



# CLIMATE CHANGE IMPACT ON AGRIFOOD SECTOR WITH FOCUS ON QUALITY

ALBANIA





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## Global Quality and Standards Programme Albania

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# Executive summary

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Albania is one of the most exposed countries in the region to climate change. The agrifood sector in Albania is particularly vulnerable to the effects of climate change, with impacts varying across specific value chains and regions. The impact of climate change represents a concern for competitiveness as well as compliance with food safety and quality standards. There is a heightened concern for the country's export-oriented value chains, as export markets often face stricter standards. This concern extends to the Medicinal and Aromatic Plants (MAPs) value chain, for which there is a special focus in the report. On the other hand, the agrifood sector is also one of the main contributors to climate change and environmental pollution. Thus, reducing the negative impact of agriculture on climate change and ensuring compliance with environmental standards is crucial.

The report is based on secondary and primary data – the latter consisting of surveys targeting agriculture (extension) experts and MAPs farmers. The report highlights significant shifts in climate patterns across various phenomena, presenting a concerning outlook for the agricultural sector in Albania. During the last decade, agriculture experts and farmers have witnessed a higher flooding frequency, hail frequency and drought durations, with an adverse impact on certain agricultural activities. Additionally, the population dynamics of pests and diseases have increased, indicating growing challenges for agricultural production in terms of both yields and adherence to quality (and safety) standards.

Survey findings reveal widespread concerns among respondents regarding the potential impacts of climate change on farm operations and future extreme weather events. Respondents perceive drought as a major concern due to its substantial effect on plant health and yield, given that most cultivated MAPs plots are not irrigated. There is a consensus regarding the need for proactive adaptation strategies within the agricultural community to address these challenges effectively.

Challenges hindering the farmers' ability to respond to climate change include limited access to resources, knowledge gaps, and inadequate government support. Strengthening extension services, providing financial resources, enhancing awareness and knowledge dissemination, and improving government support policies are crucial steps in overcoming these obstacles and building climate-resilient agricultural systems.

Recommendations to enhance climate change adaptation and resilience in the Albanian agricultural sector include improving access to extension services, increasing financial support for implementing adaptation measures, promoting the adoption of climate-smart practices, and providing up-to-date information and advice through suitable platforms. Collaboration between research institutions, agriculture extension services, and farmers is essential for effectively addressing climate change challenges in agriculture, including aspects related to quality and safety standards. Strengthening the Quality Infrastructure (QI) can support sustainable agricultural practices that support mitigation and adaptation to climate change.







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# Abbreviations

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<b>AIDA</b>	Albanian Investments Development Agency
<b>AKIS</b>	Agriculture Knowledge and Innovation System
<b>ANES</b>	Agricultural National Extension Services
<b>ARDPF</b>	Agriculture and Rural Development Program Fund
<b>ATTC</b>	Agriculture Technology Transfer Center
<b>AUT</b>	Agricultural University of Tirana
<b>BMEL</b>	German Federal Ministry of Food and Agriculture
<b>BIP</b>	Border Inspection Points
<b>BRCGS</b>	Brand Reputation Compliance Global Standards
<b>BSCI</b>	Business Social Compliance Initiative
<b>CABs</b>	Conformity Assessment Bodies
<b>CASCO</b>	Council Committee on Conformity Assessment
<b>CMO</b>	Common Market Organization
<b>CNVP</b>	Connecting Natural Values and People
<b>CPC</b>	Civil Protection Committee
<b>CSA</b>	Climate-Smart Agriculture
<b>DCM</b>	Decision of Council of Ministers
<b>DNA</b>	Designated National Authority
<b>DSA</b>	Development Solutions Associates
<b>EEA</b>	European Economic Area
<b>ENEA</b>	Ente Nazionale Energia e Ambiente
<b>ETRS</b>	Ethical Trade and Responsible Sourcing
<b>EU</b>	European Union
<b>FAO</b>	Food and Agriculture Organization
<b>FFL</b>	Fair for Life
<b>FL</b>	For Life
<b>FNC</b>	First National Communication
<b>FPRC</b>	Fertilizer Products Registration Commission
<b>FSSC</b>	Food Safety System Certification
<b>FSVI</b>	Food Safety and Veterinary Institute
<b>F &amp; V</b>	Fruits and Vegetables
<b>GDA</b>	General Directorate of Accreditation
<b>GDM</b>	General Directorate of Metrology
<b>GDP</b>	Gross Domestic Product
<b>GDS</b>	General Directorate of Standardization
<b>GFSI</b>	The Global Food Safety Initiative
<b>GHG</b>	Greenhouse Gases
<b>GIS</b>	Geographic Information System
<b>GIZ</b>	Deutsche Gesellschaft für Internationale Zusammenarbeit
<b>GLP</b>	Good Laboratory Practice
<b>GQSP</b>	Global Quality and Standards Program
<b>GVA</b>	Gross Value Added
<b>HACCP</b>	Hazard Analysis and Critical Control Point
<b>IAMO</b>	Leibniz Institute of Agricultural Development in Transition Economies
<b>IFC</b>	International Finance Corporation
<b>IFS</b>	The International Featured Standard
<b>IMF</b>	International Monetary Fund
<b>IPARD</b>	Instrument for Pre-Accession Assistance for Rural Development

