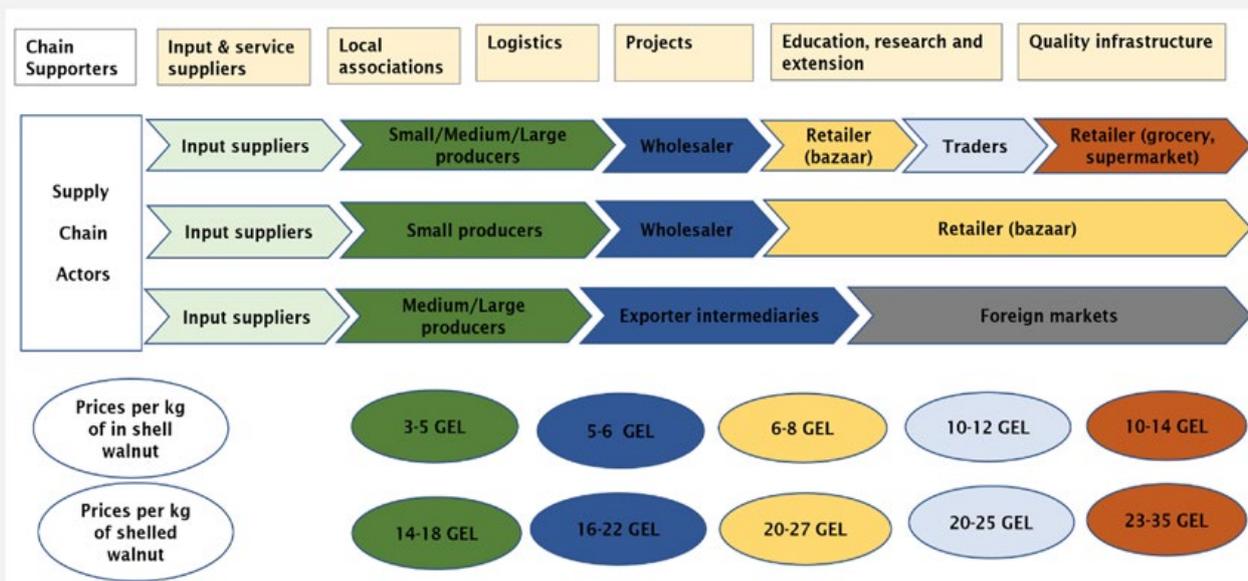
General requirements for the export of F&V to the EU are listed in Chapter 4. Specificities for walnuts:

- » Pesticide MRLs for walnuts
- » Maximum limits exist for aflatoxin contamination
- » Marketing standards: the EU general marketing standards (EU Implementing Regulation (EU) No 543/2011, Annex 1 Part A) apply for walnuts in shell, but not for shelled walnuts. Other official standards are: UNECE standard for walnut kernels and UNECE standard for walnuts in shell.
- » Packaging: Common packaging for nuts in shell are net bags, polybags, cartons and flat jute fabric bags. Common packaging for nut kernels is vacuum bags of 5 or 10 kg placed in cartons (CBI n.a.c).
- » Walnuts are among the most common food allergens and therefore allergen advice must be clearly visible on retail packaging.

Production

- » Mentioned in IV-VI centuries BC among other plants produced in Georgia (Agrokavkaz 2020)
- » Produced in all regions of Georgia, but relatively new industry which started to develop commercially since 2015 (Interviews)
- » 307 orchards in total with the following distribution among regions: Kakheti (42%), Kvemo Kartli (25%), Shida Kartli (19%), Imereti (9%), Mtskheta-Mtianeti (3%) and less than 1% in Guria, Adjara and Samtskhe-Javakheti regions respectively (AWPA 2018)
- » 500 farmers with a total of 3500 ha of orchards (AWPA 2021); Out of 3500 ha of orchards, 2809 ha were built with state support program (AWPA 2020)
- » While Adjara region's share in the number of orchards is very small, it is a leading producer accounting for 30% of total production in 2019 (Geostat 2021)

Value chain map of Georgian walnuts



Source: Adapted from the publication Agro Solutions LTD study "Walnut Market Research and Development Opportunities in Georgia", 2017

- » By 2026 17,000 tons of walnut is expected to be produced from Rural Development Agency funded orchards (projection is based on the statistics provided by RDA and presented by AWPA)
- » For commercial purposes walnut orchards are recommended to be built in Imereti, Kvemo Kartli, Samtskhe-Javakheti and Kakheti regions (Narchemashvili 2019)

Produced varieties

Cultivated varieties – regular, shamira, black, grey, heartshaped, manjurian, ideal, franketa, lara, pedro, pecan and chandler (AWPA 2020, PMCG 2016).

Farm type: 60-70%- up to 5ha, 20% - 5-20 ha, 10% - more than 20ha

Big producers

- » Agro Line (200 ha orchard)
- » LTD „Tengo” (84 ha orchard in Kakheti region, funded by EU)
- » NATS Incorporated (private investment)
- » LTD “Deveplus” (5 ha orchard in Bolnisi, Kvemo Kartli region, funded by state support program)
- » Individual producer M. Chegoshvili (7.3 ha in village Vazisubani in Kakheti region, state supported)

Wholesale markets

Regional wholesale markets and wholesale markets (open bazaars) in Tbilisi, namely “Dezertirebi”, “Navtlughi”, “Gldani market” and “Avlabari Bazaar”.

Domestic retail

- » Georgian supermarkets sell around 100 – 150 tons of shelled walnuts during the year (Interviews).
- » Domestic consumption is the highest during New Year Eve
- » Supermarkets: Carrefour, Goodwill, Spar, Ori Nabiji, FRESCO, Magniti, Zgapari

Processors

Overall, four processors to be opened soon in Kakheti, Mtskheta-Mtianeti and Kvemo Kartli. American Investment Company “G Investment Corp” is opening a processor in Nichbisi (Mtskheta-Mtianeti).

Specialized packers, traders, exporters

Walnuts are transported mainly by trucks, without packaging. Walnut seedlings are transported via refrigerated trucks. Each truck contains 20-25 thousand seedlings and the price of seedlings transportation is 2000-2500 USD per truck.

Inputs and equipment

Seedlings

90% of seedlings are imported from Turkey, Italy, and US. Local nurseries: Gogra.ge, WalTree LTD, LTD “Mtsvane Sakhli”, Cooperative “Niqozi”, LTD “Pademi”, Cooperative “Nergebi”, LTD “Kakali”, LTD “Georgia’s Agrarian Unity”.

Fertilizers and plant protection

Fertilizers are available in all regions through input shops which are mostly supplied mostly from Tbilisi by companies like Kartlisi.



Irrigation systems

State supported program “Plant the Future” provides the list of suppliers of drip irrigation systems along with their contact information (e.g. LTD “Agrobrest”, LTD “Gvaza” etc.)

Associations

Almond and Walnut Producer Association (AWPA), Georgian Seed and Sapling Association (GEOSSA), Georgian Farmers Association (GFA), Elkana (in the case of organic production), PMAG. For more details see Section 5.4.

Logistics

Company “Agrolideri” is constructing a storage (756 tons) and processing facility in the village Ftsa (Kareli).

Projects

- » Adjara’s Agricultural Program: 80% of the project cost was covered by the Ministry, 20% by farmers
- » “Plant the Future” implemented by RDA
- » Chandler demonstration farms set up in all Adjarian municipalities (2014-2015) with help of ENPARD.
- » The USAID Agriculture program’s grant to AWPA for organizational development
- » AWPA’s trainings, group chats in social media platforms and walnut growers’ database

Education, research, and extension

- » Agro Consulting Centre (ACC) offering farmers a one-year consulting package which includes online and phone consultations and two visits to the orchard; laboratory analysis of soil; chemicals and seedlings; development of agro calendars, information brochures, and trainings.
- » Agro Solutions LTD offering market research, business plan development, preparation of agro technological Maps, laboratorial service, gardens’ cultivation, technical services etc.
- » Ministry of Environmental Protection and Agriculture (MEPA) municipal extension centers offering consultations to producers and increasing their awareness of state support programs.

Quality infrastructure

Georgia’s general QI for F&V is described in Chapter 7. As walnut production is relatively new in Georgia and plantations were established throughout the country, there are so far no QI actors and services available with highly specialized knowledge on walnuts.

CHALLENGES:

- » Lack of frost-resistant varieties (interviews)
- » Outdated production technologies (Agro Solutions LTD 2017)
- » Low product quality (Agro Solutions LTD 2017)
- » Lack of commercial orchards (PMCG 2016)
- » Lack of experience with modern varieties
- » Lack of experience in production as walnut is relatively new product to Georgia (interviews)
- » Poor experience with Chandler variety as it turned out to be inconsistent with climatic conditions of selected regions (interviews)
- » Poor hygiene practices in open bazaars
- » Sporadic wholesale trading
- » Absence of processor (PMCG 2016; interviews)
- » Poor post-harvest handling practices (lack of cracking and sorting machines) (PMCG 2016)
- » Non-diversified production (lack of higher value-added products like walnut oil, walnut butter etc.) (PMCG 2016)
- » No packaging (Agro Solutions LTD 2017);
- » No credible studies neither for local nor international walnut markets (AWPA 2021)
- » Lack of nurseries producing high quality seedlings (PMCG 2016)
- » Lack of equipment needed to produce seedlings
- » High prices on seedlings (PMCG 2016)
- » Absence of national certification system although SRCA has started certification program for seedlings (Agro Solutions LTD 2017)
- » Lack of agronomists (interviews)
- » Less competitive Georgian seedlings (non-standardized) (PMCG 2016)
- » Low sustainability of state-supported orchards after state support program is terminated
- » Lack of organizational and technical development of association (AWPA 2020)
- » Low visibility of association at local and international markets (AWPA 2020)
- » Absence of “exit strategy” for state programs

POTENTIALS:

- » High value crop
- » High export potential to EU and World market
- » Availability of state support programs for developing walnut orchards
- » Existence of AWPA and availability of donor funding for its further development

6.4 Greens

In this study, greens are interpreted as fresh culinary herbs (fresh leaves used for flavoring food). While hundreds of plants are grown for this purpose worldwide, most popular greens include rosemary (*Rosmarinus officinalis*), fennel (*Foeniculum vulgare*), mint (*Mentha*), parsley (*Petroselinum crispum*), oregano (*Origanum vulgare*), basil (*Ocimum basilicum*), coriander or cilantro (*Coriandrum sativum*), chives (*Allium schoenoprasum*), sage (*Salvia officinalis*), dill (*Anethum graveolens*), tarragon (*Artemisia dracunculus*), horseradish (*Armoracia rusticana*), and thyme (*Thymus vulgaris*) (AgriOrbit 2020; Kaiser and Ernst 2020). The most common greens in Europe include basil, parsley, coriander or cilantro, chives, thyme, oregano, rosemary, dill, mint, sage, tarragon (*Artemisia dracunculus*), chervil (*Anthriscus cerefolium*), marjoram (*Origanum majorana*), and lemongrass (*Cymbopogon citratus*). Basil makes up 60-75% of the total EU consumption of greens (CBI 2020f).

Global production and trade

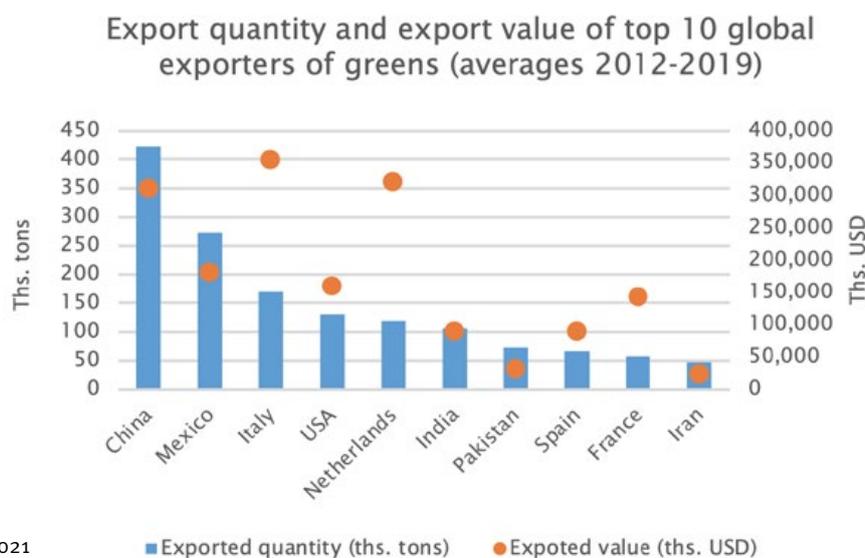
Worldwide statistics do not provide separate figures on the production of greens. In FAOSTAT data, greens are included into the category “vegetables, fresh nes”. The production of crops in this category increased from 260 million tons in 2010 to 312 million tons in 2019. Asia has the largest average (2010-2019) share (87%),

followed by Africa (6.8%), Europe (3.4%), Americas (2.7%) and Oceania (0.2%) (Faostat 2021). World’s top 10 producers of “vegetables, fresh, nes” in 2019 were China (60%), India (12%), Viet Nam (4%), Nigeria (2%), Philippines (2%), Myanmar (1%), Nepal (1%), Republic of Korea (1%), Brazil (1%) and Japan (1%). Georgia’s share in global production is tiny and accounts for 0.006% (Faostat 2021).

Worldwide imports of greens (HS Code: 070999) showed an increasing trend over the last decade and amounted to around 2.7 billion USD in 2019. Between 2015-2019, annual growth in imported value of greens has been 5%. For the same period, annual growth in imported quantity has been negative and accounted to -3% (Trade Map 2021).

The worldwide top 10 exporters of greens are China, Mexico, Italy, USA, Netherlands, India, Pakistan, Spain, France and Iran (ranked by average export quantities 2012-2019). The top 10 importers of greens are United Arab Emirates, France, Germany, Mauritania, USA, Hong Kong, China, Netherlands, Canada, Russian Federation and Singapore (ranked by average import quantities 2012-2019) (Trade Map 2021) (Note: This study presents trade statistics of greens for 2012-2020 because HS code for greens was changed in 2012).

Georgia ranks as 34th by export quantity and as 43rd by export value among global exporters of greens (averages of 2012-2020) (Trade Map 2021).

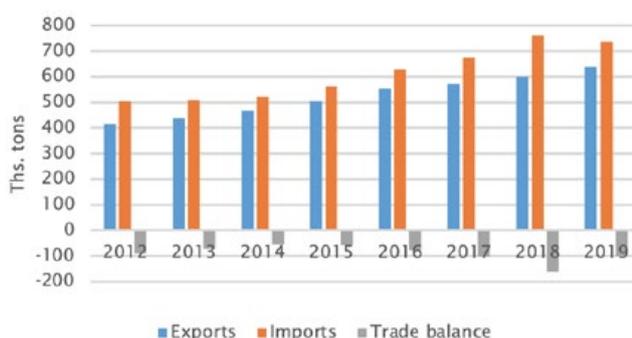


EU trade

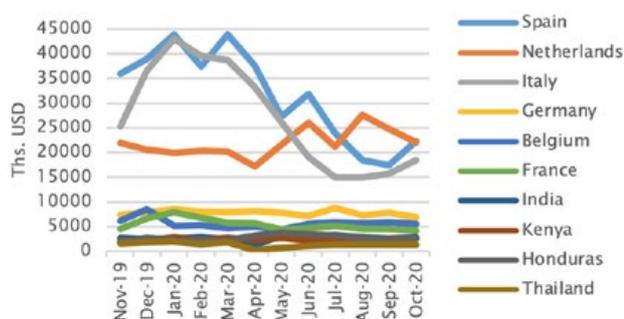
The EU's trade balance for greens has been negative for all years in 2012-2019. Both exports and imports experienced an increasing trend for the last eight years (Trade Map 2021).

EU's trade in greens is dominated by intra-EU flows. The main importing countries of greens in the EU (by value, average of 2012-2019) are Germany, UK, France, Netherlands, Austria, Belgium, Sweden, Denmark, Italy and Czech Republic. The following countries are top 10 suppliers of greens to the EU (by value, average of 2012-2019): Italy, Spain, Netherlands, France, Germany, Belgium, Kenya, India, Morocco, and Thailand (Trade Map 2021).

EU exports, imports and trade balance of greens (2012-2019)



Leading suppliers of greens to the EU, monthly (Nov 2019-Oct 2020)



Source: Trade Map 2021

Trends

The following trends have been observed on the EU market of greens for the last couple of years (CBI 2019; CBI 2020f; CBI 2020g; Trade Map 2021; Market Research Future 2021).

- » Increasing demand for greens; Increasing interest of EU consumers for culinary experiences, natural food, healthy food.
- » Increasing imports
- » Domination of EU producers in the EU trade (Spain, Italy and Netherlands jointly account for 60% of all foreign supply of greens to the EU countries).
- » A stable supply of green from non-EU growers (5-10% of imports come from non-EU countries).

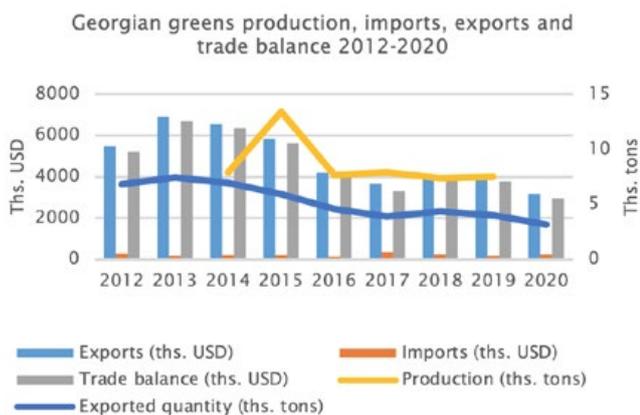
- » Fast-growing production of greens in the EU countries; Consumers/supermarkets prefer locally produced greens (there has been a growing popularity of regional produce in EU countries); it is difficult to compete with EU producers during summer season (most imports of greens occur from October to March).
- » As the majority of greens worldwide were sold straight to restaurants, a standstill of this distribution channel during the COVID-19 pandemic harshly affected the market for greens.
- » Growing demand for greens produced with sustainable production practices (e.g., GFSI); Growing demand for organic greens.
- » Growing demand for potted greens (herbs sold in pots). This marketing line is related with higher costs for transport as well as additional strict phytosanitary requirements (potted greens are almost always supplied by local producers)
- » Fierce competition (general of fresh F&V markets); buyers rules matter
- » Alongside stable quantities, quality, freshness, appearance, flavour and certification (e.g., GLOBALG.A.P. for production and BRCGS, IFC and other HACCP-based management systems for packing) are most important aspects for entering the EU market of greens; suppliers are asked to be transparent about every step of greens value chain
- » Regional differences in terms of demanded varieties, based on culinary traditions (e.g., chives, tarragon, parsley and chervil in France, dill in Scandinavian market, mint, parsley, chives in Germany, and dill, parsley and oregano in Eastern Europe).
- » Differences in terms of stability and stringency of requirements between North-western Europe and Eastern Europe markets. The former is more stable market, whereas the latter is less strict on packaging standards.

Georgian export potential

Production: Georgia produces around 8 tons of greens annually. Imereti is the main producing region for greens in Georgia (63%; average of 2016-2019), followed by Kvemo Kartli (14%; average of 2016-2019) (GeoStat 2021).

Exports and export destinations: The country's trade balance for greens (HS code 070999) has been positive for all years in 2012-2019, with exports being considerably higher than imports. The exported quantity showed a slight decreasing trend over the last eight years (GeoStat 2021; Trade Map 2021). In addition to dill (main herb exported), coriander and parsley, Georgia also exported around 10 tons (export value of 14 ths. USD) of celery (HS code 070940) in 2020.

In line with the production season, Georgia's exports of greens occur between November and May, with a peak in March-April. There are almost no exports between May and October (GeoStat 2021). The main export destinations of Georgian greens (both in terms of quantity and value) have been Russian Federation, Belarus, Ukraine, Kazakhstan, and Azerbaijan. Only small amounts of greens have been exported to the EU (Romania, Poland, Greece, Latvia, Lithuania, and Bulgaria). The share of EU countries in Georgian green exports have been around 6% on average in 2012-2020 (Trade Map 2021).



Source: GeoStat 2021; Trade Map 2021

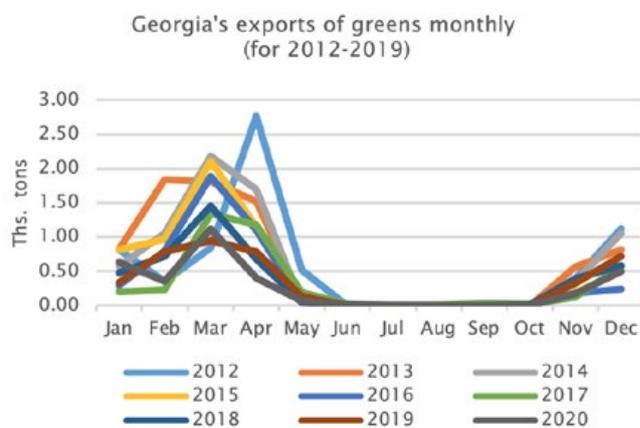
According to respondents, Iran is currently the main **competitor** of Georgia on CIS markets (e.g., Russia, Ukraine). Iranian growers have relative cost advantage due to much lower labor costs compared to Georgia as well as their production system - growing greens without greenhouses. As the latter is possible in Iran until around February, only after February are Georgian greens more competitive. This is also confirmed by the monthly trade statistics of Georgian green exports, which usually peak around March-April. Uzbekistan is another competitor of Georgia on Russian market of greens.

CBI's list of promising F&V product for export to the EU includes greens (fresh herbs) (CBI 2020b). EU's imports of greens are less affected by economic crisis (compared to CIS countries). Import quantities have been increasing without drop in prices over the last decades. As greens are important culinary ingredients and account for only small share in the final cost of dishes, the demand for greens is rather inelastic. Eurostat's forecasts a further increase of demand for greens in the EU markets, providing good opportunities for non-EU imports (GIDG 2015).

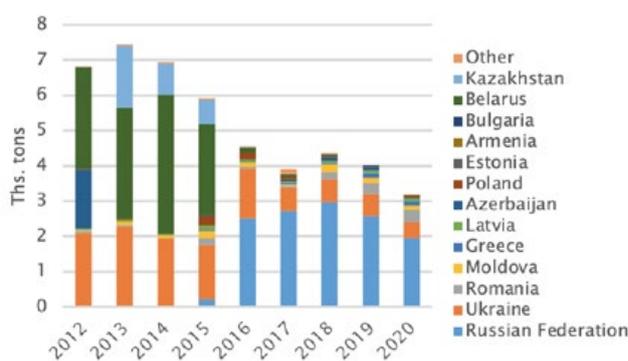
RCA: Georgia's RCA for greens has consistently been > 1 in 2012-2020 (Trade Map 2021), indicating a revealed comparative advantage of the country for this product.

ICT's export potential and export diversification potential indicators: In this tool, greens are not included as a separate category (only as part of Vegetables, fresh or chilled; HS code 0709XX). This latter product category is listed among the top 50 products with export potential to the EU & West Europe

and ranks as 41st. Georgia's export potential of this product category to the world is 4.1 million USD and export potential to the EU & Western Europe is 1.4 million USD. The product category is not listed among top 50 products with export diversification potential of Georgia (ITC 2021a; ITC 2021b).



Export destinations of Georgian greens 2012-2020



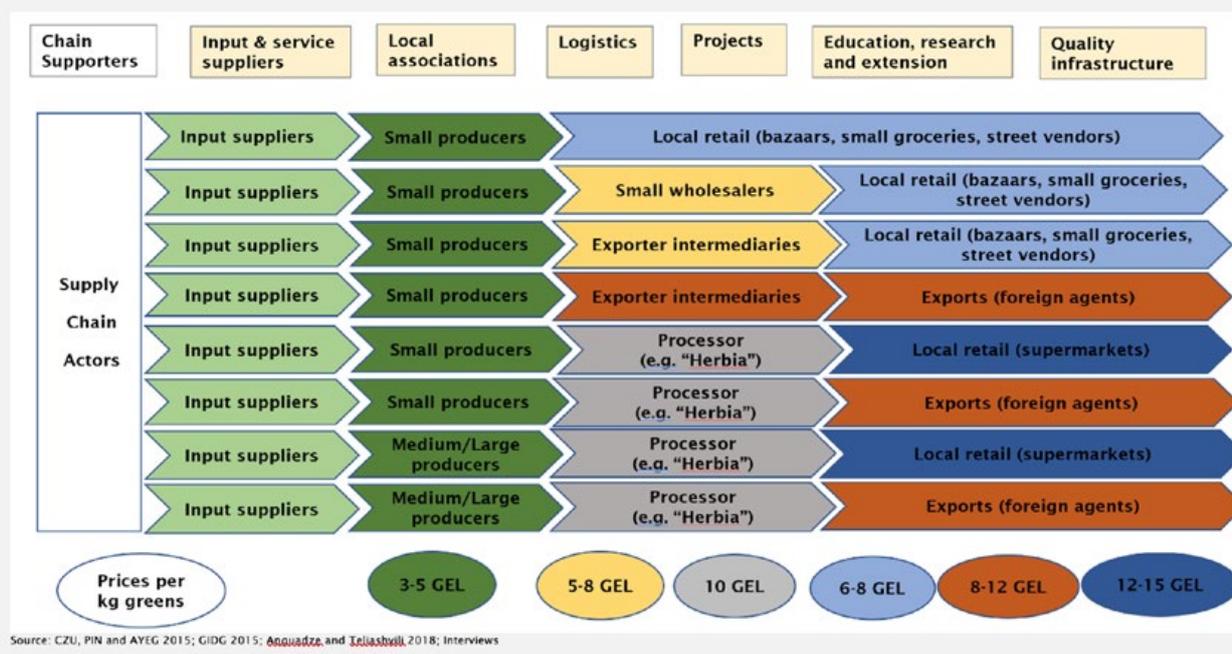
Source: Trade Map 2021

EU requirements for export

General requirements for the export of F&V to the EU are listed in Chapter 4. Specificities for walnuts:

- » Pesticide MRLs for dill, coriander and parsley
- » Marketing standards: the EU general marketing standards apply (EU Implementing Regulation (EU) No 543/2011, Annex I Part A). There are no other official international standards for greens. Defining some standards, e.g. in accordance with the main or strictest buyers, is however a must to avoid frequent rejection. Anyone can do this, but larger scales such as national level seem most reasonable (example Israel).
- » Packaging: Fresh herbs need protective packaging to maintain their freshness and quality. Packaging differs by value chain step and is typically as follows: Cardboard boxes with plastic liner, polyethylene or polypropylene bags are used for "Send for re-packaging" and "Wholesale", having weights of 1-3 kg and 0.05-1 kg, respectively. As for "Retail", convenient plastic flow packs, sealed plastic trays, re-closable punnets weighing 10-60 g are typically used.

Value chain map of Georgian greens



Production

in the region, 400 ha are in Gardabani Municipality (Anguladze and Teliashvili 2018).

Produced varieties

Georgia has a long-standing tradition in growing various greens (more than 25 varieties). Dill, coriander, and parsley are three mostly produced greens. Other commonly produced herbs include leaf celery (*Apium graveolens* var. *secalinum* Alef.), garden cress (*Lepidium sativum*) and purple basil (*Ocimum basilicum*, cultivar *Osmin Purple*). Some producers have recently started to cultivate new varieties (not previously known in Georgia) such as rucola, basil (green), and rosemary.

Production season

The main season for production of greens (in greenhouses) is from November to May. Coriander and parsley (but not dill) can also grow outside starting from end of April. In summer, greens are produced for local markets (there are no exports during summer months). (Interviews)

Production regions

- » The main producing region is Imereti, with average share of 63% in 2016-2019 (GeoStat 2021). Particularly popular is Tskaltubo Municipality (with relatively short winter, hot summer, and average annual temperature of 15 °C). Around 12,000 greenhouses operate in the Municipality (GIDG 2015; CZU, PIN and AYEG 2015). According to respondents, greens are currently cultivated on around 1000 ha in the Tskaltubo Municipality.
- » Another growing region is Kvemo Kartli, contributing on average 14% to country's greens production (GeoStat 2021). Out of 477 ha cultivated for greens

Production systems and yields

- » Greens are mostly produced by family households who operate small greenhouses of around 500m².
- » Greens are harvested 8-10 times per season. Only manual harvesting is practiced in Georgia. According to respondents, availability of labor is not a problem.
- » Average yields of greens are 15-20 tons/ha (Interviews).
- » Production is associated with food losses of around 15% due to inappropriate farming techniques, weather conditions, and diseases. Farmers experience further losses during the years when there is an oversupply on markets (e.g., 2017-2018) (Anguladze and Teliashvili 2018).

Big producers

- » There is one big producer – LTD “Herbia” (founded in 2006) who employs around 150 people and operates around 25 ha of greenhouses. “Herbia” has fully integrated value chain for greens (owning production, collection, sorting, packaging, and transporting facilities) and supplies local supermarkets (95% of the produce) and export markets (5%). In addition to own production company also buys greens from local producers (around 100 producers) based on contract terms (e.g., quantities defined but prices change based on market; per kg of greens, Herbia offers 0.50-1.0 GEL more than the prevailing market price). Herbia is the only herb's producing company in Georgia that owns a Global G.A.P. certificate (obtained in 2009) (Interviews).

- » There are some newly established cooperatives that include "Imeruli Bostneuli" (17 members that can produce up to 100 tons of greens per season (Interviews)), "Geguti" and "Dovlati".
- » "Imereti Greenery" (a high-tech hydroponic greenhouse producing more than million heads of lettuce per year) and "Smart Logistics LLC" (big producer of salads) also own GLOBAL G.A.P. certificate but do not produce culinary herbs.
- » While dried herbs (spices) are produced in Georgia, they are mostly based on other herbs (often wildly grown) than mostly produced herbs (dill, parsley and coriander). Among others, companies producing spices include "Sunelis Saxli", "GEO", "Marneuli Food Factory", "Suneli", "Ojakhuri", "Georgian Herbs LLC" and "Waime Spices".

Wholesale markets

- » Greens produced in Imereti region are brought to Kutaisi wholesale market ("Nikea" market). From there, greens are transported to other wholesale markets in Georgia (e.g., Tbilisi, Gori, Batumi) (Interviews)
- » Greens produced in Kvemo Kartli are delivered to local wholesale markets as well as to Tbilisi (Interviews)

Domestic retail

- » Greens are important ingredients in Georgian traditional cuisine. Per capita consumption statistics for greens in Georgia are not available; only available category is per capita consumption of vegetables, which show a slight decreasing trend for the last decade (GeoStat 2021).
- » Almost 100% of domestic demand is covered by local production (CZU, PIN and AYESG 2015; GeoStat 2021). Small quantities of imports include specific greens used in Mediterranean and Asian cuisine, demanded by restaurants and large supermarkets (Interviews).
- » Greens are sold on local markets (bazaars), small shops for F&Vs or in supermarket chains (Carrefour, Goodwill, Spar, Fresco, Nikora, Ori Nabiji, Magniti, Zgapari).
- » Prices of greens vary across regions, being highest in Tbilisi. While producer prices and wholesaler prices vary by variety, retailer prices are similar for all main categories of greens. Average mark-up of retailers is around 30% (CZU, PIN and AYESG 2015).

Processors

- » Most greens produced in Georgia do not undergo any form of processing. Damaged and wilted greens are sorted out by producers (Anguladze and Teliashvili 2018).
- » "Herbia" is the only company in Georgia that processes greens. The company has recently started to produce herbal sauces and marinades, combining both Italian and Georgian recipes. New products include dill sauce, red adjika, green adjika, basil pesto, and parsley pesto, among others (EastFruit 2020c).

Specialized packers, traders, exporters

Packaging

- » There are no specialized providers of services such as cleaning, sorting, grading or packaging.
- » Greens are prepared by producers either for local markets (packed in bunches and tied with rubberbands) or for exports (packed in carton boxes with the capacity of 30 kg). Cost of latter packing is around 10 GEL per 30 kg carton box (Anguladze and Teliashvili 2018).
- » "Herbia" operates several sorting and packaging centres for herbs. Herbs are bounded either in 50-80-100 g bunches (put in 1-1.3 kg cartons) or in 150-300 g bunches (put in 20-30 kg cartons). Ice bricks are used for maintaining quality during the transport (GIDG 2015).
- » The Spar group in Georgia has recently developed "Lileo" – a brand that packages greens for selling in local supermarkets. They mostly source greens at local bazaars in Tbilisi (Interviews).

Traders, exporters

- » According to respondents, there are 10-15 exporters (local intermediaries) in Imereti that perform export preparation (collecting, packaging, and storing) and transporting of greens.
- » Some exporters own warehouses that are refrigerated. Others use refrigerated containers not only for transport but also for storing greens (Anguladze and Teliashvili 2018).
- » The land transportation of Georgian greens to different countries last from 3 to 7 days. The transportation with refrigerated trucks to Moldova costs around 700 USD/ton and to Romania around 1000 USD/ton (Anguladze and Teliashvili 2018). Export cost (by land) to Ukraine amounts to 1500 USD/ton. The transportation cost for herb exports by air is around 2500 USD/tons (GIDG 2015).

Input suppliers and equipment

Main inputs used in greens production are seeds, pesticides, fertilizers greenhouse, and irrigation.

Seeds

- » Seeds are imported from Ukraine, Russia, Switzerland, Italy and Netherlands. Main seed

brands supplied are “Zaden” and “Braker’s Brothers” (CZU, PIN and AYESG 2015; Anguladze and Teliashvili 2018). Seeds sold to Imeretian greens producers are usually sourced at agro-shops in Tbilisi (CZU, PIN and AYESG 2015).

- » Some family farmers use self-produced seeds. Furthermore, seeds purchased by small farmers are often of low quality and productivity (CZU, PIN and AYESG 2015). The difference in seed quality is also reflected in big range of prices from 15 GEL/kg to 350 GEL/kg (Anguladze and Teliashvili 2018).
- » Herbia mostly uses seeds from “ENZA Seeds” (Interviews).

Plant protection

As for pesticides and herbicides, the following products are mostly used: Ridomin Gold (pesticide, Switzerland), “Corz Super” (pesticide, Bulgaria), “Prome Gold” (herbicide, Bulgaria) and “Shock”, herbicide, China) (CZU, PIN and AYESG 2015).

Fertilizers

Most farmer use organic fertilizers that are sourced locally (Interviews).

Greenhouses

- » There exist mainly low greenhouses and high greenhouses (CZU, PIN and AYESG 2015).
- » Greenhouses are usually made by polyethylene plastic (glass greenhouses are very seldom).
- » The greenhouses are unheated and low-tech (no ventilation, no temperature control, no drainage) (CZU, PIN and AYESG 2015).
- » The investment cost for heated and unheated greenhouses differs greatly; 15 USD/m² and 60 USD/m² for unheated and heated greenhouses, respectively (Anguladze and Teliashvili 2018).

Irrigation

Most producers do not have specific irrigation systems installed and manually water their plants. Generators are used to pump water from ground and sprinkler systems. Only few producers use drip irrigation. In winter months, greens are irrigated only once or twice a month (Anguladze and Teliashvili 2018).

Associations

Greens Producers’ Association of Georgia, Georgian Seed and Sapling Association (GEOSSA), Georgian Farmers Association (GFA), Elkana (in the case of organic production), PMAG. For more details see Section 5.4. The Imereti Regional Chamber of Commerce and Industry is part of Georgian Chamber of Commerce and Industry (GCCl). GCCl supports Georgian entrepreneurs in exploring export markets and finding business partners abroad.

Logistics

- » There are no specialised transport and storage companies for greens.
- » Most producers sell greens immediately after the harvest (harvesting usually starts only after middleman orders particular quantity of greens). Producers who have foreign end markets usually need to store greens for a few days. Mostly basements or some free rooms in houses are used. Only few producers use refrigerated storages, where greens are stored under -2 °C (Anguladze and Teliashvili 2018; Interviews). The recommended storage temperature is between 0 and 3 °C and is only practiced by “Herbia”. In 2016, 8 cold storage facilities (with the total capacity of around 900 tons) had operated in Tskaltubo. Their usage was very low, ranging from 3% to 10% (Anguladze and Teliashvili 2018).
- » Transportation of vegetables happens by road, railway, marine and air. While air transportation is the fastest option, it is also the most expensive one. Road transport (both non-refrigerated and refrigerated) is less expensive than air transport but it is slower (Anguladze and Teliashvili 2018).

Projects

- » The Government of Georgia (GoG) supported the creation of two new greenhouses and expansion of 34 greenhouses in Imereti Region. The state-of-the-art greenhouse established by LTD Herbia was also financially supported by GoG (MEPA 2019b).
- » In May 2018, the International Conference Herbs of Georgia took place in Kutaisi, with the goal of promoting country’s exports of fresh culinary herbs. The event that attracted around 60 industry players was organized by EU, EBRD and FAO in the framework of EU4Business Initiative (FAO 2018).
- » Herbs for Growth (Hego) project seeks to improve performance of the herb sector and contribute to endemic herb species conservation in Greece, Moldova, Armenia and Georgia.
- » Greenhouse Clusters Diagnostics Team at TBSC is currently working on researching the Greenhouse Cluster in Imereti Region. This is a follow-up project of a study by UNIDO on mapping of emerging and potential manufacturing and agribusiness clusters in Georgia. The results on the Greenhouse Cluster are expected to be delivered by April 2021 (Interviews).

Education, research, and extension

- » A course on vegetable production is given in agronomy and agrotechnology programs at AUG and the Technical University of Georgia. There is no specific lecture on herbs.
- » Information and Consultation Centres (ICCs), the state extension service at municipality level

- » A training on modern production and marketing of herbs was conducted in May 2018, in the framework of EU4Business initiative (FAO 2018).
- » MEPA's electronic library includes Georgian language publications on parsley and dill cultivation.
- » Crop2shop website developed by Export Development Association (EDA) provides information on main export markets for greens
- » Demonstrative Base of Annual Crops (in Tsilkani, Mtskheta)

Quality infrastructure

Georgia's general QI for F&V is described in Chapter 7. The following QI actors and services are especially relevant for greens: Microbiology LTD in Kutaisi and Agro Lab LTD in Zugdidi are the laboratories closest to the main production region of greens; ISO CONSULTING LTD, GDCI LTD and Natela Khurtsidze are consulting companies providing services to greens producers with regard to food safety and quality standards and certification.



CHALLENGES:

- » Small, irregular volume related to (i) small-scale production; (ii) lack of modern farming practices; and (iii) low productivity (despite 2-3 times increase over the last decade (GIDG 2015), it remains low compared to EU countries (ProDoc 2020))
- » Heterogeneous quality (Interviews)
- » Not meeting GLOBALG.A.P. standard. Small producers could not afford certification costs: The GLOBALG.A.P. certification is estimated to be around 50,000 EUR (GIDG 2015). In addition, around 5000 EUR should be planned per year for respective checks. (Interviews)
- » No long-term relationships between value chain actors; spot market transactions are most common (CZU, PIN and AYESG 2015)
- » Almost no processing activities and thus very limited value addition in greens value chain (Limited post-harvest value addition)
- » Lack of post-harvest handling facilities (collection and packaging centers) (CZU, PIN and AYESG 2015)
- » No contracts between exporters and producers / exporters and foreign buyers (Anguladze and Teliashvili 2018)
- » Exporters mostly focus on CIS markets
- » Greens Producers' Association of Georgia is at early stage of development; lack of info or interest in related activities (Interviews)
- » Using basements and cellars for storing greens result in losses in terms of quantity and quality. Use of cold chain facilities (pre-cooling, refrigerated storage, transportation and loading) is limited (Interviews)
- » Refrigerated transportation is used by several but not all exporters; sometimes exporters use ice bricks or no cooling at all (Interviews).
- » Air transport is only possible from Tbilisi (with Turkish Airline to Istanbul or Cargolux to Luxemburg) (Anguladze and Teliashvili 2018)
- » No specific projects for vegetables production in Georgia (similar to "Plant the Future" that supports fruit plantations in Georgia)
- » The latest Georgian language book on vegetables, including comprehensive description of herbs is from 1965, and not recommended for use (GIDG 2015)

POTENTIALS:

- » Demand for greens is increasing on World and EU markets
- » Cost advantage: not-heating greenhouse gives Georgian growers a notable cost-advantage over the European competitors. The comparison of average yields between Imereti Municipality and EU countries showed smaller yield levels in Georgia compared with some countries in the Northern Europe. Nevertheless, greenhouses in EU countries are mostly heated, and heating has a big share in production costs (Anguladze and Teliashvili 2018)
- » Quality advantage: Respondents assess overall quality (including taste) of Georgian herbs as good, providing further competitive advantage.
- » Recently developed cooperatives who seek to increase volumes and jointly package greens for local and export markets
- » Existence of Kutaisi International Airport (in Imereti - the region where greens are produced)
- » The sector is one of the MEPA's priority areas
- » The greenhouse cluster in Imereti - "Imereti Agro Zone" was developed to ensure sustainable supply of required quantities of herbs as well as meet quality standards of export markets (incl. EU) (FAO 2018, MEPA 2019b)





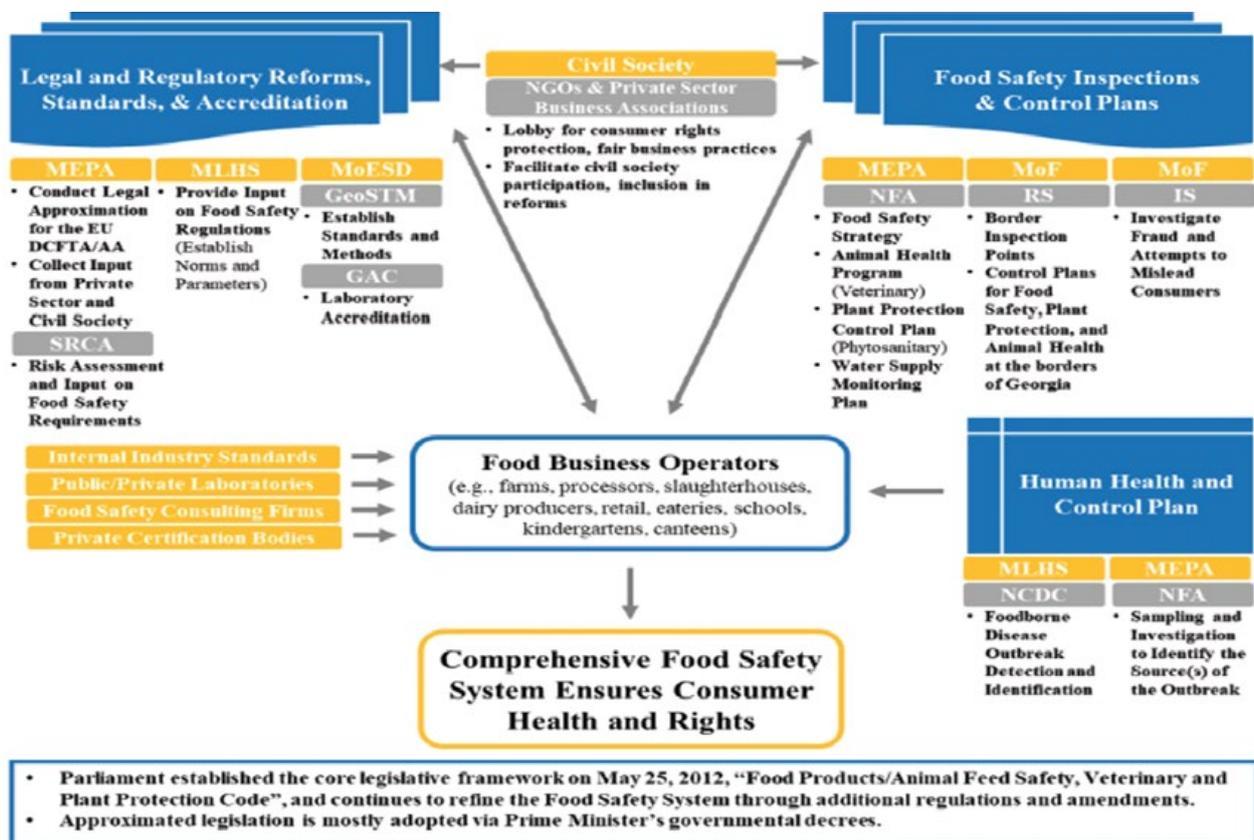
THE GEORGIAN QUALITY INFRASTRUCTURE

A central factor accessing and competing in new markets with F&V – exporting Georgian blueberries to Germany, for instance – is the ability to demonstrate quality and safety of products and to meet international standards in destination markets. In this, the Quality Infrastructure (QI) system is key, and especially conformity assessment to prove compliance with market requirements.