IPM	Integrated Pest Management
ISCPMS	Intersectoral Strategy for Consumer Protection and Market Supervision
ISO	International Organization for Standardization
IWGCC	Inter- Working Group for Climate Change
MAPs	Medicinal and Aromatic Plants
MARD	Ministry of Agriculture and Rural Development
MFE	Ministry of Finance and Economy
MIE	Ministry of Infrastructure and Energy
MD	Ministry of Defence
MRL	Maximum Level of Residuals
MTE	Ministry of Tourism and Environment
NACP	National Agency for Civil Protection
NAE	National Environment Agency
NAP	National Adaptation Plan
NAPM	National Action Plan on Mitigation
NAVPP	National Authority for Veterinary and Plant Protection
NFA	National Food Authority
NGO	Non-governmental organization
NQP	National Quality Policy
NSCC	National Strategy on Climate Change
NSDEI	Strategy for the Development and European Integration
NTFP	Wild non-timber forestry products
PHA	Product Handling Assurance
PPP	Plant Protection Products
QI	Quality Infrastructure
QIS	Quality Infrastructure System
RA	Rainforest Alliance
REC	Regional Environment Agency
RMs	Reference Materials
SAI	Social Accountability International
SARDF	Strategy for Agriculture, Rural Development and Forestry
SDC	Studies and Development Center
SDGs	Sustainable Development Goals
SECO	State Secretariat for Economic Affairs
SESS	State Entity of Seeds and Seedlings
SIMS	State Inspectorate of Market Surveillance
SMEs	Small and Medium – Sized Enterprises
SMETA	SEDEX Members Ethical Trade Audit
SNC	Second National Communication
SNV	Stichting Nederlandse Vrijwilligers (Foundation of Netherlands Volunteers)
SPSS	Statistical Package for the Social Sciences
SSH	Albanian Standard
TBT	Technical Barriers of Trade
TIC	Testing, Inspection, Certification
TNC	Third National Communication
UFN	University Fan Noli Korce
UNDP	United nations Development Program
UNEP	United Nations Environment Program
UNFCCC	United Nations Frameworks Convention on Climate Change
UNIDO	United Nations Industrial Development Organization
USD	United States Dollar
VSS	Voluntary Sustainability Standards
WB	Western Balkan
WTO	World Trade Organization



## 1 Introduction

Climate change occurs over an extended period of time, while there are also shorter-term climate variations (e.g. precipitation and temperature changes) and extreme events (e.g. drought, floods, storms, etc.). **In Albania, the implications of climate change for the Albanian agricultural sector could be substantial, since Albania is one of the most exposed countries in the region to climate change. This is crucial given also the importance of the sector as well as the high fragmentation and dominance of small farms, which, by default, have limited resources to deal with climate change effects. Agriculture is one of the main sectors of the Albanian economy** in terms of contribution to GDP and employment. Agriculture contributes almost one fifth of the country's GDP, and it employs around one third of the employed population in the country. The sector has played a buffer role during the early transition to market economy, and continues to play an important role in maintaining social equilibrium. Consequently, it is and will remain the main source of employment and income for rural households (which are characterized by higher level of poverty compared to urban areas) (FAO, 2020).

The number of farms is reducing slowly, but steadily, and

this is being accompanied by an increase in the number of larger market-oriented farms. In addition, the farming sector capacity to produce for exports has increased. Therefore, the export of agrifood products has increased over the years. Despite the improved trade balance, there is still a substantial trade deficit (ibid).

The agrifood value chain is undergoing **rapid transformation** fueled by the expansion of supermarket chains, shopping centers, and other retail outlets, together with shifts in consumer behaviour, advancements in supply chain management, and ongoing liberalization of foreign trade. In this evolving landscape, retailers and wholesalers exert significant pressure on suppliers, imposing **stringent requirements regarding quality** and quantity while pushing for cost reductions. On one hand, there is higher competition as a result of imports (e.g. from more advanced EU producers) while on the other hand, there is an opportunity to increase exports, which is also a priority of the current government of Albania that has stated a target of 1 billion USD of export value in 2030. Achieving this level represents a challenge. Considering the pressure of EU and other markets on conformity with sustainability principles and the rigorous

requirements on quality, as well as climate change implications (both in terms of quantity and quality of production) that target can be hardly achieved if there are institutional gaps in terms of ensuring compliance with relevant standards.

**Small-scale farmers, in particular, encounter numerous challenges** in meeting these requirements and thereby in accessing markets. The number of border rejections is high and compliance with requirements related to the levels of residues and bacterial contamination remains a major challenge (UNIDO, 2023c). Farmers' lack of compliance with standards undermines market access and motivates farmers exit out into other economic activities, thus contributing to continuous youth migration and abandonment of agricultural land.