This chapter aims to have a closer look at the QI system to do with F&V in Georgia. It combines and presents key insights from different sources, namely from numerous expert interviews from the relevant actor groups, from expert knowledge within the research team as well as pertinent online resources and publications (e.g. UNIDO’s QI approach, World Bank’s QIS Diagnostic Toolkit).

Georgia’s National QI comprises, as its main technical components, aspects related to metrology, standardization, accreditation and conformity assessment (testing, inspection and certification). On part of the government, different ministries and numerous departments/agencies are involved, most prominently the Georgian National Agency for Standards and Metrology (GEOSTM), the Georgian Accreditation Centre (GAC) and the National Food Agency (NFA). In addition, the private sector plays an important role, amongst others from conformity assessment and testing laboratories to food safety consulting companies and certification bodies. For an overview of the food safety system in Georgia, see Figure 12.

FIGURE 12: : INFOGRAPHIC OF THE GEORGIAN FOOD SAFETY SYSTEM (SOURCE: EPFOUND 2018)



Two issues need explanation before going deeper into the institutional details of the Georgian QI setup. First, conformity assessment is at center stage, a process implemented by the relevant conformity assessment body (CAB) to identify the fulfilment of directives/standards/technical regulations – an EU directive, for instance – by the produced product/service. This is done with the aim to issue the certificate of conformity. The following food industry certificates exist in Georgia: [Hygienic Certificate](#), [Veterinary Certificate](#), [Phytosanitary Certificate](#), [Calibration Certificate](#), and the [Certificate of Origin](#) (EUR1). Conformity Assessment bodies consist of:

- » Laboratories (SST ISO/IEC17025): testing, calibration, medical (SST ISO15189);
- » Certification bodies (SST ISO/IEC17065): product, processes, services; persons (SST ISO/IEC 17024), audit and management systems (SST ISO/IEC 17021);
- » Inspection bodies (SST ISO/IEC17020): car inspection, verification of legalized measurement means;
- » Proficiency testing providers (ISO 17043);
- » Reference materials providers (ISO 17034).

Second, inspection and market surveillance are areas of official control provided by national authorities. In Georgia, it is the National Food Agency (NFA) of the Ministry of Environmental Protection and Agriculture (MEPA) providing official inspections and market

surveillance to do with food/feed safety and in the veterinary and phytosanitary fields.

The remainder of this chapter presents the ‘Who is Who’ of Georgian QI. In fact, much of the characteristics of the actors involved are quite well known and can be accessed online. The profiles of individual actors are thus as short and concise as possible. Key to this chapter is the focus on challenges and potentials of individual actors – in order to identify leverage points aiming to make the overall system perform better. This is where the study aims to make a meaningful contribution.

This chapter presents the key information mostly as tables, structured in a way that lists and briefly characterizes the most relevant actors in the QI system in Georgia (‘description of QI actors’), and lists their challenges and potentials as insights leading to the formulation of meaningful, feasible and effective recommendations (Chapter 8). This chapter also serves as a point of reference for the in-depth value chain analysis of four selected specific products (Chapter 6).

The QI system in Georgia is analysed along the following actor groups: key government institutions (7.1), supportive governmental institutions (7.2), testing (and calibration) laboratories (7.3), certification bodies and consulting companies (o), market surveillance and inspection bodies (7.5), educational institutions (7.6), quality extension services (7.7) and traceability service providers (7.8). Contact information for each presented actor is available in Annex 7 and a separate excel file.

7.1 Key government institutions

Public institutions play a crucial role in the Georgian QI system to do with food, involved in establishing and providing a framework that ensures public interest requirements (e.g. health, safety and environment). It is, above all, to safeguard Georgian people, and on the domestic market. The Law of Georgia ‘Code on Safety and Free Movement of Products’ incorporates all relevant legislation in the QI field and reflects also the requirements of two horizontal EU Directives, namely the ‘General Product Safety Directive’ and the ‘Liability for Defective Products’. In 2018, the amendments to the Code were adopted, which also included market surveillance procedures in compliance with EU best practice.

As to the Georgian food QI, the Ministry of Economy and Sustainable Development (MoESD) as well as the Ministry of Environmental Protection and Agriculture (MEPA) are key both for advancing QI-related, specialised institutions under their authority as well as meeting general responsibilities on establishing legislation and policies (e.g. a National Quality Policy). The scope of their activities also includes the coordination of stakeholders and activities of donors,

for which in many cases interagency coordination councils are created, based on the perceived importance of an issue. In the following, three public key institutions are detailed, two which are part of MoESD, namely the Georgian National Agency for Standards and Metrology (GEOSTM) and the Georgian Accreditation Center (GAC); and one which is under MEPA, namely the National Food Agency (NFA). This section does not include NAPR, SRCA and RDA which are described in the section ‘Supportive governmental institutions’ nor the state laboratories which are listed under ‘Laboratories’ further below.

ACTOR	CHALLENGES AND POTENTIALS
<p><u>Georgian National Agency for Standards and Metrology (GEOSTM)</u></p> <p>GEOSTM was established in 2005 as a legal entity under public law (LEPL) under MoESD. It is a member of the following international/regional organizations: ISO, CEN/CENELEC, ETSI, BIPM, OIML and COOMET.</p> <p>Standardization: There are 8 Technical Committees (TC) which develop, adapt and adopt standards for the Georgian context. TC 3 on Food and Foodstuff is the most relevant for F&V. In 2020 the Georgian standards base consisted of 18'476 standards out of which 6'807 are ISO/IEC and 11'669 are EN (CEN/CENELEC) standards adopted as Georgian standards, including harmonized standards which are particularly important for the implementation of the DCFTA TBT legal approximation process. As of 2020, 152 standards were fully translated, while others were adopted with cover page translation.</p> <p>Metrology: GEOSTM's metrology division is operating according to ISO/IEC 17025:2017 (recognized by the regional metrology organization COOMET). It currently offers 62 internationally recognized Calibration and Measurement Capabilities (CMC) in the fields of temperature, humidity, mass, pressure, small volume, length, ionizing radiation and electrical measurements. CMC on thermometry are also provided to labs from Azerbaijan and Armenia. GEOSTM has started to develop physico-chemical measurements and reference material production in line with ISO 17034:2016 (staff is currently attending trainings).</p>	<p>Challenges</p> <ul style="list-style-type: none"> » Lack of services in regions » Lack of on practical on-the-job trainings for implementation of ISO 17034 » Lack of awareness among stakeholders about services and activities of GEOSTM » Lack of young staff, with technical skills and knowledge of foreign languages » Lack of funds to translate all documents into Georgian (20 documents per year) <p>Potentials</p> <ul style="list-style-type: none"> » Organizational structure covers all relevant aspects to do with standardization and metrology » GEOSTM is well connected with all relevant international organizations » Increasing number of CMCs with the potential to receive international recognition (plus 29 in 2020) » Development of CMCs in the field of physico-chemical measurements and reference material production » Well-established connections with CABs in Georgia (and beyond) providing CMC services and training sessions
<p><u>Georgian Accreditation Center (GAC)</u></p> <p>The GAC was founded in 2005 as a LEPL under MoESD. The Center operates according to ISO 17011 and grants accreditation for International Standards (ISO 17025, ISO 17065, ISO 17020, ISO 17021 etc.) to various CABs including testing and calibration laboratories; inspection bodies; personnel certification bodies; product, processes and service certification bodies; Proficiency Testing (PT) providers; certification bodies for Audit and Management Systems.</p> <p>GAC has bilateral agreements with European Accreditation (EA) which creates benefits for Georgian laboratories as their testing results can be recognized by EA. The recognition so far covers personnel certification, calibration, inspection bodies and medical laboratories but not food testing laboratories due to wide application of GOSTs.</p>	<p>Challenges</p> <ul style="list-style-type: none"> » Lack of EA-recognized food testing labs » Lack of accreditation scheme and experience in management system certification bodies accreditation (ISO 17065) » Lack of young specialists, with modern skills and skills in foreign languages » Lack of qualified assessors with language and modern technical skills <p>Potentials</p> <ul style="list-style-type: none"> » Support from MoESD with infrastructure and resources; » Training and ToT for GAC staff (lead and technical assessors) ongoing » GAC is supporting laboratories in implementing ISO standards » Facilitation activities for establishment of proficiency testing services » Support process of reference materials providers establishment » Collaboration with EU ACs to develop best practices, critical revision and updating of national accreditation procedures in line with ISO 17011.

National Food Agency (NFA)

The NFA is a LEPL operating under MEPA, with the following departments: Food safety, Veterinary, and Plant Protection (phytosanitary).

The NFA is the official market surveillance body for food safety. It elaborates annual official control plans for food business operators (FBOs). For the respective conformity assessments, it announces tenders to purchase testing services from public and private testing laboratories.

The NFA also approves pesticides (currently 748) and agrochemicals (currently 1024) and publishes a [list of approved products](#).

NFA is currently prioritizing improvements in the area of plant protection.

Challenges

- » Lack of qualified staff and high staff rotation, esp. among food inspectors (Tbilisi city service)
- » Lack of small sampling equipment
- » Lack of lab capacity on MRL testing, hence postponing of official controls
- » Lack of accurate list of FBOs, especially farmers (only RDA beneficiaries since 2015), for proper official controls
- » Unpractical databases on registered pesticides/ agro-chemicals and MRLs
- » NFA is not involved in TRACES
- » Lack of technical literature in Georgian
- » Limited coordination with other agencies such as GeoSTM and GAC

Potentials

- » Continuous support for capacity building and implementation from different donors (see Section 5.5.3) – at the moment especially on plant health

7.2 Supportive governmental institutions

There exist several governmental units providing important support to the food sector in Georgia. Three of the more prominent institutions are the National Agency of Public Registry (NAPR) under the Ministry of Justice as well as the Scientific Research Center of Agriculture (SRCA) and the Rural Development Agency (RDA) operating under MEPA. By providing scientific research and implementing a range of technical, financial and institutional programs, SRCA and RDA aim to work against the many challenges the agricultural sector in Georgia is facing today, among them: the large number of small-scale farms; low productivity with little stability in supply, and underdeveloped supply

chains; the difficulty with cooperation and the creation of associations and unions; yet also low awareness of farmers towards modern farming practices, EU requirements and food safety issues. NAPR is of particular interest in this regard as it is tasked with the registration of Food Business Operators (FBOs), including farmers. The development of a complete, up-to-date FBO database including the comprehensive registration of farms is crucial for both the enforcement of food safety legislation and inspection yet also for the further development and improvement of the agricultural sector in the country.



ACTOR	CHALLENGES AND POTENTIALS
<p><u>National Agency of Public Registry (NAPR)</u></p> <p>NAPR operates under the Ministry of Justice, providing services for the registration of property and businesses. An actor whose activity is linked to the food supply chain (de iure) has to register as an FBO and must provide accurate information about its activities. Activities without registration are (de iure) fined with 500 GEL. In reality, many FBOs are not registered and the registry is not up to date. There are big discrepancies between NAPR’s registry and NFA’s list for FBO inspections.</p>	<p>Challenges</p> <ul style="list-style-type: none"> » Lack of accurate list of registered FBOs including primary producers. <p>Potentials</p> <ul style="list-style-type: none"> » Some efforts ongoing to foster registration of FBOs, especially primary producers
<p><u>Scientific-Research Center of Agriculture (SRCA)</u></p> <p>The SRCA was established in 2014 as a LEPL operating under MEPA. It runs <u>four scientific research bases</u> (on annual crops, annual crop seedlings, perennial crops and beekeeping), an experimental complex of greenhouses, a scientific council and <u>seven laboratories</u> (the relevant ones are described in detail in Section 7.3). Amongst others, the SRCA is engaged in testing new varieties (including F&V), quality assurance of propagation materials, pest and disease monitoring, technological advancement of post-harvest handling and processing, promotion of food safety and harmonization with international standards, development of extension programs, knowledge sharing as well as coordination with donors and NGOs. On its website, SRCA has sections with <u>relevant legislation</u>, “<u>agro-tips</u>” and publications.</p>	<p>Challenges</p> <ul style="list-style-type: none"> » Lack of young specialists and scientists with up-to-date knowledge and skills » Limited outreach to ICCs and FBOs <p>Potentials</p> <ul style="list-style-type: none"> » Highly knowledgeable and experienced specialists in F&V / horticulture » Detailed analyses available on the suitability of different F&V varieties for the local context » Ongoing activities in food safety and quality assurance, networking, coordination and knowledge sharing » Support from FAO for the integration with the International Seed Testing Association (ISTA)
<p><u>Rural Development Agency (RDA)</u></p> <p>RDA implements a variety of programs and projects initiated by MEPA (the relevant ones are described in Section 5.5.2). In the frame of many of these programs, RDA requests beneficiaries to act in line with certain standards, e.g. to conduct soil testing prior to planting, to use certified propagation materials, to implement food safety management systems etc. Conformity is checked via respective documentation and sporadic visits. RDA is also managing the state extension service, namely the Information and Consultation Centres (ICCs), discussed in section on extension services.</p>	<p>Challenges</p> <ul style="list-style-type: none"> » Little resources for beneficiary coaching » Limited focus on post-harvest handling <p>Potentials</p> <ul style="list-style-type: none"> » Strong influence on the Georgian food sector which can be used for the promotion of food safety, hygiene, good agricultural practices etc. » Well established programs generally showing good results » Large network of beneficiaries

7.3 Testing (and calibration) laboratories

This section takes a detailed look at the laboratory landscape in Georgia, based on an understanding that effective and efficient laboratories providing the relevant capacities in a demand-oriented manner (both market and customer) are a key component for establishing a meaningful, well-integrated national food safety system.

In Georgia, there exist public and private laboratories with different scopes of services and offering a wide range of testing. In general terms, the following sources give an overview of the laboratory landscape to different extents: [GAC website](#), [UNIDO's Lab Net](#) (13 testing laboratories and 4 Inspection Bodies are listed for Georgia) and the Project Document QOSP Georgia. The QOSP Georgia Project Document (2020, Annex 4) lists 19 accredited CABs and highlights that most laboratories have internal quality control (IQC) systems in place and participate in regular external quality assessment programs or inter-laboratory comparisons for some or all of their activities – and that almost all the test laboratories are accredited and certified in accordance with ISO/IEC 17025 (ibid:14). However, the Project Document also identifies a number of major challenges in the conformity assessment in Georgia. In terms of laboratories, the general challenges include the following (ibid:50ff, direct quotations):

- » Lack of information about the existing relevant standards and regulations (local and international), requirements.
- » Misunderstanding of standards and regulations requirements (reasons: lack of knowledge of fundamental issues related to the field, lack of knowledge of English, poorly translated into Georgian technical literature, etc.).
- » Lack of communication between the stakeholders: private sector and Government bodies;
- » Lack of modern equipment (e.g. LC-MS (MS) and GC-MS (MS) and methodology / technology for testing food safety parameters e.g. quality analysis of F&V.
- » The types of equipment available in Georgian laboratories in most cases are outdated and cannot provide reliable test results; (very often equipment does not work at all);
- » Most laboratories work in accordance with GOST standards and should be upgraded in accordance with international standards;
- » Lack competency for quality testing/analysis, e.g. LMR, heavy metals, mycotoxins, traceability and reliability of measurement results.
- » An insufficient number of suppliers of: laboratory technic, equipment, service engineers, consumables, chemical reagents, certified reference materials (CRM).

- » Some distributors have a monopoly in the country and, due to lack of healthy competition; the service/ quality is very poor.
- » It should be noted that in addition to the problem with suppliers, government laboratories also have another procurement problem, which is caused by the observance of public procurement rules (the laboratory must announce a state tender where the winner is the supplier who offers a low price, and the laboratory suffer from the purchased low-quality goods)
- » Absence in the country of Proficiency Testing (PT) and Inter Laboratory Comparisons (ILC) suppliers;
- » Lack of competent technical staff. Educational institutions cannot provide a sufficient number of graduates with the desired education; Because of low salaries and reimbursement in Georgian laboratories, professional staff goes- out.

In addition to the above issues, it seems important to mention that certain testing capacities are partly or fully absent (e.g. testing of only 75 out of 600 pesticides, testing for food contact materials and irradiation). one preliminary remark on laboratory infrastructure and contaminant testing seems important:

In the following, 20 laboratories in Georgia are listed and described in more detail. The research team has decided to expand the selection of laboratories provided in the Project Document in order to more strongly add a regional component (thus, considering more prominently also laboratories outside Tbilisi, in the regions) and with various accreditation scope and technical capacities. The table (below) includes the two leading laboratories – one public and one private – namely MEPA's State Laboratory of Agriculture (SLA) and Multitesti. These are the only two laboratories in Georgia currently capable to conduct tests of a larger number of pesticide MRLs and have the capacity to increase the number of testing elements to fulfill EU requirements. In addition, four laboratories, namely Norma LTD, G. Natadze Scientific research Institute of Sanitation, Hygiene and Medical Ecology LLC, Expertiza+ LTD and Laboratorial Research Centre LLC (Batumi) have an interest and the potential to implement MRLs testing needed for the F&V sector in Georgia, however, will need substantial investments in terms of equipment to do so. Also, three laboratories without accreditation are listed: while not accredited, the H. Peri Laboratory of the Agriculture University of Georgia offers comprehensive soil tests and results are reliable and widely recognized by local authorities; Agro Lab LTD from Zugdidi is providing services to farmers from the Western part of the country and conflict zone bordering regions; and the Laboratory Soil Research named after Prof. Ivane Sarishvili which can provide tests of soil and recommendations on sustainable soil management. One private calibration laboratory was added as an important service provider for farmers and

producers. Furthermore, there are laboratories which are service providers for primary producers in the area of irrigation and drinking water testing and soil testing. SGS LTD is mentioned in Section ‘Certification bodies and consulting companies’, as within the scope of our study it is providing certification of management systems – however it is important to highlight its laboratory which is certified against ISO 9001:2015, and has international accreditation ISO 17025 for Oil, Gas and Chemicals testing.

The main table of this section focuses on short descriptions of individual laboratories as well as their specific challenges – and thus goes beyond the more general challenges listed in the Project Document. In addition to challenges the table also lists specific potentials of individual laboratories not to lose sight of potential contributions that specific actors can make towards improving the QI system as a whole.

ACTOR	CHALLENGES AND POTENTIALS
<p>State Laboratory of Agriculture (SLA)</p> <p>The SLA is a LEPL operating under MEPA. There is one head office in Tbilisi and 12 regional laboratories. Currently SLA provides a large number of tests in the areas of animal and plant health, food and feed. Amongst others it participates in diagnoses, control and management of animal and plant diseases, and quarantine. SLA facilitates the approbation and introduction of new diagnostic methods, laboratory equipment and diagnostic tools, and it can provide samples collecting service to producers/farmers. Detailed scope is available on GAC.</p> <p>The lab is equipped with GC/MS, GC/MS/MS, LC/MS/MS, GC and HPLC.</p> <p>Most important testing for F&V:</p> <ul style="list-style-type: none"> » Pesticide MRLs: currently 55 pesticide residues measurements are possible with AOAC 2007.01, EN 15662:2008 methods. » Heavy metals: EN 13804:2003, EN 13805:2003, Guideline Agilent and GFAAS. » Aflatoxin B₁ and sum of B₁+B₂+G₁+G₂ are measured with method LVS EN 14123. » Aflatoxin B, G₁ and Ochratoxin A are measured with Radox Evidence Investigator guideline, which is not validated. » Patulin: not available. » GMO: tests available according to ISO methods <p>One of the priorities is to develop SLA, together with the support of international projects, into a reference laboratory in Georgia.</p>	<p>Challenges</p> <ul style="list-style-type: none"> » Lack of staff, time, and capacity to provide necessary number of testing; » Lack of language skills and technical knowledge to implement internationally recognized methods; » Lack of validated international methods; » Lack of capacity of regional branches, as producers/farmers prefer to bring samples directly to head office; » Lack of technical knowledge for equipment maintenance. <p>Potentials</p> <ul style="list-style-type: none"> » SLA is well equipped in terms of technical equipment; » SLA provides ToT to lab staff to share experience with other laboratories, esp. in regions; » Introduction of internationally recognized, validated methods to increase capacity of tests; » Cooperation between stakeholders for on time implementation of new testing methods to be in line with emerging legislation; » Laboratory has regional offices (which could be used more intensively).

“Multitesti” LLC

“Multitesti” is a private accredited laboratory which can provide a large number of tests; it is considered the leading private laboratory in Georgia. Detailed scope is provided on [GAC](#).

The lab is equipped with GC, GC/MS and 2 HPLC.

Most important testing for F&V:

- » Pesticide MRLs: currently 75 pesticide residues measurements are available with AOAC 2007.01 method, and internal methods.
- » Heavy metals: GOSTs and guidelines are used which are not internationally recognized.
- » Aflatoxin: Aflatoxin B₁+B₂+G₁+G₂ is measured with method AFLA 0412 and Aflatoxin B₁ with GOST
- » Ochratoxin A for fruits is tested with OIV-MA-AS315-10 OTAWo218 validated method.
- » Patulin: Patulin for processed fruits is tested with SST ISO 8128-1:2008 method;
- » GMO: not available

Challenges

- » Difficulties with equipment maintenance due to lack of demand for testing;
- » Lack of implementation of ISO standards and internationally recognized methods.

Potentials

- » Leading private laboratory in the country;
- » Large scope of accreditation.

Laboratory of G. Natadze Scientific research Institute of Sanitation, Hygiene and Medical Ecology, LLC

Accredited private laboratory with long history of existence. The lab has a large scope of accreditation. Detailed scope is provided on [GAC](#). It can provide very comprehensive analyses and recommendations for drinking, irrigation, wastewater. Lab is providing tests of F&V and products made by their processing;

Lab has implemented ISO methods for microbiology tests. For F&V sampling and testing GOSTs are used. Lab can provide radiology tests, but methods are not internationally recognized.

Aflatoxins are tested with ELISA kits and GOSTs, Patulin is tested with GOST method. Heavy metals are tested in water with ISO methods, but for food and F&V VCs GOSTs are used.

The lab has GC/MS and LC/MS which could be used for pesticide MRLs tests but currently the equipment is out of order and no internationally recognized methods are implemented.

Challenges

- » Lack of modern equipment for implementation of internationally recognized testing methods.
- » Lack of skills and knowledge for maintenance of modern technics and technologies; - Lack of qualified staff with knowledge of languages and modern technical skills.

Potentials

- » Improvement or purchasing equipment for implementation of new tests (MRLs) and internationally recognized methods.

Norma, LLC

Private, accredited lab, which has in scope F&V and can provide tests for Heavy metals, Pesticides, Aflatoxins and Patulin for processed fruits and vegetables, but these tests are conducted with GOSTs or internal methods, which are not internationally recognized.

The laboratory does not have equipment to introduce testing of MRLs but is planning to purchase it.

Challenges

- » Lack of modern equipment, technologies and internationally recognized methods.

Potentials

- » Cooperation with providers of used, secondary equipment to purchase it and implement new tests and methods.

<p>Agroecological Learning-Scientific Diagnostic Laboratory</p> <p>Accredited laboratory of the Georgian Technical University. Detailed scope is provided on GAC. For primary products producers lab can provide drinking and surface water tests, soil sampling and testing. For F&V has implemented testing of Vitamin C, but GOST method is used. Lab is in the process of accreditation of microbiology testing of soil - diseases and nematodes. Mainly GOST methods are used but also some ISOs.</p>	<p>Challenges</p> <ul style="list-style-type: none"> » Lack of equipment for implementing new tests and ISO standards. <p>Potentials</p> <ul style="list-style-type: none"> » Increase capacity of soil testing by purchasing new equipment and introduction of internationally recognized methods.
<p>Quality Lab, LLC</p> <p>Private, accredited lab with large scope of tests. Detailed scope is provided on GAC. The lab has a Batumi Branch.</p> <p>For F&V VCs lab can provide: GMOs tests with ISO methods; Glyphosate tests; allergens testing with ISO methods. Due to the lack of official control (change of approach), there is low demand for laboratory testing; so Quality Lab has oriented itself more towards COVID testing. The lab is accredited for heavy metals testing (Lead, Cadmium) in plastics, could be used for FCM.</p>	<p>Challenges</p> <ul style="list-style-type: none"> » Low demand for laboratory testing which is causing difficulties in maintaining equipment and keeping scope of accreditation. <p>Potentials</p> <ul style="list-style-type: none"> » Provide large range of tests with internationally recognized methods and equipment.
<p>WINE LABORATORY LTD – TBILISI</p> <p>Lab is accredited LEPL under SRCA. The scope is testing of alcoholic beverages. It is equipped with GC and HPLC and provides services to a large number of wine producers. Lab is not providing services to primary producers of F&V but has potential to participate in QI improvement as provider of trainings and experience exchanging.</p>	<p>Challenges</p> <ul style="list-style-type: none"> » Lack of technical staff for equipment maintenance. <p>Potentials</p> <ul style="list-style-type: none"> » Participation in ToT trainings and qualification increasing activities to share experience with stakeholders.
<p>“Test Lab”</p> <p>Private accredited lab at Agricultural University of Georgia (AUG). Detailed scope is provided on GAC. Lab can provide tests for F&V VCs: few pesticide MRLs on GC with GOSTs; Aflatoxin B1, B2, G1, G2 could be measured on HPLC with ISO method; heavy metals on AAS with GOSTs and guidelines.</p>	<p>Challenges</p> <ul style="list-style-type: none"> » Lack of recognized methods. » Lack of staff competency, such as language and technical skills for modern equipment and methodologies. <p>Potentials</p> <ul style="list-style-type: none"> » Capacity building on residue testing; » Implementation of internationally recognized methods.

<p>Eqspertiza+ LLC</p> <p>Private accredited lab. Detailed scope is provided on GAC.</p> <p>Lab can provide tests for F&V VCs, such as Aflatoxin, Heavy Metals, Patulin - but is using GOST methods.</p> <p>Lab is equipped with GC, but outdated and HLPC, with GOSTs. Can provide Organochlorine pesticides with chromatography but is using not internationally recognized methods.</p> <p>Test results of the lab are used by Products Certification Body “Expertiza+” which is described in section “Certification Bodies”</p>	<p>Challenges</p> <ul style="list-style-type: none"> » Lack of demand for testing causing difficulties with equipment maintenance; » Lack of modern, internationally recognized methods and equipment; » Lack of availability of international standards and methods in Georgian; » Lack of maintenance service providers, causing delaying with repairment. <p>Potentials</p> <ul style="list-style-type: none"> » Capacity building on residue testing; » Implementation of internationally recognized methods and equipment.
<p>Etaloni LLC</p> <p>Private accredited lab. Detailed scope is provided on GAC.</p> <p>For F&V VCs ab can provide tests of Aflatoxins B1, B2, G1, G2, Ochratoxin A, Patulin, Heavy Metals with GOSTs or internal methods which are not internationally recognized.</p> <p>Test results of the lab are used by Products Certification Body “Etaloni” which is described in section “Certification Bodies”</p>	<p>Challenges</p> <ul style="list-style-type: none"> » Lack of modern equipment; » Lack of funds and supportive programs for purchasing heavy lab equipment; » Lack of availability of international standards and methods in Georgian; » Lack of practical, technical skills of modern methods and technologies. <p>Potentials</p> <ul style="list-style-type: none"> » Implementation of internationally recognized methods and equipment; » Implementation new methods (Eliza) for toxins testing.
<p>Mikrobiologi LLC</p> <p>Private, accredited lab, located in Kutaisi, based on sanitary inspection with long history. Detailed scope is provided on GAC.</p> <p>Lab is very important service provider on the regional level.</p> <p>Lab is oriented on microbiology tests and for F&V VCs can provide tests of ready-to-eat products, foodstuff and water testing.</p>	<p>Challenges</p> <ul style="list-style-type: none"> » Lack of demand due to not implemented official control; » Unfair competition with SLA; » Lack of practical skills and knowledge of modern methods; » Lack of qualified staff, especially in the field of sanitary microbiology; » High price of PT tests; » Lack of donor support for participation in capacity building programs. <p>Potentials</p> <ul style="list-style-type: none"> » Implementation of modern methods if practical trainings will be provided » Providing services on reginal level with internationally recognized methods

Laboratorial Research Centre LLC

Private, accredited laboratory, located in Batumi, which has large scope of accreditation and is a very important member of QI. Detailed scope is provided on [GAC](#). For F&V laboratory can provide tests:

- » Aflatoxins B1, B2, G1, G2 (sum) on chromatography;
- » Lab has HPCL, GC/MS/MS, GC with ISO methods and conducts Histamine, Color tests;
- » Heavy Metals, Patulin - GOSTs;
- » Organochlorine pesticides with chromatography and ISO methods.
- » Is implementing GMO testing.
- » Plant health testing, Food bacteriology tests
- » Laboratory is interested to invest in equipment to implement full range of pesticides MRLs testing.

Challenges

- » Lack of demand for testing, to keep equipment maintained;
- » Lack of calibration service in region.

Potentials

- » Implementation of internationally recognized methods and equipment for MRL testing.

Global test LTD

Private accredited laboratory, more focused on medical tests. Detailed scope is provided on [GAC](#)
Lab is providing tests of antibiotics and organochlorine pesticides with internal methods.

Challenges

- » Lack of availability of international standards and methods in Georgian

Potentials

- » Implementation of internationally recognized methods and equipment.

Scientific-Research Firm GAMMA LLC

Private accredited laboratory, which can provide detailed analyses and recommendations on drinking, irrigation and waste water which are very important for F&V producers/farmers. Detailed scope is provided on [GAC](#)

Test results of the lab are used by Products Certification Body “Gamma” which is described in section “Certification Bodies”.

Challenges

- » Lack of internationally recognized methods,
- » Lack of reference materials for chemical and microbiological analyses;
- » Lack of funds for participation in professional testing;
- » Lack of modern, portable equipment for field and laboratory tests;
- » Need for improved lab equipment for stationary studies;
- » Need for new lab ventilation system

Potentials

- » Implementation of new methods & tests;
- » Increase scope of lab activities;
- » Providing more services, e.g. sample collection, tests in the field with portable equipment and providing rapid results and consultancy.

“DG Consulting” LLC

Private accredited laboratory, which can provide detailed analyses and recommendations on drinking, irrigation and waste water. Also, soil testing.

These tests are very important for F&V producers/ farmers.

Detailed scope is provided on [GAC](#)

Challenges

- » Lack of laboratory software, for improvement of the process;
- » Lack of standard samples;
- » Lack of availability of funds for interlaboratory testing;
- » Lack of funds for updating inventory;
- » Lack of portable field equipment.

Potentials

- » Implementation of services such as sample collection, tests in the field with portable equipment and providing rapid results and consultancy;
- » Implementation of new tests, such as greenhouse gas analysis.

A. Beridze Soil and Food Diagnostic Center in Anaseuli, Ozurgeti municipality

The lab is accredited and operates under SRCA, Detailed scope is provided on [GAC](#).

The laboratory carries out soil analyses with GOSTs, specialized on soil type specific for the region.

Lab is elaborating recommendation for agro-chemical research, soil fertility and sustainable use of fertilizers. Also, on water contamination and plant disease.

Challenges

- » Lack of modern equipment and methodologies;
- » Lack of qualified staff with modern knowledge and skills.

Potentials

- » Introduction modern equipment and internationally recognized methods;
- » Soil management trainings for farmers

Laboratory Soil Research named after Prof. Ivane Sarishvili of SRCA

The laboratory is operating under Scientific-Research Center of Agriculture. It is not accredited.

The lab is focused on research activities and does not provide private services. It is a key institution for QI development in the field of soil testing and guidelines for adapted agricultural activities.

Challenges

- » Lack of analyses of organic compounds;
- » Lack of soil microbiology research.

Potentials

- » ToT for soil laboratories of the country;
- » Providing comprehensive data for the development of agriculture sector.

H. Peri Laboratory of Ecological Agriculture and Nature Protection Soil Research and Fertility Assessment

The Laboratory of Agriculture University of Georgia not accredited. It offers soil-agrochemical research (soil, plant, fertilizers including compost).

Many years of international experience, high precision research with ISO standards, modern equipment, sampling in the field, highly qualified service.

Challenges

- » Lack of availability of technical staff for equipment maintenance.

Potentials

- » Networking and cooperation within the laboratories will be very helpful for development of the sector.

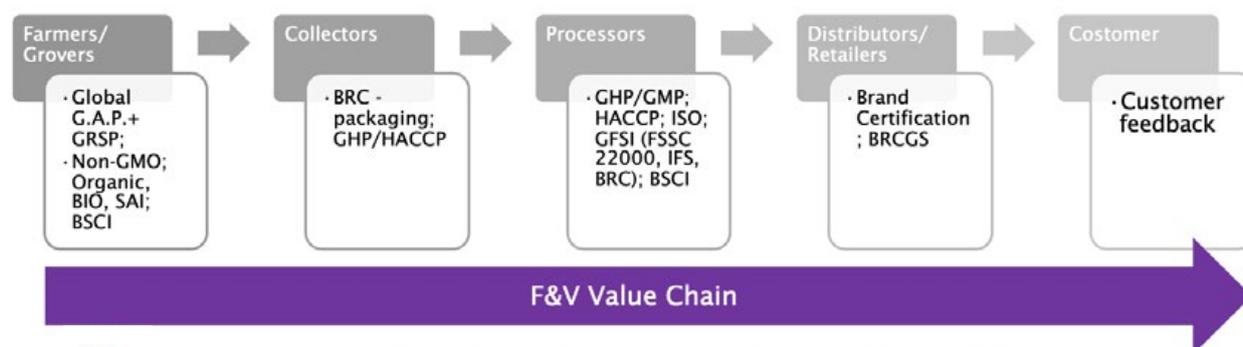
<p>Agro Lab LTD</p> <p>This laboratory is not accredited yet but has capacity to conduct chemical analyses in food, water, soil.</p> <p>It is equipped with Shimadzu ICPE-9800 Parallel action emission spectrometer with inductive related plasma.</p> <p>The lab is providing service to farmers in the west Georgia, border villages and from Abkhazia.</p>	<p>Challenges</p> <ul style="list-style-type: none"> » Lack on management system on place to undergo accreditation (ISO 17025); » Lack of qualified staff for implementation of new methods. <p>Potentials</p> <ul style="list-style-type: none"> » Training on requirements of ISO 17025 to get accreditation. » Implementation of analyses on plant disease.
<p>Metrology LTD</p> <p>Private, accredited calibration laboratory according to ISO 17025 since 2001 and accredited Inspection Body according to ISO 17020. Detailed scope is provided on GAC</p> <p>Lab is providing services to large number of enterprises, producers, farmers, and CABs.</p> <p>It is providing services covering the country by portable equipment.</p>	<p>Challenges</p> <ul style="list-style-type: none"> » Lack of modern equipment and new technologies; » Lack of implementation of internationally recognized methods; » Lack of staff competence. <p>Potentials</p> <ul style="list-style-type: none"> » Increase scope of accreditation by introducing new, modern equipment and internationally recognized methods.
<p>Chemical Risk Factors Assessment Laboratory</p> <p>The lab is operating within the National Center for Disease Control & Public Health of Georgia (NCDC) and is the European Environment and Health Process communication focal point.</p> <p>Infrastructure and equipment improvement and purchasing was supported by UNICEF, so lab is very well equipped with ICPMS and GC/LC/MS. The lab is oriented to start tests of chemical contaminants in different products, including foodstuff, the priority is Lead.</p> <p>The lab is in the process of implementation of ISO 17025 and accreditation is planned.</p>	<p>Challenges</p> <ul style="list-style-type: none"> » Lack of implemented internationally recognized testing methods; » Lack of knowledge of ISO 17025 requirements » Lack of participation in PTs <p>Potentials:</p> <ul style="list-style-type: none"> » Implementation of ISO 17025 and undergo accreditations process; » Implementation of internationally recognized testing methods; » Increased scope of testing, implementation pesticide residue MRLs testing

7.4 Certification bodies and consulting companies

Accredited according to ISO/IEC 17065, certification bodies are providing conformity certificates in various fields, such as Environmental Management, Health and Safety Management, Risk Management, Food Safety and Quality Management, among others. Within F&V value chains, different certification or certification schemes could be required by official institutions or

customers on different levels of a given value chain (see Figure 2). The most common certificates issued in Georgia are on Food Safety and Quality Management Systems (ISO 9001, ISO14001, ISO22000), [GFSI](#) recognized standards and certification schemes (FSSC 22000, IFS, BRC, GlobalG.A.P+ GRASP, etc), and organic products certification.

FIGURE 2: : IIMPLEMENTATION OF STANDARD THROUGH VC



In reality, the demand for food safety and quality management certification in the F&V sector in Georgia is currently very low. However, if the focus ought to shift from more established markets such as Russia to higher-end markets such as the EU, the Gulf States and Japan where certified products have a considerable share, then this is an important topic not to be missed. Some local companies have started developing their portfolio in this direction and some international certification bodies have created a local branch, but certification capacities are still very limited in Georgia. In the following, the most important actors in this group are described. There is one local certification body providing certification for organic products, Caucascert LTD, accredited according to ISO-17065 by the German accreditation body DAkkS. There are only three accredited certification bodies providing

certification of products and only one of them, namely 'Exspertia+', has fruits and vegetables in the scope of accreditation. All three certification bodies have similar challenges as they are not using internationally recognized methods for certification. It means that their provided certificates are not recognized on regulated markets such as the EU. Certificates of the following international certification bodies are represented on the Georgian market: SGS, TUV SUD, Lloyds Register, Bureau Veritas, and EuroCert. Certification bodies in general are reached through private consulting companies, some of them have official representatives in the country and are listed below as well. Private consulting companies are implementing Food Safety and Quality Management systems (according to international standards), inviting auditors from international certification bodies.

ACTOR	CHALLENGES AND POTENTIALS
<p>Caucascert LTD</p> <p>CAUCASCERT Ltd has been accredited according to ISO-17065 by the German accreditation body DAkkS. It has been included in the list of third-country equivalent organic certification agencies (EC regulation 1330/2016). Since 2021 the company can operate in Turkey.</p> <p>Certificates are provided to 126 individual producers/farmers and to 1 group (524 members hazelnut producers/farmers).</p>	<p>Challenges</p> <p>Certification body has to implement emerging EU legislation on organic production and labelling of organic products (EU 2018/848) until 2024.</p> <p>Potentials</p> <p>Certification body can increase activities with the region - Turkey, Azerbaijan.</p>
<p>Eqspertiza+ LLC products Certification Body</p> <p>SST ISO/IEC 17065:2012/2014</p> <p>Accreditation Scope: 1. Alcoholic and non-alcoholic beverages; 2. Tea, honey, spices, Ajika; 3. Fruits, vegetables and their products.</p>	<p>Challenges</p> <ul style="list-style-type: none"> » Lack of demand for services, causing difficulties for keeping accreditation; » Lack of knowledge of international standards; » Lack of documents in Georgian <p>Potentials</p> <ul style="list-style-type: none"> » Increase scope of activity; » Providing certification of product process.

<p>Etaloni LLC Product Certification Body SST ISO/IEC 17065:2012/2014 Accreditation Scope: 1. Egg; 2. Packed black and green tea; 3. Flour confectionery, cake; 4. Tobacco and its products: cigarettes; 5. Fruit and vegetable processing products and their preserves; 6. Grain processing products (flour); 7. Low-alcoholic and non-alcoholic beverages: beer, bottled drinking water, natural - mineral, tap water.</p>	<p>Challenges Lack of demand for services, causing difficulties for keeping accreditation Lack of knowledge of international standards Lack of documents in Georgian Potentials Increase scope of activity Improve staff competences and knowledge by participation in local and international trainings</p>
<p>Association GAMMA LLC Product Certification Body SST ISO/IEC 17065:2012/2014 Accreditation Scope: 1. Waters: mineral, natural, spring; 2. Drinking water, packaged, unpackaged and artificially mineralized; 3. Non-alcoholic beverages.</p>	<p>Challenges Lack of documents in Georgian Potentials Improvement of staff competences by participation in local and international seminars (trainings).</p>
<p>SGS LTD The Georgian subsidiary of SGS S.A “SGS Georgia” Ltd established since 1997. SGS Georgia is working across several business lines including “Agriculture, Food and Life”, “Environment, Health and Safety”, “Certification and Business Enhancement”, “Transportation”. Has laboratory certified against ISO 9001:2015 and accredited for Oil, Gas, Minerals and Chemicals, testing according to ISO 17025.</p>	<p>Challenges Lack IRCA certified auditors. Potentials Increase scope of provided service in the fields of GFSI standards</p>
<p>Bureau Veritas Georgia Local representative of the international organization Bureau Veritas. Bureau Veritas is a global leader in Testing, Inspection and Certification (TIC), delivering high quality services to help clients meet the growing challenges of quality, safety, environmental protection, and social responsibility.</p>	<p>Challenges Lack of IRCA certified auditors. Potentials Increase scope of services in the fields of GFSI standards.</p>
<p>ISO consulting LTD – management systems consulting company. The team of professional consultants, experts and auditors specialized in providing consultancy, training, and assessments accordance with ISO standards. ISO Consulting offers all the tools for implementation, development and improvement of food safety and quality and other management systems, among them Good Agriculture Practice according to GLOBALG.A.P. standard. Cooperates with Lloyds Registry.</p>	<p>Challenges Lack of qualified staff with specific technical knowledge and specializations; Lack of auditors with IRCA certification. Potentials Increase quality and scope of provided service in the fields of GFSI standards</p>
<p>Natela Khurtsidze - International Expert of Management Systems Natela Khurtsidze - an international expert, consultant, auditor, and trainer in the fields of food safety, quality management, environmental protection, and management systems. More than 200 successful certified projects for private and state business’ sector.</p>	<p>Challenges Lack of IRCA certified staff and auditors. Potentials Increase capacity of provided services and consultants with IRCA certified trainings on GFSI standards</p>

STAR consulting LTD

Food safety and quality management systems consulting company since 2012.

Providing training, GAP assessment, management systems implementation and consulting services. First-hand knowledge of Georgian agriculture sector. Implemented projects in Azerbaijan, Armenia, Kyrgyzstan.

GLOBALG.A.P. systems were certified by EUROCERT and SGS Moldova.

For food safety and quality management systems certification cooperates with various international certification bodies, such as Bureau Veritas, SGS, etc.

Challenges

- » Lack of competent official control of FBOs causing unfair competition of service providers;
- » Lack of guidelines for post-harvest processing and technologies;
- » Lack of networking and cooperation among consulting companies for experience exchange on local and international level.

Potentials

- » Increase capacity of services and consultants with IRCA certified trainings on GFSI standards
- » Creating safety and quality guidelines for improvement of services

GDCI LTD

Food safety and quality management systems consulting company. During the 12 years of GDCI existence, consultants provided consulting services to approximately 100 enterprises and delivered training to more than 2000 individuals. Until 2020 was member of GLOBALG.A.P. and it officially translates GLOBALG.A.P. documents into Georgian. The company covers topics, such as food safety and quality management principles, GMP/GHP, HACCP, internal audit training course, international standards (ISO 22000, FSSC 22000, IFS, ISO 9001, GLOBALG.A.P., etc.)