Compliance with standards is important not only in the case of export markets, but also – and increasingly so – in the local market (given the rapid change in consumer preferences). Various research works confirm the fact that on one hand, Albanian consumers prefer local products (which is an advantage for local producers), while on the other hand, they are very concerned about food safety standards and express a low level of trust in institutions/actors which are responsible for enforcing food safety standards (Meixner et al, 2024).

There are various factors that contribute to the (non) compliance with food safety and quality standards – one of them is **climate change**. While the link between lower yield or risk of crop failure and climate change has been documented in various studies, **there is a scarcity of understanding of the link between climate change and quality for the agrifood sector in general as well as for specific sectors and countries/regions**.

The impact of climate change on the Albanian agrifood sector varies by specific value chains and regions. The concern is higher for export-oriented value chains, given that the requirements (related to standards) in export markets are even stricter. That is the case for MAPs and for fruits and vegetables (F & V) value chains. Other value chains which are heavily exposed to climate change are olive and olive oil, as well as vineyard and wine, whose quality attributes are very important for consumers. Climate change affects the production and quality of

olives, which have significant year-to-year fluctuations in yield and quality (Kaniewski et al, 2023). Since most olives are processed into olive oil, the quality of raw olives greatly impacts the quality of the final product. The situation is also similar for vineyards and wine. With intense competition in local and international markets, high quality is essential for sales, especially to premium market segments.

Open field plants value chains are by default more exposed to climate change (when compared to the greenhouse vegetables or livestock sector). This includes Medicinal and Aromatic Plants (MAPs) (both wild and cultivated) which is also a focus of this report and UNIDO QSGP interventions, as well as the F & V value chain (which together with MAPs are the key contributors to agriculture exports).

Studies on the impact of climate change on the agrifood sector and specific value chains, such as MAPs, are scarce and with limited depth (Skreli and Imami, 2019; Zhllima et al, 2022). This report aims to address this scarcity, by providing more insight into the climate change trends and implications for the abovementioned sectors. More specifically, the objective of this assignment is to conduct a detailed analysis of the situation in the Albanian agrifood sector with focus on climate change (including mitigation and adaptation) and develop a set of recommendations accordingly, paying special attention to QI.

Given the UNIDO GQSP interventions programs, a particular focus is placed on the MAPs sector. The study provides useful information to different stakeholders such as policy-makers, international organizations, stakeholders in agriculture and rural development, and researchers in the field.

Chapter 2 consists of the conceptual framework. Chapter 3 presents the methodology. Chapter 4 analyses policy and institutional framework. Chapter 5 provides in-depth analyses of the climate change impact on the agricultural sector and implications with focus on quality, based on combined extensive desk research and survey findings. Chapter 6 includes conclusions and recommendations.



## 2 Conceptual framework

Addressing climate change has become a strategic priority due to several key reasons. Climate change poses significant economic risks such as damage to production, infrastructure and disruptions to supply chains. On the other hand, there are higher regulatory and legal pressures in the international market. Governments worldwide are implementing regulations to reduce greenhouse gas (GHG) emissions. Failure to adapt to these regulations can lead to legal challenges and reputational damage. Proactive climate action can help organizations comply with regulatory requirements.

**Climate change response involves two interconnected approaches:**

**Adaptation:** This involves adjusting to the impacts of climate change, reducing vulnerability, enhancing resilience, and coping with adverse effects. Classical examples are adjusting crop varieties, and designing infrastructure to protect against the impact of extreme weather events.

**Mitigation:** Mitigation focuses on reducing GHG emissions to limit future climate change. Actions include transitioning to renewable energy, improving energy efficiency, afforestation, and implementing sustainable agricultural practices.

While both adaptation and mitigation should be dealt with, in the context of small-scale farming, particularly in the case of the Albanian horticulture sector, adaptation

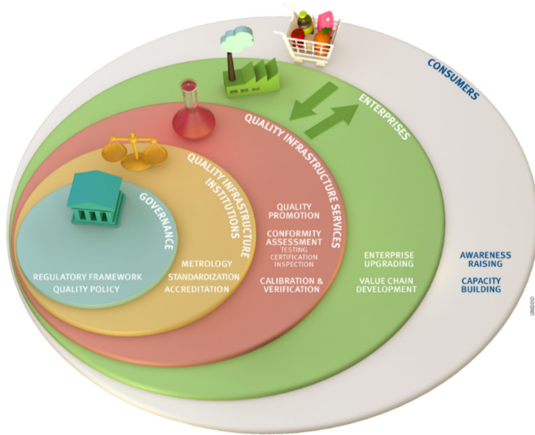
represents a major challenge.

As highlighted in the introduction section, climate change also affects quality, thereby quality infrastructure (QI) can support sustainable agricultural practices that enable mitigation and adaptation to climate change. This includes promoting the use of climate-smart agricultural techniques that improve soil health, conserve water, and reduce greenhouse gas emissions. UNIDO's approach to developing a robust QIS can contribute to addressing climate change issues (UNIDO, 2024).