Challenges

- » The company has no significant challenge at the moment.

Potentials

- » Increase capacity of provided services and consultants with IRCA certified trainings on GFSI standards

STR consulting LLC

Management systems consulting company from Batumi, Adjara, providing consultancy, training and management system implementation service in various areas.

Cooperates with several international certification bodies, e.g IQNET.

Challenges

- » Lack of IRCA certified staff and auditors.

Potentials

- » Increase capacity of services and consultants with IRCA certified trainings on GFSI standards

QUADRA Consulting LTD

The company is providing services of assessment, implementation, training, and internal audit of management systems according to ISO 9001, ISO 14000, ISO 27000, ISO 45000, ISO 13485, etc.

The company is highly qualified in providing services for ISO/IEC 17025 implementation for accreditation of laboratories.

Challenges

Lack of IRCA certified staff and local auditors.

Potentials

- Implementation of ISO/IEC 17025;
- Increase capacity of services and consultants with IRCA-certified trainings on GFSI-standards.

7.5 Market surveillance and inspection bodies

The Georgian Accreditation Center (GAC) is providing accreditation services according to ISO 17011 to Conformity Assessment Bodies (CABs) throughout the country. Accreditation of Inspection bodies is done according to ISO 17020, and in total there exist 120 registered Inspection bodies in Georgia operating in very diverse fields (e.g. vehicles, lifts etc). The main market surveillance and inspection body in our field of interest is the National Food Agency (see Section 7.1). It is providing official inspections and market surveillance to do with food/feed safety, animal and plant health. NFA is operating on the basis of national legislation (Law of Georgia on ‘Food Products/Animal Feed Safety, Veterinary and Plant Protection Code’, from 25.05.2012) yet is not accredited according to ISO 17020. There is no other officially recognized or accredited inspection body with scope of activities

related to F&V or related to the agricultural sector for that matter. This is a significant challenge for the general QI in Georgia, namely that not all categories of products placed on the market are under systematic control. There is a lack of a dedicated market surveillance body for food contact materials producers (such as NFA) and hence a lack of official control. Market surveillance procedures and structures of the institutions are not sufficiently developed and not in compliance with best international practices. There exists one organization, the Center for Strategic Research and Development of Georgia (CSRDG), which in the frame of different programs is conducting market surveillance activities in different fields, provides trainings and consultancies and has published to do with aspects of food safety in Georgia.

ACTOR	CHALLENGES AND POTENTIALS
<p>Center for Strategic Research and Development of Georgia (CSRDG)</p> <p>CSRDG, established in 1995, is active in following fields: community development, promoting good governance, CSO capacity building, consumer rights protection, social entrepreneurship, European integration. CSRDG provides training, consultancy and awareness raising. In 2019 CSRDG, with support of donor organizations, implemented the projects “To support ongoing reforms in the field of food safety in Georgia” and “Facilitate the implementation of the EU-Georgia Association Agreement in the field of sanitation and phytosanitary matters”. The organization has an ongoing project (2019-2021) on “Increasing product safety in Georgia”.</p> <p>Information about activities, successful stories are shared on social media and web-page momxmarebeli.ge</p>	<p>Challenges</p> <ul style="list-style-type: none"> » Lack of funds for implementation of food safety monitoring and market surveillance programs <p>Potentials</p> <ul style="list-style-type: none"> » Implementation of projects supporting implementation of DCFTA and SPS requirements; » Implementation projects of consumer rights protection; » Implementation of independent market surveillance activities.

7.6 Educational Institutions

There are numerous educational institutions and departments in Georgia linked directly or indirectly to the field of QI from both higher education and vocational education (for a list of all institutions in the Georgian education system, see [MES](#)). In higher education, four universities rank prominently when it comes to capacitating and preparing students for future work in the field of quality infrastructure and especially also in conformity assessment bodies: Agriculture University of Georgia, Georgian Technical

University, Tbilisi State University, and Tbilisi State Medical University. With the former two institutions (AUG, GTU) an interview each was carried out to learn more about their specific challenges and potentials, the latter two universities are listed as general information and drawing attention to the availability of relevant programs in the country.

Every year, the Ministry of Education, Science, Culture and Sport is elaborating an order (e.g # [91/N](#)) on universities and educational programs which are to

be covered fully from the public budget. For freshers, this makes the selected programs attractive to choose. For 2020-21 the order is covering following institutions, with following specialties: Tbilisi State University (Physics, Chemistry, Biology); Georgian Technical University (Energetics and Electronic Engineering; Agriculture Technologies, Food Technologies, Agro-Engineering, Soil and Water Resources Engineering, Chemistry, Biomedical Engineering and others); Ilia State University (Physics, Biology); Akaki Tsereteli State University (Physics, Biology, Agronomy, Food Technology and Safety, Agro-engineering, Chemistry, Biotechnology, Quality Management; Samtskhe-Javakheti University (Agronomy, Ecology); Telavi State University (Food Technologies, Biology, Agronomy); Batumi State University (Biology, Chemistry, Physics, Agriculture Technologies); Sokhumi State University (Chemistry, Biology, Physics); Gori State University (Biology). It is noticeable that many of the degree courses can quite easily be linked to the field of QI and that this is the case across Georgia. One can hence expect well-trained graduates entering the QI job market with an apt educational background in the years to come.

In addition to higher education, there also exist specialization and certification courses in vocational education provided through state and private education institutions (colleges, general and higher education institutions). In total, there are 136 private and 45 state VET service providers offering 620 qualification programs and 409 certified courses. Among them 57 are in the field of healthcare, 56 in agriculture and veterinary, and 156 in engineering, production, and construction (list of all VET providers). Vocational Education Programs are oriented to the labor market, last one to three years and aim to develop practical skills. However, generally speaking, vocational education in Georgia is not very popular, suffers from poor quality of existing programs, a lack of prestige, an imbalance between those wanting to study in higher education institutions and those going to vocational education schools, and low chance for employment for vocational graduates. In the following, one of the most relevant vocational educational institutions, the Ilya Tsinamdzgvrishvili College, is mentioned as a separate entry.

ACTOR	CHALLENGES AND POTENTIALS
<p>Agriculture University of Georgia (AUG)</p> <p>AUG was founded in 1929 and represents the main university with an agricultural profile in Georgia, providing educational programs of all levels for agronomists and food technologists. Most relevant:</p> <p><i>BSc Program in ‘Food Processing Technology’</i> which includes modules on Food Safety, Physic-Chemical Methods of Food Quality Control, Food Production Hygiene and Sanitary; Metrology, Standardization, Certification; Fruits and Vegetables Processing Technology; Refrigeration Technology, among others.</p> <p><i>MSc in ‘Agricultural Sciences with a specialization in Food Processing Technology’</i> which includes modules such as Laboratory Methods of Technical-Chemical Control; Microbiological Methods of Food Product Quality Control, among others.</p>	<p>Challenges:</p> <ul style="list-style-type: none"> » Lack of agronomy students; » Lack of demand for graduates; » Businesses request experienced, not young specialists. <p>Potentials:</p> <ul style="list-style-type: none"> » Fully accredited university programmes providing training in QI-relevant fields; » Several profs with practical experience in modern conformity assessment, food safety & quality standards etc.; » Programs cover key topics but are not updated and relevant to demand; » Networking and cooperation between stakeholders and with EU colleagues; » Participation in international workshops and post-graduate short courses; » Offer courses as on-the-job trainings.

Georgian Technical University (GTU)

Established in 1917 as Polytechnic Institute in Tbilisi, the first Higher Educational Institution in Caucasian region provides a large range of programs and research.

Faculty of Informatics and Control Systems: BSc and MSc programs including a metrology module; Training courses on metrology, standardization, and certification. There is also a center “Standard” at the faculty, which organizes interlaboratory comparisons and develops certification schemes.

Faculty of Agricultural Sciences and Biosystems Engineering: BSc Program in Agronomy, Agro-engineering, Food Technology; PhD in Agricultural Technologies, Food Technology; Professional educational programs in different areas of agriculture.

Faculty of Chemical Technology and Metallurgy: BCs and MCs in Food Stuff Production Engineering; PhD in Chemistry, Chemical and Biological Engineering; various professional education programs, such as «Expert of Chemical and Food Products», «Foodstuff Ecology Specialist» etc.

Challenges:

- » Lack of demand by students, as there is very low awareness on importance of metrology, standardization, and conformity assessment requirements;
- » Lack of modern equipment and technologies.

Potentials

- » Providing training to various organizations on the assessment of measurement uncertainty;
- » Increase awareness on QI (metrology, standardization, conformity assessment);
- » Provide young professionals, with practical skills and modern knowledge.

Tbilisi State University TSU

The first national university in the Caucasus was opened in 1918, combining a European-type institution with Georgian educational traditions.

The Faculty of Exact and Natural Sciences is the main unit for educational programs and research in the exact and natural sciences at TSU. It provides BCs and MCS in Physics, Biology, Applied Biosciences and Biotechnology and PhDs in Biology, Chemistry, Physics and others.

Faculty of Medicine: The TSU Faculty of Medicine offers undergraduate, Master, Doctoral Programs, Residency in several fields, among them Public Health.

No interview with TSU, thus no challenges and potentials listed.

Tbilisi State Medical University TSMU

The university is providing academic educational and professional Programs on various faculties, among them Medicine, Pharmacy, Public Health. Providing MCs and PhD studies, International and Exchange Programs, has Institute of Postgraduate Medical Education and continuous Professional Development.

No interview with TSMU, thus no challenges and potentials listed.

LEPL “Ilia Tsinamdzgvrishvili College”

The Ilya Tsinamdzgvrishvili College implements five professional programs, namely horticulture, viticulture - winemaking, hotel services, dairy production, based on the principle of modern industrial approaches. In the process of training, skills are developed in a real production environment (in the enterprise).

The college is located in the village Tsinamdzgvriantkari, Mtskheta municipality.

Challenges:

- Lack of interest from students;
- Lack of modern equipment;
- Lack of knowledge of modern technologies and methodologies;
- Lack of availability of scientific and modern practical literature in Georgian.

Potentials:

Improve quality of provided courses, by introduction of practical activities, modern technologies, and equipment

7.7 Quality extension services

This section briefly describes key institutions that provide, in one way another, information relating to the field of food safety, quality requirements and related QI services. In the given context these are sector associations (listed in Section 5.4), the

Georgian Laboratory Association (GeLab) and different (farmers’) consultation centers. Such organisations are in a strong position to raise awareness towards the issue and foster the demand for local QI services.

ACTOR	CHALLENGES AND POTENTIALS
<p>Georgian Laboratory Association (GeLab)</p> <p>GeLab was established in 2013. It provides proficiency testing, interlaboratory comparisons (PT / ILC), trainings similar to TrainMiC program and according to individual requirements of labs (such on the creation of an internal network management system (LIMS), work with specific equipment, waste management, etc.) and organizes meetings with representatives of GAC and GeoSTM.</p> <p>GeLab is providing the following services: Translation of professional literature into Georgian; Dissemination of professional information (e.g. international news about new regulations, standards, trainings, conferences, etc.). All services are free of charge, only trainings and delivery of ERA PT / ILC samples requires payment.</p> <p>In past years trainings were conducted on international standards (ISO / IEC 17025, ISO15189 and ISO / IEC 17020), with various topics (general review of standards, internal audits, uncertainty assessment, metrological traceability, risk-based thinking etc.).</p> <p>GeLab is cooperating with international associations and organizations, such as: EURACHEM; ERA; TrainMic; VUP, PTB - Implemented project “Strengthening Food Testing and Metrology in the South Caucasus Countries“, #95097, Mmbz-nr. 2014.2204.7).</p>	<p>Challenges:</p> <ul style="list-style-type: none"> » Lack of funds to fulfill all planned activities. <p>Potentials:</p> <ul style="list-style-type: none"> » Providing large number of trainings and services; » Networking and cooperation with international organizations; » Ensure sustainable development of labs.
<p>Information and Consultation Centres (ICCs)</p> <p>ICCs are operating under RDA and are present in all municipalities of Georgia. In March 2021, project on renovation and improvement of extensions centers was presented. New directions: sharing of field knowledge and increase of access to information in the agrarian sector; creation of a digital platform; access to MEPA’s electronic library (elibrary.mepa.gov.ge) and unified network of demonstration plots for farmers.</p>	<p>Challenges:</p> <ul style="list-style-type: none"> » Lack of qualification of ICC staff; » Lack of practical skills on modern agro-technological a farming practice. <p>Potentials</p> <ul style="list-style-type: none"> » Capacity building of ICC staff; » Networking with EU colleagues and successful story sharing.

The Agriculture Extension Centre “Agrohouse”

Agricultural service provider company located in Zugdidi, founded in 2014, is a unique provider of agriculture-related extension services with broad experience. It has favorable office environment with modern facilities (agro-laboratory, agro-store, vet clinic, training center) and professional staff. The company has experience in preparing short-term demand-oriented trainings and offers consultancy in the following areas, especially in Samegrelo-Zemo Svaneti: farm and business management, business planning, marketing, food safety, HACCP and GLOBALG.A.P.

Challenges:

- » Lack of funds to fulfill activities and projects in the field of agriculture.

Potentials:

- » Development of local agro experts;
- » Facilitation of the public and private providers' partnership in the region;
- » Facilitate the linkages between stakeholders.

Agrocom LTD

Farmers service and training center founded in 2011. Now they are providing numerous services to more than farmers.

Agrocom offers European quality products to farmers and agricultural organizations including pesticides, fertilizers, agro-technics, irrigation systems, seedlings, seed material, hail nets – yet also offers qualified consultation to farmers.

Challenges:

- » Lack of staff with knowledge and skills on modern technologies, sustainable resource management, IPM etc.;
- » Lack of control of propagation materials;
- » Lack of waste management service provider companies;
- » Lack of official control of Plant Protection Products (PPP) providers;

Potentials:

- » Providing service for waste management;
- » Increase scope and quality of services.

Institute of Subtropical Crops and Tea Industry

Institute has been functioning since 1930. Its multi profile research have been the base of producing high and stable harvest of tea, citrus and subtropical fruit culture in the most southern subtropics and developing recycling industry. The institute has four laboratories: Engineering and technology laboratory, Plant breeding laboratory, plant protection laboratory, Laboratory of Agro-chemistry and Soil Science

Challenges:

- » Lack of demand and students;
- » Lack of modern equipment and techs

Potentials:

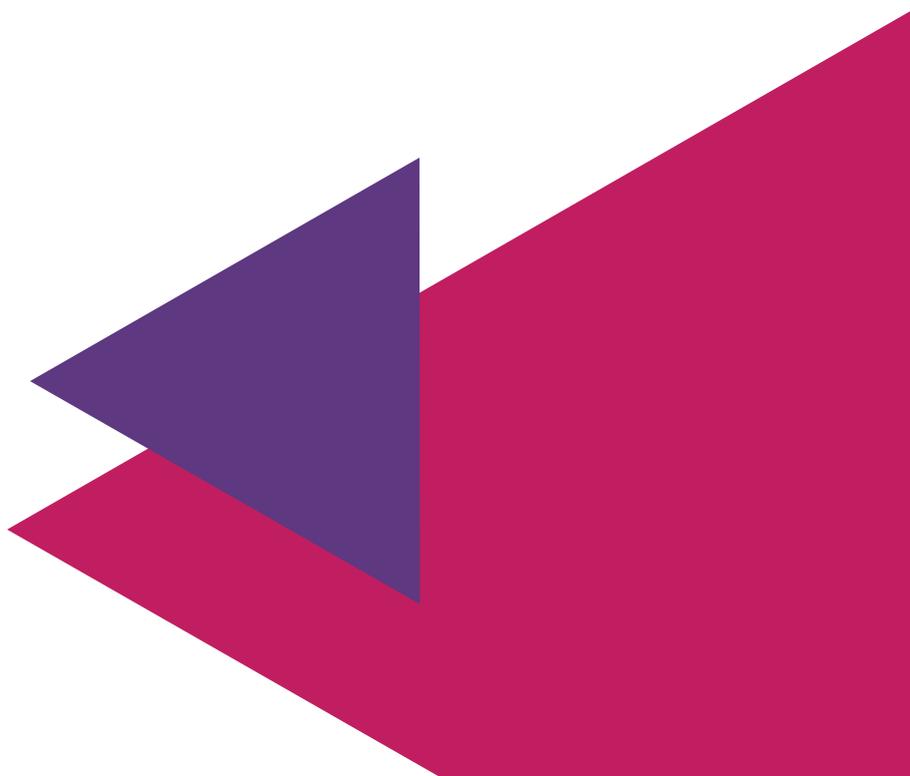
- » Development of short post-grad courses;
- » Trainings on modern agricultural and post-harvest treatment technologies;
- » Experience exchange with EU colleagues.

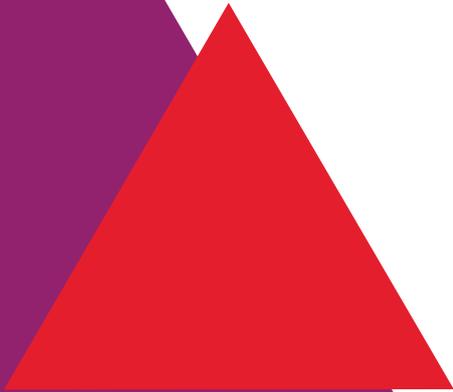
7.8 Traceability service providers

While there exists a legal act on traceability in Georgia, it is not well enforced. At the level of primary production the traceability system is poorly developed, primary product traceability is low (lack of control, unorganized markets etc) and the conformity of many Food Business

Operators, especially farmers, is very low. In addition, only very few companies can provide sector-specified traceability software. One example is UGT with the development of HVMS (see below).

ACTOR	CHALLENGES AND POTENTIALS
<p>UGT LTD</p> <p>UGT is a leading company in the field of digital technologies in Georgia, which has expanded greatly throughout the field of IT in the past 20 years. Today, UGT is implementing solutions adapted to different sectors including building management, payments and cash processing, solar energy etc. Has the full range of technologies and competencies to provide the digital transformation of organizations. USAID has contracted for the development of Harvesting Mobile Application (HVMS) which is used mainly by berries producers.</p>	<p>Challenges:</p> <ul style="list-style-type: none"> » Lack of demand from primary producers and specific sectors. <p>Potentials:</p> <ul style="list-style-type: none"> » To provide sector specified traceability programs; » High level of technical capacity and experience.
<p>GS1 Georgia</p> <p>GS1 Georgia is one of the 112 member organizations of GS1, which assigns identification numbers to member companies to regulate product accounting and develop e-business. GS1 Georgia administers the GS1 system, i.e. issues the company prefix starting with the country code 486 to its more than 700 member companies. Georgian products identified by these three numbers are known all over the world.</p>	<p>Challenges:</p> <ul style="list-style-type: none"> » High price for barcode service. <p>Potentials</p> <ul style="list-style-type: none"> » Large number of customers in Georgia representing various sectors.







CONCLUSION AND RECOMMENDATIONS

This chapter brings together the key findings of the previous Chapters in the form of a conclusion and gap analysis (Section 8.1). This is followed by eight recommendations for further strengthening the QI development of the sector (Section 8.2).

8.1 Conclusion and gap analysis

This research study was carried out and written up during the second and the third wave of COVID-19, at a time of deep global uncertainty. The pandemic has profoundly changed things, on all levels, and on a magnitude that hardly anyone could have foreseen only a year ago. The pandemic has forced the Georgian economy into shutdown, has contributed to important economic slowdowns in key sectors and led, instead of the initially forecasted 5 % growth of GDP, to a steep economic contraction of 6 % in 2020 (World Bank 2021). As an early-felt impact of COVID-19 in Georgians' everyday lives, and while the country was still held up as a model case of virus containment, the "...retail prices of most key staple foods in [...] Georgia during the first six months of 2020 saw large percentage increases over the previous year, implying a significant increase in the cost of diets" (FAO 2020). Things did not improve, quite to the contrary, Georgia experienced a two-digit food price inflation in 2020 (Geostat 2021) and the latest World Bank poverty projection (World Bank 2020c) shows that the economic shock from the pandemic could have impoverished 350'000 people in Georgia and forced over 800'000 people to suffer from downward mobility.

While numerous studies are currently published on pathways to economic recovery, it is hard to predict accurately what this all means for global markets, international trade, consumption patterns and national economies, and whether for instance, among many other things, a more regionalized world economy will emerge in the years to come. Some observers suggest that COVID-19 is expected to affect agricultural markets over the next full decade (OECD 2020). Georgia's agriculture has proven one of the most resilient sectors of the country with comparatively high production, increased exports and little wage income losses during 2020 (EC 2021b; Geostat 2021; World Bank 2020c) but it remains an unanswered question how Georgia's

economy, overall, will recover from the pandemic's impact in the longer term – and what this all means for Georgian agriculture in general and the F&V sector in particular.

While this is not the place for bold speculation, the research team expects a number of things to remain largely unaffected by COVID-19 in terms of the Georgian F&V sector which may serve in parts as orientation on what lays ahead (for more details see Chapters 3 to 7):

- » Despite the possible challenges in production and trade, the demand for F&V will stay strong and may even grow due to increased health concerns of consumers.
- » The requirements of buyers in high-end markets such as the EU are strict and tend to become even stricter in terms of food safety and quality, traceability and ecological and social sustainability.
- » While the government as well as many individual FBOs strive to diversify exports, Georgia's F&V exports this diversification has not yet materialized, neither in terms of products nor destinations. Very large shares of F&V exports continue to go to Georgia's traditional target markets, namely Russia and other CIS countries, while Georgian F&V exports to the EU basically equaled hazelnuts during the past two decades making a staggering 97.6% of total F&V exports on a yearly average between 2001 and 2020.
- » Apart from hazelnuts (and other nuts), which are relatively easy to handle and less demanding with regard to food safety and quality, most F&V value chains in Georgia face similar challenges in terms of compliance with high-end market requirements: lack of awareness among many FBOs about good agricultural / manufacturing / hygiene practices, food safety and quality requirements

and internationally recognized standards coupled with a lack of resources to comply with these requirements; lack of high-quality inputs, post-harvest technologies and appropriate and affordable packaging solutions; limited market intelligence.

- » To mitigate the above challenges, governmental support schemes, development projects and export facilitators provide extensive support to food value chains in Georgia, including F&V, especially by means of capacity building, co-financing investments, facilitating horizontal and vertical cooperation between value chain actors and conducting market research. Many of these investments need time to bear fruit in the truest sense of the word because perennial crops yield full harvests only after several years, but also because the developments involve a lot of tacit knowledge and require behavioral changes.
- » The legal approximation with the EU in the frame of the Association Agreement and its integral part, the DCFTA, is underway, supported via technical assistance and subsidies from the EU. In line with this, the compliance with EU policy and best practices is of utmost priority in the ‘Agriculture and Rural Development Strategy of Georgia 2021-2027’ (MEPA 2019a) with one out of only three goals on ‘Effective systems of food/feed safety, veterinary and plant protection’. This goal entails to approximate the sanitary and phytosanitary regulatory legislation of Georgia to the EU legislation, to ensure that products supplied to the local and export markets comply with sanitary and phytosanitary standards, to develop the laboratory capacities, and quality assurance of agricultural inputs.

» The approximation process will ultimately enhance FBOs’ compliance with food safety and other requirements, improve food safety in the country and at the same time ease exports to the EU (and other high-end) markets. Actual enforcement is however facing several challenges including a fear of negative social impacts, an incomplete FBO database and limited capacities of the principal market surveillance body (NFA) as well as sub-contracted service providers (laboratories and inspection bodies).

» A strong QI with capable CABs is crucial to control as well as to prove conformity. But Georgian CABs face many challenges in terms of high-quality service provision to market surveillance bodies as well as FBOs, including the current lack of demand which leads to underutilized capacities and limited resources for necessary investments in equipment as well as knowledge.

In view of the above facts one can conclude that the GQSP Georgia project, with its focus on strengthening CABs, covers a highly relevant niche which complements very well other ongoing initiatives that are more oriented towards value chain development or institutional building of government entities. To identify the most meaningful interventions for further development, the key question is: where are the major gaps in the system?

Table 6 provides a summarizing comparison of the EU food safety and quality requirements for fresh and processed F&V – considering legislation as well as common voluntary international standards – with the responsible stakeholders’ capacities in Georgia in order to identify the main gaps. This forms the basis for the recommendations shown in Section 8.2.

Requirement	Responsible stakeholders	Gaps
<p>Traceability (<u>Regulation EC/178/2002</u>): Food business operators need a comprehensive, easily accessible traceability system, they must be able to identify at least the immediate supplier and subsequent consignee of a product, and they have to adequately label food and accompany it with any required documentation.</p>	<p>MEPA: potential adoption of legislation in line with EU</p> <p>National Food Agency (NFA): enforcement and official control</p> <p>FBOs: ensuring conformity</p> <p>Traceability system providers (UGT, GS1 etc.) and accounting software providers (Orisi, 1C, SuperFin, etc.)</p> <p>Food Safety Management Systems (FSMS) consulting companies</p>	<p>There is a legal act on traceability in Georgia but it is not well enforced</p> <p>Lack of control of primary product traceability (unorganized markets, street selling)</p> <p>Non-conformity of many FBOs, especially farmers (limited document-keeping and use of traceability systems)</p> <p>Lack of traceability system and accounting software for primary production and agriculture (so far only HVMS by UGT)</p>

<p>Food hygiene (<u>Regulation (EC) 852/2004</u>): All FBOs except for primary producers are obliged to implement a <u>Hazard Analysis and Critical Control Point (HACCP)</u> system. They have to provide a confirmation of FSMS implementation.</p>	<p>NFA: enforcement and control by own inspectors FBOs (especially post-harvest): ensuring conformity FSMS consulting & certification companies: Star consulting LTD, ISO consulting LLC, Natela Khurtsidze - International Expert of Management Systems, QUADRA Consulting LTD, GDCI LTD, STR consulting LTD, Bureau Veritas Georgia, SGS LTD etc.</p>	<p>EU legislation was adopted in 2015 and stepwise enforcement is foreseen until 2023 So far rather weak enforcement of legislation and irregular official controls due to a lack of qualified auditors / inspectors Non-conformity of FBOs due to low awareness and required investments</p>
<p>Contaminants - pesticides (<u>Regulation (EC) No 396/2005</u>): <u>EU Pesticide Database</u></p>	<p>NFA: enforcement and official control with sub-contracted service providers (labs) FBOs (especially primary producers): ensuring conformity Laboratories: SLA and Multitesti with internationally recognized testing capacity for 75 resp. 55 pesticides; Wine Laboratory LTD: large scope of internationally recognized testing methods but offers services only to wine producers; Other labs: mostly operate with GOST but some of them showed interest to invest in modern capacities in the future</p>	<p>EU legislation was adopted in 2016 but so far not enforced despite plans until 2020 Currently no official control because no service provider (lab) was capable and eager to do it Non-conformity of many FBOs due to lack of awareness regulations Lack of knowledge and skills on modern management, sampling and testing standards among labs Lack of lab equipment to comply with modern, internationally recognized testing standards Limited accreditation scope of labs Lack of workable, up-to-date resources such as key documents translated into Georgian language, databases on registered pesticides per product and pesticide MRLs Lack of lab supporting services (e.g. reference material providers, equipment maintenance services) Lack of demand leading to labs' underutilized knowledge and skills Participation in proficiency testing (PT) is very expensive</p>
<p>Contaminants - heavy metals and mycotoxins (<u>Commission Regulation (EC) No 1881/2006</u>): limits exist for Lead, Cadmium, Tin (canned food), Aflatoxins, Patulin and Ochratoxin A</p>	<p>NFA: enforcement and official control with sub-contracted service providers (labs) FBOs: ensuring conformity Laboratories: SLA, Multitesti, Laboratory of G. Natadze, Norma, TestLAB, Expertiza+, Etaloni, Laboratorial Research Centre, Quality Lab</p>	<p>EU legislation was adopted in 2015 but is enforced to a limited extent Lack of internationally recognized methods (so far mostly GOST) and modern testing equipment Participation in PT is very expensive</p>

<p>Contaminants - microbiological (<u>Commission Regulation (EC) No 2073/2005</u>): Limits exist for <i>Listeria monocytogenes</i> (for ready-to-eat foods), <i>Salmonella</i> and <i>E. coli</i></p>	<p>FBOs: ensuring conformity NFA: enforcement and official control with sub-contracted service providers (labs) Laboratories: all labs which have F&V in their scope do microbiological testing</p>	<p>EU legislation was adopted in 2015 and is quite well enforced Lack of reference materials for labs Participation in PT is very expensive</p>
<p>Irradiation (<u>Directive 1999/3/EC</u>)</p>	<p>MEPA: adoption of legislation NFA: enforcement and official control (currently not done) FBOs (especially post-harvest): ensuring conformity Laboratories: -</p>	<p>Adoption of EU legislation is not foreseen in the frame of DCFTA agreement No irradiation testing and hence no official control in the country</p>
<p>Plant health (<u>Regulation (EU) 2016/2031</u> and <u>Regulation (EU) 2019/2072</u>): many F&V require a phytosanitary certificate and are subject to documentary, identity and plant health checks upon arrival in the EU. The EU's platform TRACES allows to update official certificates and get validation from authorities online.</p>	<p>NFA and its 12 regional offices: inspections and issuance of phytosanitary certificate by own phytosanitary specialists FBOs: ensuring conformity in terms of production methods, packaging materials etc. Laboratories: SLA, plant health labs of the Scientific Research Centre of Agriculture (SRCA) and Agro Lab LTD have certain phytosanitary testing / diagnosis capacities; not all of them are accredited and SRCA labs are mainly used for scientific purposes</p>	<p>EU regulation will be adopted in 2024 (with the support of an EU twinning project) and gradually enforced thereafter Need for improvement of NFA's phytosanitary analyses to become fully aligned with EU regulation Lack of knowledge of EU phytosanitary requirements among all stakeholders Lack of labs for phytosanitary diagnoses Lack of official control in many relevant areas related to plant health (e.g. propagation materials, use of agrochemicals etc.) NFA is so far not involved in TRACES</p>
<p>Marketing standards (<u>EU Implementing Regulation (EU) No 543/2011</u>): There is a specific EU marketing standards for 10 fresh F&V (Annex I Part B) for which FBOs have to provide a conformity certificate. Other official standards are the <u>UNECE standards</u> and the <u>Codex Alimentarius standards</u>.</p>	<p>MEPA or GeoSTM: potential adoption of legislation / standards NFA: enforcement and official control (but currently not active in this field) FBOs: ensuring conformity Laboratories with accreditation scope for organoleptical assessments: Multitesti, Laboratory of G. Natadze, Expertiza+, Laboratorial Research Centre, TestLAB, Quality Lab, A. Beridze Laboratory Conformity assessment bodies (CABs) issuing conformity certificates</p>	<p>Georgian regulation is not in line with EU marketing standards and adoption of EU legislation is so far not foreseen No official control on part of NFA Lack of knowledge on EU and other official marketing standards among all stakeholders Lack of CABs providing tests and conformity certificates in line with international / EU requirements (Expertiza+ is accredited but only for GOST standards and other outdated normative acts)</p>

<p>Food composition (for processed products):</p> <p><u>Food improvement agents (Regulation (EC) No 1332/2008, Regulation (EC) No 1333/2008, Regulation (EC) No 1334/2008); food supplements (Regulation (EC) No 1925/2006); and particular products (Regulation (EC) No 1925/2006, Council Directive 2001/113/EC).</u></p>	<p>This aspect was not assessed in depth in the frame of this study due to a focus on fresh F&V.</p> <p>NFA: enforcement and official control through sub-contracted labs</p> <p>FBOs (processors): ensuring conformity</p> <p>Laboratories</p> <p>FSMS consulting and certification companies</p>	<p>EU legislation has been partially adopted since 2016 but not fully enforced, adoption of remaining acts is planned for coming years</p> <p>Official control by NFA is not fully in line with EU requirements due to lacking capacities of labs</p> <p>Lack of labs with capacities in food composition analyses</p>
<p>Food contact materials (FCM) (<u>Regulation (EC) No 1935/2004</u> and legislation on <u>specific materials and substances; a revision process</u> is going on). <u>Directive 94/62/EC</u> sets out the EU's rules on the management of packaging and packaging waste.</p>	<p>NFA: checking certificates of FCM used by FBOs (but not very actively)</p> <p>FBOs: ensuring conformity in terms of used machinery, packaging etc.</p> <p>CABs providing FCM testing and certification: Quality Lab is offering some analyses on heavy metals in plastics</p> <p>PMAG (the first Georgian packaging cluster)</p>	<p>EU legislation was adopted in 2018 and shall be enforced by 2024</p> <p>Lack of dedicated market surveillance body for FCM producers (such as NFA) and hence lack of official control</p> <p>Lack of awareness among FBOs on FCM requirements</p> <p>Lack of CABs offering FCM testing and conformity certificates</p>
<p>Labelling (<u>Regulation (EU) No 1169/2011</u>): <u>Requirements</u> per product can be extracted from the <u>European Labelling Information System</u></p>	<p>NFA: enforcement and official control with own inspectors</p> <p>FBOs: ensuring compliance</p> <p>Various consulting companies</p>	<p>No significant gaps, as EU legislation was adopted in 2016 and is quite well enforced</p>
<p>Voluntary standards and certification schemes (ISO, BRC, IFS, FSSC 22000, GlobalG.A.P+GRASP), organic and Fairtrade standards</p>	<p>GeoSTM: translation and listing of official (ISO) standards</p> <p>FBOs: ensuring conformity</p> <p>RDA: financial support for implementation and certification</p> <p>Donor organizations, especially USAID Agriculture Program: capacity building and financial support</p> <p>Certification body for organic products: Caucascert LTD</p> <p>FSMS consulting and certification bodies: Star consulting LTD, ISO consulting LLC, Natela Khurtsidze - International Expert of Management Systems, QUADRA Consulting LTD, GDCI LTD, STR consulting LTD, Bureau Veritas Georgia, SGS LTD etc.</p>	<p>Strong but insufficient qualified specialists which can provide consultancy services to FBOs (e.g. lack of agronomists with up-to-date knowledge on Good Agricultural Practices (GAP), Integrated Pest Management (IPM))</p> <p>Lack of local auditors for GFSI-recognized standards</p> <p>Lack of reliable, certified propagation materials and Plant Protection Products (PPP)</p> <p>Shortcomings in health and work safety practices at primary production level (e.g. required by GlobalG.A.P+GRASP, BSCI)</p> <p>Lack of knowledge and skills for organic farming, especially IPM</p> <p>Lack of reliable and certified FCM (especially packaging)</p> <p>Lack of well-planned and organized supply chain and storage facilities</p>

8.2 Recommendations

The bottom-line is straight forward: to enter the EU market – or any other high-end market for that matter – Georgian food products need to fulfil essential food safety and quality requirements. Conformity assessment is fundamental to prove compliance with these requirements and is thus one of the cornerstones of a well-functioning export-oriented economy. Georgia’s QI and conformity assessment capacities are generally considered “poorly developed” for most agri-food export chains. This is where the QSP Georgia project sees its main contribution, namely by strengthening conformity assessment bodies (CABs), especially testing and calibration laboratories, in view of enhancing the export potential of Georgian F&V. While the present study was significantly broad in its scope, it aims to contribute to QI development by providing specific, relevant and feasible recommendations of high priority and with substantial leverage that have a fair chance to significantly improve conformity capacities in Georgia in the medium to long run.

Recommendations 1 to 5 address the following: (1) the institutional development of the Georgian Laboratory Association; (2) technical, service and management capacity building for laboratories; (3) trainings on GFSI-recognized standards and certification schemes; (4) the high-quality translation of relevant documents for laboratories; and (5) the creation of a workable pesticide database.

QI alone is not the magic bullet to cure all ails of Georgian F&V exports, of course. The most capable CABs and the most complete translation of documents will not serve the purpose if production and post-harvest processes continue to face low quantity and poor quality of F&V. The non-conformity of FBOs and their products is a main constraint, which limits Georgia’s F&V exports at present. There is a need to further support and complement ongoing development projects, governmental support schemes and other potential multipliers focusing on food value chain development (including F&V) by providing them with advisory support and complementary capacity building formats in the area of food safety and quality requirements and, especially, related QI services (**Recommendation 6**).

In fact, the lack of demand for laboratory services is probably the most prominent root cause for many of the challenges that the Georgian QI faces today. It is as simple as that: the lack of demand means that laboratories are hesitant and/or unable to invest in modern equipment, for instance, that equipment maintenance is problematic, that technical staff does not get the routine in the testing procedures/methodologies and that hence there are challenges with keeping and increasing the scope of accreditation. This insight is far from new, but part of the solution and further development of the sector also rests on

such increase in demand. The most potent driver for change in this regard is the swift implementation of EU food safety standards as part of the Deep and Comprehensive Free Trade Area Agreement (DCFTA). What is needed essentially is the enforcement of food safety legislation and related official controls – and a strong lobbying, together with other actors, towards this end (**Recommendation 7**).

Currently, official control is much underperforming, for various reasons, and the latest skipping of pesticide residues inspection for the year 2021 is just one case in point. Put differently, it needs *an enabling environment* to bring to full use the laboratory capacities envisioned. This is why there is a second recommendation to do with lobbying, namely to lobby for further QI development (**Recommendation 8**). There are many fields of action to do with the long-term development of the Georgian QI system.

The voice of UNIDO is an important one, and it may very well use its institutional weight also in entry points of limited direct control and leverage to advance the agenda of supporting the alignment of the Georgian QI services with EU market requirements and standards for F&V – and by doing so potentially establishing a model for the food sector more generally. While UNIDO’s commitment to this cause may lead some to think that such change is relevant only in terms of contributing to an increase in export, it will work also, of course, towards increased food safety on the domestic market. Thus, the enforcement of legislation in line with EU regulations and with it the much needed, increased testing, will benefit – first and foremost – Georgian consumers. The focus on exports through the lens of QI needs to be understood also as both an important driver of and contribution to safer food and improved livelihoods in all of Georgia.

R1: INSTITUTIONAL DEVELOPMENT OF THE GEORGIAN LABORATORY ASSOCIATION (GELAB)

Justification	<p>GeLab aims to unite Georgian laboratories and other parties interested in the improvement of laboratories' performance and to provide various services to its members in order to ensure maximum compliance with international standards. The association is headed by a dedicated and prominent expert in the field who facilitates, negotiates and coordinates between labs and the wider QI context and acts as an institutional memory. Most of the relevant laboratories to do with F&V are members of GeLab and many of the interviewed laboratories highlighted the importance of the association, as it brings together individual actors that otherwise would be linked only loosely, if at all. Given these facts, GeLab represents the ideal body for sustainable strengthening of the Georgian laboratory infrastructure.</p> <p>While GeLab is considerably active in some areas (e.g. training on requirements of relevant international standards), it also faces certain challenges in terms of specific service provision, making its voice heard and overall institutional development.</p>
Recommendations	<p>Support GeLab with a systematic and thorough longer-term coaching in the area of member acquisition and maintenance, internal and external networking and outreach (e.g. donor community), communication (e.g. professional website including a “lab-finder function”) and service portfolio development etc.</p> <p>Provide financial support to GeLab for:</p> <ul style="list-style-type: none">» offering needs-based trainings and coaching;» professionally facilitating Communities of Practice (CoP);» easing career entry for young professionals (e.g. through a job fair or an internship/ job platform for graduates);» conducting high-quality technical translation work;» supporting participation in proficiency testing and inter-laboratory comparison programmes;» coordinating the larger scale collection of samples for sending them to laboratories abroad;» facilitating joint purchasing of products and services in the area of food safety and quality, e.g. consumables and reference materials for testing, equipment calibration and quality control of testing methods; and» networking and advice about the purchasing of second-hand heavy lab equipment and the like;» organizing networking events where QI and value chain actors can meet and learn about each other's needs and services. <p>Making most of these services exclusively available to members could help increase and maintain the membership community.</p> <p>Work through GeLab when capacitating Georgian laboratories and ensure that GeLab – as an institution and ‘brand’ – already now receives high visibility through and by way of these activities.</p>
Expected outcome	<p>GeLab is further establishing itself as a capable, widely recognized CAB focal point with convening power for all to do with laboratories in the field of F&V by providing meaningful, targeted and value-adding support to its members. GeLab is acting as laboratories' unified voice, with increased lobbying and bargaining power towards government, donors and suppliers of products and services. Strengthening GeLab is expected to contribute considerably to improving the overall QI system in Georgia.</p>
Involved actors	<p>Georgian Laboratory Association (GeLab)</p>
Priority	<p>High</p>

R2: TECHNICAL, SERVICE AND MANAGEMENT CAPACITY BUILDING FOR LABORATORIES

Justification	<p>The study confirms the challenges of Georgian testing and calibration laboratories described in the GQSP Georgia Project Document (2020:5off): laboratory staff often lack relevant knowledge and skills, e.g. in the area of modern, internationally recognized standards of sampling and analysis, legal requirements, use and maintenance of modern lab equipment and efficient, customer-oriented service provision. This directly translates into a set of further challenges such as the limited reliability of results, the failure of proficiency testing, low customer satisfaction and the like.</p> <p>Enhancing the quality of services from local laboratories is crucial for F&V value chains to ensure safe, reliable and competitive products that fulfill all requirements of both local as well as export markets.</p>
Recommendations	<p>Through GeLab, provide capacity building (trainings similar to TrainMic program but also one-to-one coaching and CoPs) for testing and calibration laboratories on:</p> <ul style="list-style-type: none">» Management standard for testing and calibration laboratories (ISO 17025) needed to fulfill accreditation requirements;» Modern, internationally recognized sampling and testing methods (ISO, BSI etc.) for foodstuff, especially F&V, in the area of contaminants but potentially also related to food composition requests of processed food, food contact materials and marketing standards in order increase laboratories' scope of accreditation;» Transition from GOST to internationally recognized standards;» Implementation of laboratory software such as Laboratory Information Management System (LIMS);» Use and maintenance of modern laboratory equipment;» Participation in proficiency testing (PT) and inter-laboratory comparisons (ILC);» Customer-oriented service provision such as sample collection services and digitalized processes. <p>Wherever possible, use synergies by embedding laboratory staff in already existing courses in Georgia (e.g. at local universities or by local consultants) and internationally (online events).</p> <p>Wherever possible and meaningful, make use of local expertise by inviting proficient speakers from Georgian universities, research institutes, exemplary CABs, consultancy firms, experienced food business operators (FBOs) etc.</p> <p>Consider working with videos which offer the possibility to visualize practical aspects in the case of virtual events and which can be reused multiple times and distributed more broadly.</p>
Expected outcome	<p>The technical, service and management competence of Georgian laboratories for F&V is strengthened. They increase their scope of modern, internationally recognized services meeting the needs of F&V FBOs.</p>
Involved actors	<p>GeLab, Georgian laboratories and Georgian experts (the most relevant ones are listed in Chapter 7), international experts.</p>
Priority	<p>High</p>

R3: TRAININGS ON GFSI-RECOGNIZED STANDARDS AND CERTIFICATION SCHEMES

Justification	<p>The demand for food safety (FS) and quality management (QM) certification is currently very low in the F&V sector in Georgia. However, if the focus ought to shift from more established markets such as Russia to higher-end markets such as the EU, the Gulf States and Japan where certified products have a considerable share, then this is an important topic not to be missed.</p> <p>Some local companies have started developing their portfolio in this direction some international certification bodies have created a local branch, but certification capacities are still very limited in Georgia. The lack of local certification bodies and auditors registered in the International Register of Certificated Auditors (IRCA) became especially apparent during the travel restrictions related to Covid-19.</p>
Recommendations	Organize IRCA-certified trainings on standards and certification schemes recognized by the Global Food Safety Initiative (GFSI) (FSSC 22000, BRC, IFS, SQF, GlobalG.A.P) for already existing certification bodies, local FS and QM consultants, extension service providers and other potentially interested stakeholders (e.g. NFA staff).
Expected outcome	Stakeholders develop a better and shared understanding of international standards and therefore provide more diverse and consistent consultancy / extension / certification services to FBOs. Joint attendance of trainings improves the networking among stakeholders.
Involved actors	IRCA-certified training providers; certification bodies, consultancy firms, extension service providers and other interested stakeholders (e.g. NFA staff).
Priority	Medium