- The “**governance**” element can be expanded to include regulations that are relevant to climate and sustainability-related initiatives, whilst at the same time, the “quality policy” (traditionally focusing on trade-related topics) can embrace climate change considerations.
- The “**quality infrastructure institutions**” can include climate action initiatives into their portfolios.
- The “**quality infrastructure services**” can focus on promoting actions to cope with climate change. Conformity assessment bodies can support climate action initiatives, while calibration and verification services can be adapted to enhance confidence.
- “**Enterprises**” should adapt to growing global concerns about climate change by promoting climate action throughout the value chain.
- “**Consumers**” (and, more broadly, “citizens”) should be more aware of their own responsibilities to make informed decisions not only about the products

and services offered to them, but also on their own behaviour as members of the global community.

**Figure 2.1. From policy to consumer – UNIDO systemic approach to Quality Infrastructure (QI)**



Source: UNIDO (2024)

QI establishes standards and certification processes that promote the production and use of climate-resilient products. For example, standards for building materials can ensure that structures are more resilient to extreme weather events. Product quality infrastructure can promote energy-efficient products through standards and labelling schemes. This helps reduce greenhouse gas emissions, thus contributing to climate change mitigation efforts. QI can help raise consumer awareness about climate change and the importance of choosing sustainable products. This can drive demand for eco-friendly products and encourage businesses to adopt sustainable practices.

Standardization involves translating knowledge about usability, quality, safety, and performance into technical specifications for products and their testing. Standardization is crucial for QI systems, as it provides clarity and comparability. Standards play a vital role in addressing climate change by supporting sustainability initiatives, such as environmental management and carbon footprint reduction. High importance in this context is given to Voluntary Sustainability Standards

(VSS) as existing guidelines adopted voluntarily to demonstrate commitment to sustainable practices, which cover environmental, social, and economic aspects (see in the Appendix the main VSS used globally by market operators).

Metrology, the science of measurement, is essential for understanding and monitoring climate change, providing precise and globally comparable measurement results. Accreditation ensures the competence, consistency, and impartiality of conformity assessment bodies (CABs). Conformity assessment bodies test, inspect, certify, verify, and validate aspects like energy efficiency and GHG emissions reduction (UNIDO, 2024).

Calibration laboratories ensure precision in measurement, particularly for GHG programs, while testing laboratories support compliance with specifications and regulations. Inspection verifies the safety and operation of assets, contributing to carbon emissions reduction and energy efficiency. Certification confirms compliance with regulations and standards related to environmental and energy management, as well as carbon footprint measurements.

A quality culture is crucial for the effectiveness of a QIS, encompassing not only specific aspects, such as products and services quality, but also broader aspects like social and environmental awareness, including climate change (adaptation and mitigation). It involves embedding quality principles at all levels—individual, organizational, societal, and national. A quality culture fosters awareness and commitment to quality, promotes fact-based decision-making, and efficiently manages quality across various dimensions such as product/service quality, environmental sustainability, energy management, as well as health and safety. Developing a quality culture is essential for sustainable competitiveness, particularly for small and medium-sized enterprises (SMEs), enabling them to compete effectively in global markets and adapt to dynamic changes.



### **3 Methodology**



### 3.1 Research questions

The objective of this assignment is to conduct a detailed analysis of the situation in the Albanian agrifood sector in the context of climate change, and develop a set of recommendations on reducing the negative impact of climate change in terms of quality. Given the UNIDO GQSP interventions programs, a particular focus is placed on the MAPs sector and QI. By using different data sources, including secondary and primary data, the study aims at answering the following questions:

- Which are the main institutional actors and policies related to agriculture and rural development and climate change?
- What are the perceptions of the value chain actors related to climate change?
- Is there an increasing occurrence of climate change hazards with direct effect on the agrifood sector, especially in the case of MAPs?
- How is climate change affecting production quality?
- Are farmers and other market operators capable of implementing adaptation measures in order to cope with the negative effects of climate change? What is their knowledge and awareness on adaptation? Which are the main challenges?
- What are their main expectations from the enabling

policy environment?

### 3.2 Methods and procedures

The report is based on a combination of qualitative and quantitative information, both from desk research and primary data. Desk research includes the review of policies and institutional framework related to agriculture and rural development and climate change. Whereas the primary data collection consisted of two structured surveys carried out during the period November-December 2023 with agriculture (extension) experts and MAPs farmers.

#### Experts survey

The survey included 74 agriculture extension experts from different fields/disciplines in Albania. The following table (Table 3.1) provides a summary of the socio-demographic profile of the sample participating in the analysis. Almost two third of the respondents are above 50 years old, indicating extensive experience. The majority of the interviewed agriculture extension experts are men (73% of the sample) and agronomists by profession (71% of the sample). The interviewed experts have an average experience of 21 years.