R4: HIGH-QUALITY TRANSLATION OF RELEVANT DOCUMENTS FOR LABORATORIES

Justification	<p>To be able to produce correct, recognized test results, Georgian QI actors / laboratories have to align their activities with internationally accepted standard methodologies (e.g. ISO, BSI, EPA) and to correctly use their equipment.</p> <p>While key EU legislation linked to DCFTA is professionally translated, well known and easily accessible, this is not the case for most of the standard methodologies of laboratory testing and other important documents such as related guidelines and equipment handbooks. These documents are either not translated at all, adopted through cover page translation only (current practice of GeoSTM) or poorly translated in a non-technical language which makes it challenging for actual use. This leads to laboratories' limited access to highly relevant information, misunderstandings and mistakes in implementation.</p>
Recommendations	<p>With the help of GeLab, conduct a brief survey among the laboratories listed in Section 7.3 in order to identify the most relevant documents that need to be translated.</p> <p>Support GeoSTM in the professional, technical and high-quality translation of official standards from original languages (mostly English, German) into Georgian language.</p> <p>Support GeLab in the professional, technical and high-quality translation of non-official documents (such as guidelines for the implementation of standards, equipment handbooks etc.) from original languages into Georgian.</p>
Expected outcome	The availability of relevant documents in Georgian language improve the understanding and reduce misunderstandings with regard to the implementation of international standard methodologies, the use of laboratory equipment etc. This leads to more reliable, internationally recognized testing results.
Involved actors	GeLab, GeoSTM, professional translators
Priority	High

R5: CREATION OF A WORKABLE PESTICIDE DATABASE

Justification	The EU legislation on maximum residue levels (MRLs) of pesticides in or on food and feed of plant and animal origin (Regulation EC 396) was adopted in Georgia in 2016 (Regulation N623) and intended to be enforced since January 2020, yet is still pending today. One main challenge in this regard is the lack of a workable pesticide database where one can extract the MRLs of the more than 600 applicable pesticides per product. Currently, all information is compiled in five pdf files of several hundred pages each on matsne.ge website. Some of these files are scans not allowing to use the search function. It is hence almost impossible for laboratories, FBOs or other users to use these documents in any meaningful way.
Recommendations	Support the development of a workable database on pesticide MRLs per product in line with the already implemented EU legislation (similar to the EU Pesticide Database), including a tool for (automatic) updating. This database can be embedded in mastne.ge and other websites frequently used by laboratories and FBOs.
Expected outcome	A workable, up-to-date pesticide database eases the understanding and correct application of and full compliance with pesticide regulations.
Involved actors	MEPA, software development company
Priority	High

R6: AWARENESS RAISING AMONG FBOS VIA MULTIPLIERS

Justification	<p>Many development projects and governmental support schemes have a food value chain development focus (including F&V) and address systemic challenges through value chain finance, capacity building of value chain actors, institutional development etc. The focus is thereby mostly on modern production, processing and marketing methods, while food safety and quality requirements – both legal obligations as well as voluntary international standards – are addressed less comprehensively, and especially the link to QI services is rarely made. The same often holds true for sector associations, extension service providers and different online resources for FBOs. At the same time, the present study confirmed that many actors lack awareness and information in this area which hampers full compliance and successful sales on high-end markets.</p> <p>It is essential to fill parts of this gap by raising awareness for the issue among concerned government agencies, implementers of development projects and other actors with high multiplication potential, and by supporting them with the creation of effective up-to-date formats that raise awareness among FBOs and foster the demand for (improved) local QI services.</p>
Recommendations	<p>Get in touch with different actors with high multiplication potential: implementers of value chain development projects in the F&V sector (a non-exhaustive list is provided in Section 5.5), government agencies whose staff are in direct contact with FBOs (e.g. RDA), sector associations and extension providers (e.g. AGRO-COM and Kalo). Highlight the importance of food safety and quality requirements and related QI services and gain an in-depth understanding of the actors' capacity building activities and possible needs.</p> <p>Encourage the development of capacity building activities on food safety and quality and related QI services and offer advisory support, for instance by connecting them with relevant local and international experts and sources (websites, reports, publications etc.), providing or proof-reading contents etc. Suggest to focus on the FBOs with highest multiplication potential, namely input suppliers (upstream) and traders (downstream).</p> <p>Consider developing GQSP's own format(s) such as training unit(s), manual(s) or video(s), which can complement ongoing capacity building activities of the above actors and may also be promoted online (project's websites, Agronavti, crop2shop.ge, Trade with Georgia, Agro Library, momxmarebeli.ge etc.).</p> <p>Besides rather general contents (overview of legal requirements and other common standards, new pesticide database, QI map, labs and their testing services including "lab-finder function", consultancy firms and certification bodies and their services), a specific topic where related interventions might be able to occupy a niche is warehouse management and especially storage requirements (controlled atmosphere, temperature, humidity, time etc.) for different F&V.</p> <p>Besides GeLab, possible partners for the development of own formats could be the Georgian Export Development Association (EDA) or a consultancy firm operating at the interface of value chain and QI development.</p>
Expected outcome	<p>Implementers of food value chain development projects, government staff, sector associations and, through them, FBOs are more aware of food safety and quality requirements and related QI services. This fosters value chain actors' compliance with requirements, reduces their transaction costs in search of QI service providers, creates demand for local QI services and eases the export of Georgian produce to high end markets.</p>
Involved actors	<p>Implementers of food value chain development projects; RDA and their staff; sector associations; GeLab, EDA and/or a consultancy firm operating at the interface of value chain and QI development</p>
Priority	<p>Medium</p>

R7: LOBBYING FOR THE ENFORCEMENT OF FOOD SAFETY LEGISLATION AND INSPECTIONS

Justification	<p>Georgian laboratories will only be able to invest in and maintain high quality services for (F&V) FBOs if there is a continuous demand for testing. If demand is lacking, laboratories cannot buy necessary equipment or the return on investment is low and, especially, acquired knowledge and skills get lost without regular application. Several of the laboratories described exactly this challenge.</p> <p>In fact, demand for QI services will increase inevitably during the coming years, as Georgia must implement more than 250 EU food safety standards by 2030 in the frame of the DCFTA. Already now the NFA is tasked by decree to carry out food inspections in order to make sure that FBOs comply with legislation.</p> <p>The actual enforcement of the legislation and inspections faces however several challenges: i) a large majority of FBOs, especially farmers, are not registered and thus operate outside of the government's sphere of control which leads to double standards towards registered and unregistered FBOs; ii) there is a fear that FBOs operating on a small scale could be driven out of business (due to an inability to comply with requirements, additional overheads and taxes etc.); iii) the NFA has difficulties to find laboratories which are capable of taking on full inspection mandates (e.g. no pesticide residue testing was done in 2020 due to high workload and insufficient remuneration).</p>
Recommendations	<p>UNIDO, through GQSP Georgia can, together with other national and international actors (UN organizations, donors, NGOs, associations, FBOs etc.), lobby among the responsible authorities for:</p> <ul style="list-style-type: none">» the gradual but steady enforcement of EU food safety legislation along well thought-through and broadly supported action plans with accompanying social measures for small FBOs;» the development of a complete FBO database including the comprehensive registration of farms; and» the implementation of official controls, both planned and unplanned, through NFA and a diversity of sub-contracted service providers. <p>In order to carry out joint policy advocacy and lobbying, UNIDO / GQSP Georgia should become a member of various networks and alliances working on agriculture and rural development in Georgia, e.g. Civic Committee and Georgian Rural Development Network (GRDN), Georgian Alliance on Agriculture and Rural Development (GAARD).</p>
Expected outcome	<p>The enforcement of food safety legislation as well as of FBO inspections ensures safe food for consumers in Georgia and abroad and increases the demand for services of local laboratories. Local FBOs' full compliance with requirements eases sales in high-end export markets as well as on the domestic market.</p>
Involved actors	<p>MEPA / NFA, NAPR, GeLab</p>
Priority	<p>High</p>

Justification

There are many important fields of action with regard to the long-term development of the Georgian QI system. These aspects shall be pursued to a certain extent through lobbying and in the frame of the longer-term strategic roadmap for sustainable development of the Quality Infrastructure in Georgia.

Recommendations

Get started with the roadmap for further QI development early on, as this could help prioritize activities. The roadmap may also allow to already pursue certain aspects by means of lobbying, participation in working groups of other governmental or development initiatives or the (co-)initiation and (co-)facilitation of some key processes. Consider the following fields of action for the further advancement of the Georgian QI system when developing the longer-term strategic roadmap:

- » **Strategy for the further development of Georgian QI:** While there are strategic documents for the institutional development of GeoSTM and NFA, there seems not to exist an up-to-date strategy for the development of CABs or of the QI overall (in the area foodstuffs including F&V). UNIDO and GQSP Georgia could lobby for / initiate / (co-)facilitate / support the development of such a vision, strategy and action plan, thereby also taking into consideration the points listed below.
- » **Increased scope of (accredited) laboratory services:** The gap analysis has shown that besides limited capacities in testing of pesticide residues and other contaminants there is also a lack of testing capacities in the area of irradiation, plant health, food composition of processed foods as well as food contact materials. There will certainly be a need for further capacity building of laboratories (through GeLab).
- » **Acquisition of heavy laboratory equipment:** Right now, no Georgian laboratory is able to test the full range of pesticide residues in line with modern, internationally recognized standards. Five laboratories showed interest to invest in the necessary heavy equipment but cannot take the risk alone in view of the low demand and high interest rates of bank loans. It is up to MEPA and MoESD to agree on the creation of a governmental credit line for purchasing equipment at lower interest rates (similar to support schemes such as Plant the Future). It may also advise more voluminous programmes on which laboratories to support with what kind of equipment. In this regard it could be meaningful to negotiate with IAEA to extend its support also to the private sector (see ProDoc 2020:63).
- » **Fair competition between public and private laboratories:** Almost all interviewed private laboratories mentioned that there exists unfair competition between public and private laboratories. SLA has access to government funds, potentially receives donors' contribution to salaries through project budgets and may capitalize on further benefits which in turn allows to decrease prices for testing. To counterbalance SLA's unique position in the market and create a more level playing field for all, SLA should improve its scope in those fields where there is a lack of laboratories and de-emphasize areas where private laboratories can fully comply with requirements. Rather than competing with private labs, SLA could become the national reference laboratory and take a strong lead in providing proficiency testing, inter-laboratory comparison, trainings and the like.
- » **Establishment of laboratory service providers:** Laboratories lack key local service providers, namely equipment maintenance workers and reference material producers. This creates problems, as broken equipment cannot easily be repaired and the supply of reference materials from abroad is often expensive and delayed. If demand increases only slowly, there may be a need for initial (financial and capacity building) support towards the development of such products and services. GeoSTM might be well positioned to become a reference material provider in line with ISO 17034.

- » **Reviewing and further development of training programs:** In view of emerging EU legislation that is coming into force in Georgia in the frame of the DCFTA agreement, there is / will be a need for updating existing training programs on food safety, laboratory testing and agronomy at universities and potentially vocational education institutions. Also, it may be meaningful to support the development of short-term postgraduate courses for laboratory staff (and other CABs) focusing on practical skills. Such repeatedly offered courses could replace one-off trainings and would counterbalance the currently rather high staff fluctuation in laboratories.
- » **Alignment of public authorities with ISO standards:** It is recommended to implement ISO 17020 and ISO 31000 at NFA to improve the performance of inspections and ISO 17011 at GAC to improve the accreditation process.
- » **Membership of NFA in TRACES,** the EU's multilingual online platform for sanitary and phytosanitary certification, to foster easy access to documents for FBOs and authorities in destination countries.
- » **Development of more regional laboratories** to ensure easy access to testing services for FBOs through Georgia.
- » **Strong network of consultancy companies and certification bodies:** To improve the quality of services, strengthen the common understanding of internationally recognized standards and create a unified, strong voice, it may be meaningful to bring together consultancy companies and certification bodies and strengthen the exchange among and between them, e.g. through informal CoPs or even a formalized association. This may also lead to an improved outreach to FBOs.
- » **Strengthening linkages between Georgian QI and value chain actors,** e.g. by organizing roundtables and networking events between CABs and FBOs (e.g. local retailers and hospitality businesses, producer associations etc.).

Strengthening linkages with buyers in export markets. This may for instance be done by consulting interesting EU retailers' websites, by organizing meetings with EU importers or by facilitating the access to various networking platforms (e.g. CBI Market Intelligence Platform, Fresh Plaza, TRIDGE Global Trade Platform, Frozen sales, FRUIT LOGISTICA, IRO Raspberry, East Fruit) for existing and potential F&V exporters. Such activities may lead to market pull-up instead of push-up.

Expected outcome	The Georgian QI, and especially CABs, is strengthened in various ways thereby enhancing the performance of the overall QI system and service provision for FBOs ultimately leading to increased food safety and quality on domestic markets and fostering exports of Georgian F&V (and other products).
Involved actors	MEPA / NFA, MoESC / GeoSTM and GAC, CABs, other implementers of projects in the area of QI development
Priority	Medium to high





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Annex

ANNEX 1: Research team

Core team:

DR. DOMINIC BLAETTLER

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DR. PHATIMA MAMARDASHVILI

Agricultural economist, independent consultant

EKATERINA BURKADZE

Food Safety & Quality Management Specialist, STAR
consulting, PhD candidate

PIA FEHLE

Agricultural scientist, independent consultant, former
research associate BFH-HAFL

Supporters:

SUSAN ZUELLI

Lecturer Food Technology, BFH-HAFL

SALOME GELASHVILI

Agricultural economist, ISET Policy Institute

SOPHIE MARCHESI

Research assistant, BFH-HAFL

The study was conducted under the lead of the School
of Agricultural, Forest & Food Sciences, Bern University
of Applied Sciences (BFH-HAFL)

ANNEX 2: Research schedule

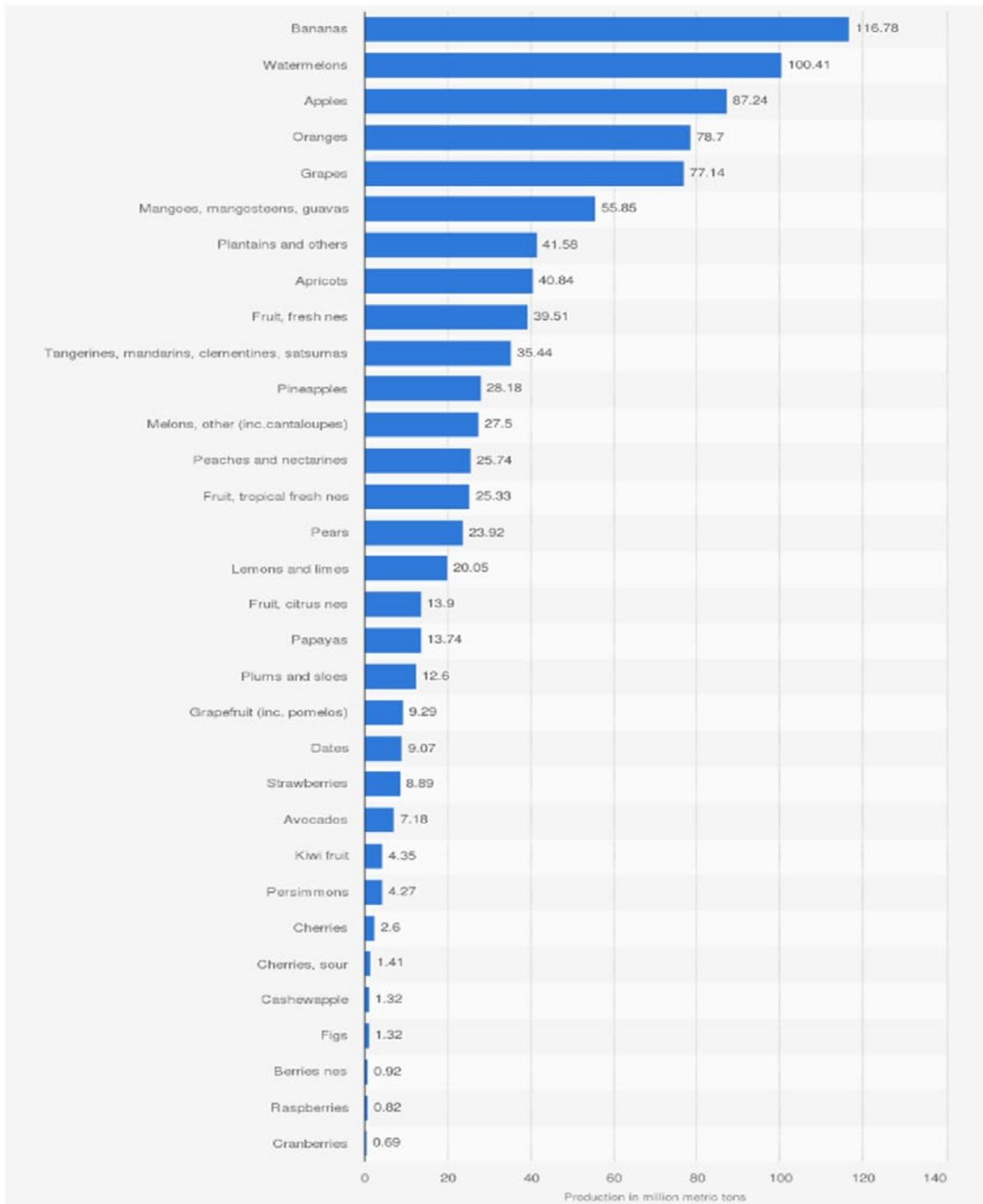
Activity	Responsible	2020					2021										
		21.12.	28.12.	04.01.	11.01.	18.01.	25.01.	01.02.	08.02.	15.02.	22.02.	01.03.	08.03.	15.03.	22.03.	29.03.	
Kick-off meeting with UNIDO	UNIDO, DB, EB, PF, PM	22.12.															
Kick-off meeting team-internal	Team	23.12.															
Drafting and finalization of contracts / TOR	DB, PF + feedback all																
Verification of product selection for in-depth analysis with M	N. Manvelidze, MEPA, DB					2											
Kick-off stakeholder workshop	UNIDO, inputs from team																
Completion of the chapter on Global F&V	PF, PM									25.01.							
Completion of the chapter on Georgian F&V	PF, PM (SG)									25.01.							
Overview of export market requirements	SM (EB, SZ)									25.01.							
Preparing Deliverables for submission, incl. feedback loops	PF, PM (SM)									30.01.							
Provision of short progress reports to DB	All									31.01.							
Submission of Deliverables to UNIDO (3.1-3.3)	DB																
Progress meeting 1	UNIDO, DB, EB, PF, PM, ?										2						
QI performance assessment	EB																
Value chain profiles of selected products	PF, SG, PM - EB, SM																
Preparing Deliverables for submission, incl. feedback loops	DB, PF, PM (EB, SG)																
Provision of short progress reports to DB	All																
Submission of Deliverables to UNIDO (3.4&3.5)	DB																
Progress meeting 2	UNIDO, DB, EB, PF, PM, ?																
Reading each others contributions	Team																
Team meeting: selection of leverage points	Team																
Formulation of leverage points	Team																
Preparing Deliverables for submission, incl. feedback loops	Tbd																
Submission of Deliverables to UNIDO (3.6)	DB																
Preparation of stakeholder meeting	UNIDO, team																
2nd stakeholder meeting: presenting results & collecting feed	UNIDO, team																
Finalization of Final Report	Team																
Sharing worklogs with DB for financial statement	Team																
Preparing Final Report (operational & financial) for submission	DB																
Submission of Final Report to UNIDO	DB																
Coordination, documentation, admin etc.	DB, PF, PM																

ANNEX 3: List of interviews

#	SURNAME	FIRST NAME	OCCUPATION/ FIELD OF EXPERTISE	DATE
1	Adamadze	Kakhi	LTD Agro Pliusi, Director	17.02.2021
2	Adamia	Tariel	Head of Lab GAMMA	15.03.2021
3	Aptsiauri	Lika	GTU LAB	18.02.2021
4	Badrishvili	Giorgi	Head of the research division of vegetable crops and melon cultures at the SRCA	04.02.2021
5	Bedoshvili	David	Director of Caucascert	14.03.2021
6	Bejitashvili	Vakhtang	Founder and manager of Angel Logistics / Fruitilia	25.02.2021
7	Bobokashvili	Zviad	SRCA, Horticulture & Viticulture Research Department / Associate Professor in Horticulture, Agricultural University	19.02.2021
8	Chanturia	Irma	Head of Wine Laboratory	12.03.2021
9	Chiqava	Irakli	Agro Solutions Consulting	19.02.2021
10	Chitadze	Giorgi	Deputy head of GAC	17.02.2021
11	Chkadua	Irakli	Former owner of Quality LAB	13.02.2021
12	Didberidze	Ivane	Head of consulting company ISO consulting	17.02.2021
13	Doghonadze	Salome	Manager at “Cartlisi” (input provider)	19.02.2021
14	Ebanoidze	Ketevan	Head of Lab Mikrobiologi	22.03.2021
15	Gigiadze	Mirian	Producer of greens in Geguti (Tskaltubo Municipality)	07.02.2021
16	Gojiashvili	Zurab	Director of apple producing company “Tiriphoni Gardens”	17.02.2021
17	Guledani	Irakli	Head of State Laboratory of the MEPA	13.02.2021
18	Gurgenidze	Tekla	Consultant at GFA	18.02.2021
19	Gviniashvili	Eliso	Berries Growers Association	20.02.2021
20	Jajanidze	Tinatin	Head of Lab Association (GeLab)	18.03.2022
21	Janelidze	Zurab	Owner of “Herbia” (biggest producer of greens in Georgia)	22.01.2021
22	Jorbenadze	David	Owner of Quality Lab	13.02.2021
23	Kalandadze	Levan	Head of Multitest	16.02.2021
24	Khargelia	Rusudan	DG consulting	15.03.2021
25	Khurtidze	Natela	Head of consulting company	17.02.2021
26	Kimeridze	Eka	Owner of GDCl	18.02.2021
27	Kobakhidze	Rezo	Head of Laboratory G. Natadze	17.02.2021
28	Lalatia	Tornike	Founder of Almonds and Walnuts Association	18.02.2021
29	Latatia	Tornike	Head of Almond and Walnut Producer Association	19.02.2021