**Table 3.1. Socio-demographic characteristics of the sample Infrastructure (QI)**

Key indicators	Value
<b>Respondents' age distribution</b>	
-40	24.3%
41-50	10.8%
51-60	39.2%
<61	25.7%
<b>Respondents' gender distribution</b>	
Male	73.0%
Female	27.0%
Total	100%
<b>Experience (average no. of years)</b>	<b>20.9</b>

Source: Experts/extension survey

### MAPs farm survey

The MAPs farmers' survey sample consisted of 200 household farms from the Municipality of Malësi e Madhe (this municipality comprises the largest share of cultivated MAPs production in Albania). Household heads (HH) or farm managers were primarily targeted. The following table (Table 3.2) provides a summary of the socio-demographic profile of the sample participating in

the analysis. Around 36% of the respondents are 51–60 years old, indicating extensive experience. The majority of them are men (89% of the sample). The average number of years of experience is 12.1 years. Approximately 72% of the interviewed farmers are self-employed in the farming sector and the average number of household members working in the farm is 2 persons.



**Table 3.2. Socio-demographic characteristics of the farm survey sample**

Key indicators	Value
<b>Respondents' age distribution</b>	
-40	16%
41-50	20%
51-60	36%
<61	28%
<b>Respondents' gender distribution</b>	
Male	89%
Female	11%
Total	100%
<b>Main employment of household (HH) head</b>	
Employed in public sector	16%
Employed in private sector	7%
Self-employed in non-agricultural sector	5%
Self-employed in farming sector	72%
<b>Highest education level (HH) of head of household</b>	
Mandatory education (up to 9 years)	51%
Agricultural high school	20%
General and other technical high school	16%
University degree (Non-agricultural education)	11%
University degree (Agricultural education)	2%
<b>Experience and household members working on farm (average)</b>	
Experience (average number of years)	12.1
Household members working in the farm (average no. of members)	2.2

Source: MAPs farm survey

The MAPs farms survey was also used to collect also gender-related data, which were analysed in a separate report.

#### Data analysis

The survey data were entered into an excel-based database and were analysed (including descriptive

statistical analysis) using SPSS. The combination of qualitative and quantitative analysis has been crucial to identify/understand trends and gaps, as well as to provide recommendations.



## 4 Policy and institutional framework



## 4.1 Policy framework

### 4.1.1. Policy framework on climate change

Albania has been actively engaged in international climate initiatives, ratifying the United Nations Framework Convention on Climate Change (UNFCCC) in 1994, the Kyoto Protocol in 2005, and signing the Paris Agreement in 2016. The country’s commitment to addressing climate change is evident in its Intended National Determined Contributions (DCM No. 762, dated 16/09/2015) outlining efforts for greenhouse gas emission reduction.

In 2017, Albania drafted the National Integrated Energy and Climate Strategy following its engagement at the Ministerial Meeting of the Energy Community. Subsequently, in 2019, the National Strategy on Climate Change (NSCC) was adopted, along with its annexes: the National Action Plan on Mitigation (NAPM) and the National Adaptation Plan (NAP), which focus on reducing

damages from floods, enhancing agricultural resilience, and ensuring drinking water quality over a 20-year timeframe, until 2035.

In 2023, Albania further strengthened its preparedness by developing the National Disaster Risk Reduction Strategy and its Action Plan, the National Risk Assessment Document, and the National Civil Emergency Plan, all through extensive consultation processes (National Civil Protection Agency, 2022).

The legislative framework has been recently updated to enhance adaptation efforts towards climate change and to address climate-related hazards. In 2019, the Law “On climate change” (DCM No. 499, dated 17/07/ 2019) and the Law “On civil protection” (Law no. 45/2019 adopted on 18/07/2019) were enacted, along with the DCM No. 747, dated 20/11/2019, “On the organization and functioning of the National Civil Protection Agency”.

**Table 4.1. Main strategic and legal documents and the relevant responsible institutions**

Document	Institutions
National Strategy for Development and European Integration (NSDEI)	CM
National Plan for European Integration 2022	CM
National Strategy on Climate Change (NSCC)	MTE
National Action Plan on Mitigation (NAPM)	MTE
National Adaptation Plan (NAP)	MTE
National Integrated Energy and Climate strategy	MIE
National Disaster Risk Reduction Strategy 2023-2030 Decision No. 94, dated 22/02/2023	MD
National Civil Emergency Plan 2023-2030 (2023)	MD
Strategy on Agriculture, Rural Development and Fisheries (SARDF 2021-2027)	MARD
Draft IPARD III Programme (2021-2027)	MARD
National Adaptation Plan (NAP) to Climate Change in Albania	MTE
Smart Specialization Strategy (2021)	MTE
Forestry Policy Document (2022)	MARD

Source: Zhllima (2023)

Actions taken to address climate change in Albania are closely integrated into the country's overarching policy framework. Climate change mitigation and adaptation efforts are key components of the National Strategy for Development and European Integration (NSDEI) 2021-2027, demonstrating the government's commitment to align climate goals with broader developmental objectives. Furthermore, specific activities aimed at addressing climate change are outlined in the National Plan for European Integration 2022 (GoA, 2023). Additionally, the Strategy on Agriculture, Rural Development and Fisheries (SARDF) 2021-2027 places particular emphasis on activities related to climate change.