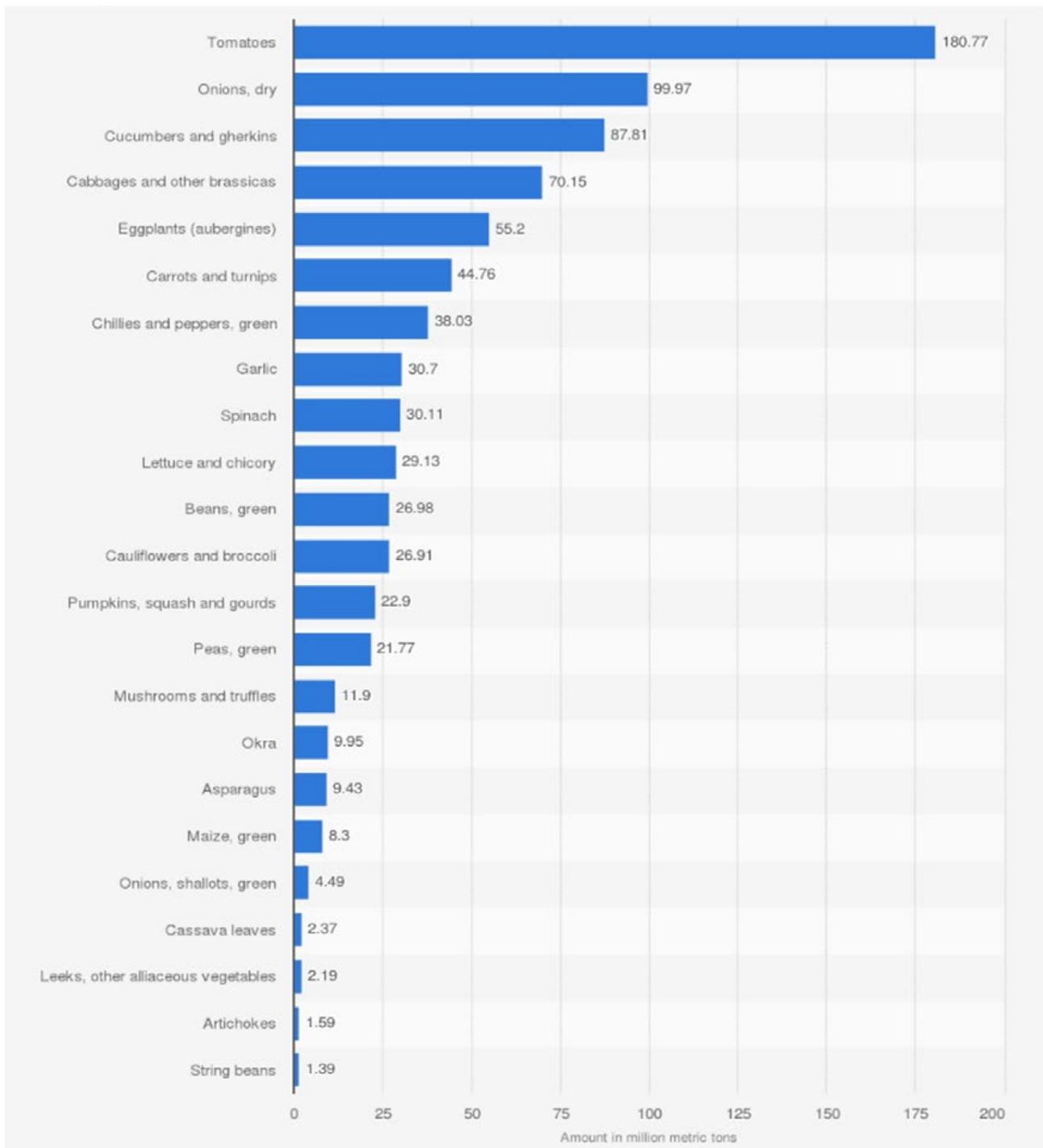
30	Lomitashvili; Koblianidze	Tengiz; Mariam	TBSC Consulting (T. Lomitashvili – Managing Consultant, Partner; M. Koblianidze – Senior Consultant)	04.03.2021
31	Magalashvili	Raphael	Director of the company “Glenberries”	17.02.2021
32	Manjgaladze	Gia	Head of Laboratory Norma	17.02.2021
33	Matchaidze	Seva	Head of Beneficiaries technical assistant department, RDA	19.02.2021
34	Merkvilishvili	Irakli	Founder of Agrocom LTD	20.02.2021
35	Merkvilishvili	Irakli	Founder of Agrocom LTD	23.02.2021
36	Merkvilishvili	Irakli	Founder of Agrocom LTD	18.02.2021
37	Meskhi	Nikoloz	Head of Phytosanitary Department, NFA	13.02.2021
38	Mikadze	Giorgi	Head of Food Department, NFA	13.02.2021
39	Mikava	Maia	Founder of AgroLab LTD in Zugdidi	20.02.2021
40	Nanobashvili	Levan	Metrology LTD	26.02.2021
41	Oghlishvili	Tamar	SGS (a certification body)	22.03.2026
42	Otkhozoria	Nona	Head of master’s program of Measuring Systems, GTU	16.02.2021
43	Philishvili	Temur	Head of Lab Etaloni	22.03.2025
44	Revishvili	Temur	Director of Anaseuli Institute	17.02.2021
45	Sharvashidze	Tornike	Greens producer in Opshkviti / Member of the cooperative “Imeruli Mcvanili”/ Former sales manager “Herbia”	15.02.2021
46	Shatberashvili	Elene	Elkana, Head of farmers advocacy	19.02.2021
47	Shavgulidze	Rati	Agriculture economist, independent expert	18.03.2023
48	Tsintsadze	Shalva	Manager of Consulting Company “Agritouch”	18.02.2021
49	Vepkhvadze	Ekaterine	Founder of Georgian Blueberry Producers Council	18.02.2021

ANNEX 4: Global F&V production by variety in 2019



Global fruit production by variety in 2019 (Source: Statista 2021)

Global vegetable production by variety in 2019



Global vegetable production by variety in 2019 (Source: Statista 2021)

ANNEX 5: Maximum levels of contaminants

HEAVY METALS (LEAD, TIN, CADMIUM)

	Food category	Current max. (Mg/kg wet weight)
Lead	vegetables, excl. brassica vegetables, leaf vegetables, fresh herbs and fungi. For potatoes the max. level applies to peeled potatoes	0.10
	Brassica vegetables, leaf vegetables and cultivated fungi	0.30
	Fruit, excl. cranberries, currants, elderberries and strawberry tree fruit	0.10
	Cranberries, currants, elderberries and strawberry tree fruit	0.20
	Fruit juices, concentrated fruit juices as reconstituted and fruit nectars	0.05
Tin	Canned foods other than beverages	200
	Canned beverages, including fruit juices and vegetable juices	100
Cadmium	Vegetables and fruit, excl. root and tuber vegetables, leaf vegetables, fresh herbs, leafy brassica, stem vegetables, fungi and seaweed	0.05
	Root and tuber vegetables (excl. celeriac, parsnips, salsify and horseradish), stem vegetables (excl. celery); for potatoes, the max. level applies to peeled potatoes	0.10
	Leaf vegetables, fresh herbs, leafy brassica, celery, celeriac, parsnips, salsify, horseradish and certain fungi (common mushroom, Oyster mushroom, Shiitake mushroom)	0.20

NITRATE (NO₃)

Food category	Current max. (Mg/kg wet weight)
Fresh spinach (<i>Spinacia oleracea</i>) (2)	3 500
Fresh Lettuce (<i>Lactuca sativa</i> L.):	
Harvested 1 October to 31 March, grown under cover	5 000
Harvested 1 October to 31 March, grown in the open air	4 000
Fresh Lettuce (<i>Lactuca sativa</i> L.):	
Harvested 1 April to 30 September, grown under cover	4 000
Harvested 1 April to 30 September, grown in the open air	3 000
'Iceberg' type lettuce:	
Grown under cover	2 500
Grown in the open air	2 000
Rucola (<i>Er. sativa</i> , <i>Diplotaxis</i> sp., <i>Brass. tenuifolia</i> , <i>Sisymb. tenuifolia</i>):	
Harvested 1 October to 31 March	7 000
Harvested 1 April to 30 September	6 000
Preserved, deep-frozen or frozen spinach	2 000

MYCOTOXINS (AFLATOXINS, PATULIN, OCHRATOXIN A)

Food category		Current max. (Mg/kg)	
Aflatoxins	1 B1, B2, G1 and G2 are different aflatoxin compounds.	B1	B1+B2+G1+G21
	Almonds, pistachios and apricot kernels, intended for direct human consumption or use as an ingredient in foodstuffs	8.0	10.0
	Hazelnuts and Brazil nuts, intended for direct human consumption or use as an ingredient in foodstuffs	5.0	10.0
	Other treenuts and processed products thereof, intended for direct human consumption or use as an ingredient in foodstuffs	2.0	4.0
	Nuts to be subjected to sorting, or other physical treatment, before human consumption or use as an ingredient in foodstuffs	5.0	10.0
	Groundnuts and nuts and processed products thereof, intended for direct human consumption or use as an ingredient in foodstuffs	2.0	4.0
	Dried fruit and processed products thereof, intended for direct human consumption or use as an ingredient in foodstuffs	2.0	4.0
Patulin	Fruit juices, concentrated fruit juices as reconstituted and fruit nectars	50	
	Solid apple products, including apple compote, apple puree intended for direct consumption with the exception of foodstuffs listed in 2.3.4 and 2.3.5	25	
	Apple juice and solid apple products, including apple compote and apple puree, for infants and young children and labelled and sold as such	10	
Ochratoxin a	Dried vine fruit (currants, raisins and sultanas)	10	

LISTERIA MONOCYTOGENES

Food category	Sampling plan ¹		Current limits		Analytical reference method ²	Stage where criterion applies
	n	c	m	M		
A. Ready-to-eat foods intended for infants and special medical purposes	10	0	Not detected in 25 g (i.e. m = M)		EN ISO 11290-1	Products placed on the market during their shelf-life
B. Ready-to-eat foods able to support the growth of L. monocytogenes, other than (A).	5	0	100 cfu/g ³		EN ISO 11290-2	Products placed on the market during their shelf-life
	5	0	Not detected in 25 g (i.e. m = M)		EN ISO 11290-1	Before food has left the immediate control of the food business operator who has produced it
C. Ready-to-eat foods unable to support the growth of L. monocytogenes, other than (A).	5	0	100 cfu/g		EN ISO 11290-2	Products placed on the market during their shelf-life

¹ n = no. of units comprising the sample; c = no. of sample units giving values between m and M

² The most recent edition of the standard shall be used.

³ This criterion shall apply if the manufacturer is able to demonstrate, to the satisfaction of the competent authority, that the product will not exceed the limit 100 cfu/g throughout the shelf-life. The operator may fix intermediate limits during the process that must be low enough to guarantee that the limit of 100 cfu/g is not exceeded at the end of shelf-life.

Regular testing against the criterion is not required in normal circumstances for ready-to-eat foods which have received heat treatment or other processing effective to eliminate L. monocytogenes, when recontamination is not possible after this treatment.

Interpretation of test results for (A) and (B): i) satisfactory, if all the values observed indicate the absence of the bacterium; ii) unsatisfactory, if the presence of the bacterium is detected in any of the sample units.

Interpretation of test results for (C): i) satisfactory, if all values observed are ≤ limit; ii) unsatisfactory, if any of the values are > limit.

SALMONELLA

Food category	Sampling plan ¹		Current limits		Analytical reference method ²	Stage where criterion applies
	n	c	m	M		
Precut F&V (ready-to-eat)	5	0	Not detected in 25 g (i.e. m = M)		EN ISO 6579-1	Products placed on the market during their shelf-life
Unpasteurized F&V juices (ready-to-eat)	5	0	Not detected in 25 g		EN ISO 6579-1	Products placed on the market during their shelf-life

¹ n = no. of units comprising the sample; c = no. of sample units giving values between m and M

² The most recent edition of the standard shall be used.

Regular testing is not required in normal circumstances.

Interpretation of test results: i) satisfactory, if all the values observed are $\leq m$; ii) acceptable, if a maximum of c/n values are between m and M, and the rest of the values observed are $\leq m$; iii) unsatisfactory, if one or more of the values observed are $> M$ or more than c/n values are between m and M.

E. COLI

Food category	Sampling plan ¹		Current limits		Analytical reference method ²	Stage where criterion applies ²	Action in case of unsatisfactory results
	n	c	m	M			
Precut F&V (ready-to-eat)	5	2	100 cfu/g	1 000 cfu/g	ISO 16649-1 or ISO 16649-2	Manufacturing process	Improve prod. hygiene & selection of raw materials
Unpasteurized F&V juices (ready-to-eat)	5	2	100 cfu/g	1 000 cfu/g	ISO 16649-1 or ISO 16649-2	Manufacturing process	Improve prod. hygiene & selection of raw materials

¹ n = no. of units comprising the sample; c = no. of sample units giving values between m and M

² The most recent edition of the standard shall be used.

Interpretation of test results: i) satisfactory, if all the values observed are $\leq m$; ii) acceptable, if a maximum of c/n values are between m and M, and the rest of the values observed are $\leq m$; iii) unsatisfactory, if one or more of the values observed are $> M$ or more than c/n values are between m and M.

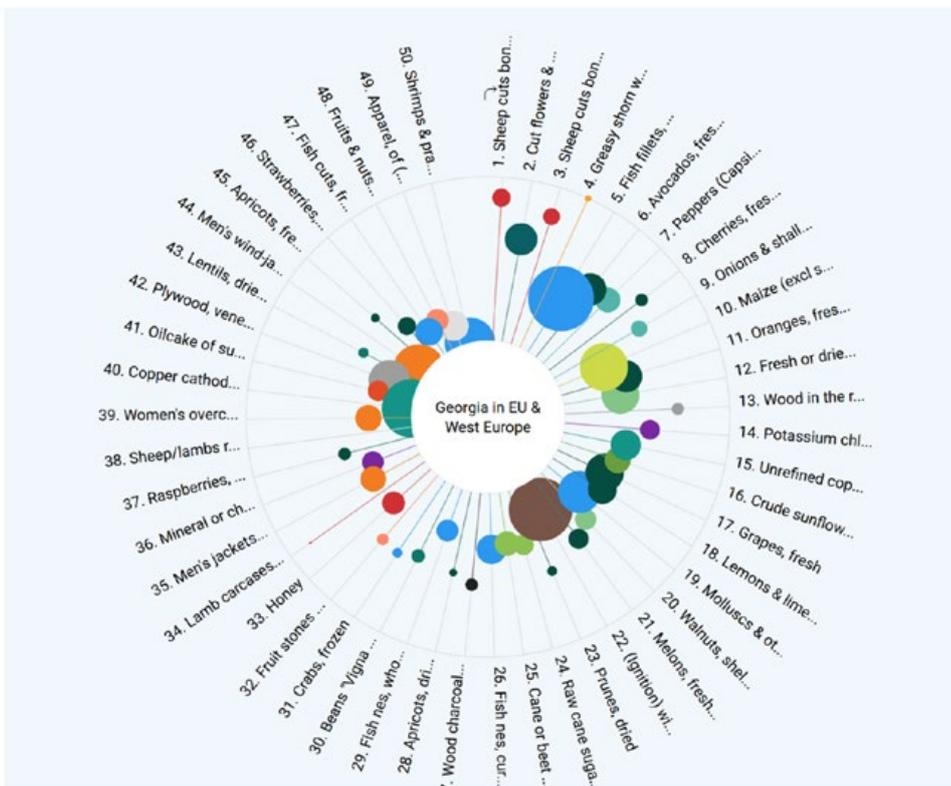
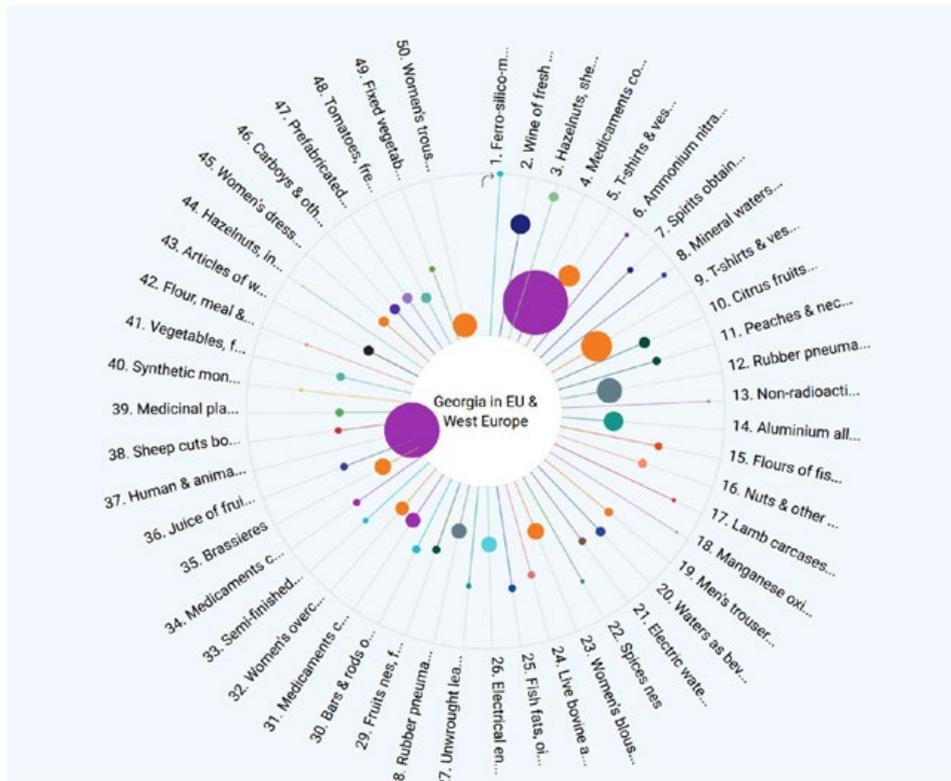
RADIOACTIVITY

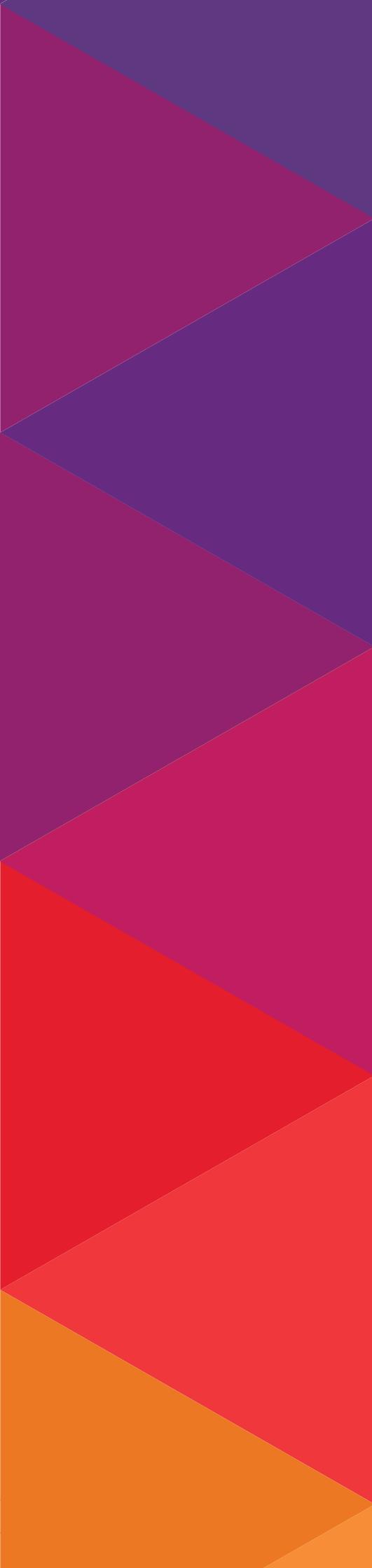
Isotope group	Food group (Bq/kg)			
	Infant food	Dairy produce	Other food exc. minor food	Liquid food
Sum of isotopes of strontium, notably Sr-90	75	125	750	125
Sum of isotopes of iodine, notably I-131	150	500	2 000	500
Sum of alpha-emitting isotopes of plutonium and transplutonium elements, notably Pu-239 and Am-241	1	20	80	20
Sum of all other nuclides of half-life greater than 10 days, notably Cs-134 and Cs-137 (6)	400	1 000	1 250	1 000

IRRADIATION

Product	Authorized at the given maximum overall average absorbed radiation dose (kGy)						
	BE	CZ	FR	IT	NL	PL	UK
Deep frozen aromatic herbs	10	10	10				
Potatoes	0,15	0,2		0,15		0,1	0,2
Onions	0,15	0,2	0,075	0,15		0,06	0,2
Garlic	0,15	0,2	0,075	0,15		0,15	0,2
Shallots	0,15	0,2	0,075				0,2
Vegetables, incl. pulses	1	1					1
Pulses		1			1		
Fruit (incl. fungi, tomato, rhubarb)	2	2					2
Strawberries	2	2					
Dried vegetables and fruits	1	1	1		1		
Dried fruit		1					

ANNEX 6: Georgia's export and diversification potential to the EU





UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

United Nations Industrial Development Organization (UNIDO)
Department of Digitalization, Technology and Innovation (DTI)
Global Quality and Standards Programme (GQSP)
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