#### 4.1.2. Policy framework related to quality<sup>1</sup>

In most countries, the National Quality Policy (NQP) is the basic instrument of the government for establishing and overseeing the QIS (UNIDO, 2018). Among other features, the NQP defines the roles and responsibilities of the QIS, the inspection and testing entities and other entities involved in the implementation of quality policies. According to UNIDO (2016), the NQP should harmonise the policy measures concerning standards, quality and technical regulations found in strategies related to industrial development, boosting export trade, environmental management, food safety and/or security, advancement in science and technology, and similar issues. The presence of a well-defined governing body is essential to spearhead the National Quality System.

In Albania, there is no comprehensive NQP in place. However, various elements of a NQP are already included in the "Intersectoral Strategy for Consumer Protection and Market Supervision (ISCPMS) 2023–2030"<sup>2</sup>.

##### The main areas covered by this strategy are:

- Safety of food and non-food products; drugs for human use; cosmetics; quality infrastructure; market surveillance, etc.;
- Consumer protection beyond safety aspects, including: i) consumer protection in terms of commercial practices; ii) enforcement of consumer

rights; iii) alternative and online dispute resolution; protection of consumer interests in the fields of environment, tourism, digitization, etc.;

- Consumers' awareness and information, as well as inter-institutional cooperation with other stakeholders such as consumer organizations, civil society, businesses, etc.

The ISCPMS 2023-2030 is a strategic document tackling quality issues. Considering the current situation, there is a need to address at sector level the quality policy and address various weaknesses which go beyond the issue of safety, consumer protection and consumer awareness. Furthermore, there is no governing body defined to oversee the National Quality Infrastructure System and effectively implement the NQP.

Several aspects of the legislation are not yet in alignment with the EU legal framework. The harmonization of these aspects should be addressed within the framework of a NQP, namely:

1. The accreditation of conformity assessment bodies.
2. Good Laboratory Practice (GLP).
3. Marketing standards as part of a common market organization (CMO).
4. Albania's legislation on accreditation and market surveillance.
5. The norms that are still based on the 'old approach' (GT Engineering, 2023) such as those for food pre-packaging<sup>3</sup>.
6. The relationship between (voluntary) standards and (mandatory) technical regulations<sup>4</sup>.

In addition, there are also several recent regulations pertaining to specific QI components (e.g. Regulation (EU) 2018/2948 on organic production and labelling of organic products) with which the Albanian legislation should be aligned.

Poor capacities for evidence-based policy development and limited stakeholder involvement in the process of legal harmonization were the main reasons for the alignment gaps.

<sup>1</sup>This subsection is largely based on UNIDO's (2023b) report developed by DSA.

<sup>2</sup>The strategy was developed under the coordination of a steering Committee led by the Ministry of Finance and Economy (MFE) in the first quarter of 2023. The Steering Committee could potentially become a de-facto governing body for Albania's National Quality Infrastructure System.

<sup>3</sup> Food pre-packaging refers to packaging that is done either at the production site (e.g. boxes used for collecting vegetables in the field) or before sale

<sup>4</sup>It is important for the government to ensure that the country implements

standards and technical regulations consistently with world trade rules.

These rules are established by the World Trade Organization (WTO). Due to the mandatory nature of technical regulations, they have the potential to become technical barriers to trade (TBT) that prevent or hinder the flow of goods and services between countries. Although standards are generally voluntary, they become mandatory when referenced in regulations.

The role of the National Standards Body in bridging the gap in meeting the legal requirements set forth in the EU's "New Legislative Framework". The "New Legislative Framework" adopted by the EU in July 2008 introduced a more flexible approach both to the adaptation and modification of standards in EU member states and to the process of legal harmonization in pre-accession countries, such as Albania. The "New Legislative Approach" reduces the reliance on primary legislation (i.e., laws), which now serves as a framework legal tool, and shifts the responsibility for designing and adapting specific provisions (i.e., standards) to more flexible tools such as national standard bodies. These groups of standards developed within the framework legislation retain legal binding force and become legal requirements.

## 4.2 Institutional framework

### 4.2.1. Institutional framework related to climate change

The institutional framework for addressing climate change in Albania is fragmented, with various ministries and agencies responsible for different aspects of the green economy. The Ministry of Tourism and Environment (MTE) plays a central role in drafting national climate policies and coordinating the integration of climate issues across multiple sectors, including agriculture, tourism, health, energy, transport, forestry, and water management. MTE also serves as the Designated National Authority (DNA) under the UNFCCC and the Kyoto Protocol.

The National Environment Agency (NAE) operates under MTE's supervision and focuses on enhancing environmental conservation and sustainable development through efficient resource management. The Ministry of Agriculture and Rural Development (MARD) oversees policies on land use, while the Ministry of Infrastructure and Energy (MIE) addresses energy-related concerns.

Given the complexity of policies on climate, an Inter-Ministerial Working Group on Climate Change (IWGCC) has been established to facilitate coordination among relevant ministries. This group collaborates regarding the formulation and implementation of policies, programs, and activities related to climate change. For example, the Framework of Priority Actions on Climate Change, integral to the National Strategy on Climate Change, is based on

the National Adaptation Plan for Albania (NAP), jointly developed by MTE, MIE, and IWGCC.

At national level, in order to respond to climate change hazards, a civil protection system has been established. The key institutions and structures responsible for the civil defence are: a) the Assembly (Parliament); b) the Council of Ministers (CM); c) the Interministerial Committee for Civil Emergencies (ICCE); d) the Civil Protection Committee (CPC) and the office responsible for the relevant situation; e) the minister responsible for civil protection; f) ministries and central institutions; g) the National Civil Protection Agency (NCPA); h) the technical advisory commissions, as required; i) the civil defence centres at prefecture-level.

At local level, mayors are responsible for planning and responding to civil emergencies within their municipalities by putting in function the municipal police and the fire and rescue teams. However, local governments face challenges in enabling civil emergencies response from climate shocks due to limited budgetary and institutional capacities, relying heavily on central government support. Although the formal systems for planning, meteorology, civil protection and emergency response are well developed on paper, the institutional and system capacities are weak in practice. Furthermore, there is a lack of awareness among the business and farming communities regarding green economy initiatives, hindering the development of bottom-up approaches to sustainability.

### 4.2.2. Quality infrastructure institutions<sup>5</sup>

The Quality Infrastructure System (QIS) is a combination of initiatives, institutions, organizations, activities and people contributing to implement a national quality policy. There are various levels of stakeholders involved in ensuring the functioning of the quality infrastructure in Albania, including: i) institutions responsible for the preparation of the regulatory framework and quality policy at central and local level government bodies, ii) quality infrastructure institutions, iii) bodies responsible for monitoring the quality infrastructure services, iv) specific stakeholder categories, including farmers, processors and importers of food products, v) consumers, vi) quality promotion stakeholders, including central state agencies, media, donors, academia and civil society (Table 4.2).

<sup>5</sup>This subsection is largely based on UNIDO (2023b) report developed by DSA.



**Table 4.2. The components of the quality infrastructure in Albania**

Level	Component	Stakeholders
Regulatory framework and quality policy	Key government institutions	Parliament, Council of Ministers, MARD (including agencies, divisions, technical committees and commissions) and MFE.
Quality infrastructure institutions	Metrology, Calibration, Accreditation	GDM, GDS, GDA
Quality infrastructure services	Inspection	NFA, NAVPP, SIMS
	Testing	FSVI, NFA laboratories, AUT laboratory, private laboratories.
	Certification and control	Certification bodies
Safety control	Local government	Consumer protection office
Quality promotion	Education institutions	AUT, UFN, vocational schools
	Quality awareness	AIDA and ANES
	Associations	Associations active in the MAPs value chain (2) and associations related to F & V value chain (3)
	Donors	SDC projects, EU, GIZ, WB, FAO.
VC Actors	From input to foreign market	Input providers, farmers, processors/exporters

Source: UNIDO (2023b)

Quality governance in Albania is organized at various levels. At the central level, the main institutions are the Parliament, the Council of Ministers, and the line ministries.

Within a QIS, the main quality institutions are those responsible for accreditation, metrology and standards. As highlighted above, these institutions operate under the authority of the MFE.

**Accreditation:** According to the ISO Council Committee on Conformity Assessment (CASCO), accreditation is the process through which an authoritative body formally recognizes that a specific body or individual is competent to perform specific tasks (UNIDO, 2016). The national accreditation body in Albania is the General Directorate of Accreditation (GDA), which has the authority to provide formal recognition to organisations providing certification, testing, inspection and calibration services<sup>6</sup>

<sup>6</sup>The GDA is subordinate to the Ministry of Finance and Economy and operates under Law No. 116/2014, dated 11/09/2014 "On the accreditation of conformity assessment bodies in the Republic of Albania", DCM No. 667, dated 29/07/2015, "On the organization and functioning of the General Directorate of Accreditation" and the requirements of standard SSH ISO / IEC 17011 "General requirements for accreditation bodies performing the accreditation of conformity assessment bodies".

in accordance with the SSH EN 45011 standard. So far GDA has acquired the capacity to accredit TIC for process standards, but not yet for product standards (e.g. Global G.A.P. standards). There is a need to enhance the accreditation capacities for product standards and to increase the engagement of the relevant agrifood sector stakeholders in the GDA technical groups.

**Standardisation:** In Albania, the national body responsible for standardization is the General Directorate of Standardization (GDS)<sup>7</sup>. GDS is responsible for developing, adopting, approving, implementing, and publishing Albanian standards in all fields. GDS technical committees do not currently involve stakeholders or experts from the MAPs sector. In addition, there is limited awareness among market operators on the scale and importance of GDS services. The rules governing GDS are not yet aligned with the EU regulatory framework. Law No. 9870, dated 04/02/2008, "On Standardisation", is the

<sup>7</sup>The work rules and procedures for national standardization activities have been drawn up by the General Directorate of Standardization (DPS) pursuant to Law No. 9870, dated 04/02/2008 "On Standardization", as amended.

main legal act governing the process. In addition, the capacity to enforce the already adopted EU regulations is diminishing the GDS authority in regulating the standards in the Albanian markets.

**Metrology:** In Albania, the primary national conformity assessment body is the General Directorate of Metrology (GDM)<sup>8</sup>. GDM develops the national metrology system in line with European standards and harmonizes technical procedures for conformity of measurements in order to avoid technical barriers to trade. GDM activities include three basic and overlapping activities: i. Scientific metrology, ii. Industrial, applied or technical metrology and iii. Legal metrology. The legal base is not yet aligned with the EU regulatory framework. Another important issue is that the GDM itself lacks accreditation according to ISO/IEC 17025 for laboratory competencies related to services required by the agrifood (e.g. MAPs) market operators. It also has to uphold compliance with the requirements of ISO/IEC 17025 concerning laboratory competencies, particularly in electrical, temperature, humidity, length and chemistry laboratories.

**Inspection:** Other supporting institutions are MARD depended agencies. For instance, seeds inspection and testing services are conducted by the State Entity for Seeds and Seedlings (SESS), a body responsible for authorizing the production and import of certified propagation materials (PM). The responsible body for Plant Protection Products (PPPs) registration is the PPP Registration Commission. Fertiliser Products: The responsible body for fertilisers is the Fertiliser Products Registration Commission (FPRC) in MARD; FPRC is a collegial, technical, permanent and decision-making body. The National Food Authority (NFA) controls the import, trade and storage of agricultural inputs, whether imported or domestically produced.

**National Authority of Veterinary and Plant Protection – NAVPP<sup>9</sup>:** NAVPP is in charge of on-farm inspections & controls, including the on-farm use of agricultural inputs. The mission of NAVPP is to guarantee in-farm human, animal, plant and environmental health. NAVPP is also in charge of overall phytosanitary and animal health monitoring.

These two largest QI institutions, responsible for agricultural inputs and food certification, registration,

inspection and testing, have several gaps. NFA has limited resources and capacities to inspect agricultural input traders and food processors and limited categories of plants subject to control. Inspections of agricultural inputs are mainly based on documentation, with limited testing. In addition, an ineffective traceability system is in place for agricultural inputs. NAVPP have the following gaps: i. No clear MRL specifications by products type in the Albanian legislation; ii. Insufficient knowledge and updates on the MRL and contaminant limits set by EU provisions for products intended for the EU market; iii. Lack of laboratory-based control at the farm level for the horticulture sector (including MAPs) (controls are rare and only visual); iv. Inadequate pharmacovigilance practices that result in limited oversight of the utilization of Plant Protection Products (PPPs); v. Improper institutional division of competencies – input retailers are controlled by NFA, despite its close connection to farmers; control through NAVPP could be more effective; vi. Lack of protocols for the use of PPPs based on the type of plant.

**Conformity assessment and testing:** Conformity assessment is related to the processes and procedures that are used to demonstrate that a product or a service, management system, organization or personnel meets the specified requirements. These requirements are usually stated in international standards developed by organizations such as ISO (International Organization for Standardization) (UNIDO, 2016). In Albania, the testing infrastructure includes the National Reference Laboratory, the NFA laboratories and private laboratories, whether accredited or not accredited. In addition, research institutes laboratories provide services mainly in the framework of their research missions and scope. The main clients are exporters, whose specific demands depend on the buyers' requirements, the scale of processing and the specifics of the destination markets. The FSVI is the National Reference Laboratory for Public Health and for Food Safety; it has a wide range of testing and conformity assessment responsibilities relevant to food products. FSVI also monitors the epizootic situation in the country. FSVI is aligned and compliant with all EU requirements for fresh MAPs products, for more than 600 matrix-Reference Materials (RMs). The plan is expanding on an annual basis, in parallel with the increase of FSVI capacities. The range of accredited and non-accredited testing services is also expanding.

<sup>8</sup>The General Directorate of Metrology is a public legal entity specialized in metrology, based in Tirana, and organized into 4 service sectors, subordinate to the Minister of Finance and Economy. It exercises its activity based on Law No. 126, dated 15/10/2020 "On metrology", and based on the by-laws issued in implementation thereof.

<sup>9</sup>Refer to Law No. 71/2020 "On some changes and amendments to Law No. 10465/2011" and DCM No. 683/2020 "On the establishment, organization and functioning of the National Authority of Veterinary and Plant Protection".

**NFA regional laboratories:** NFA manages 7 regional laboratories subordinated to the Risk Assessment Directorate at the General Directorate. While all laboratories provide analyses for food safety, only 3 of them are structured to cover plant protection (Durrës, Korce and Shkoder).

There are various challenges hampering the further development of the laboratories: i. High average fixed costs (unit costs) - considering the present modest demand, unit costs are high. ii. Lack of trust by the market operators. iii. Trust in accreditation - trust is undermined due to the questionable accreditation received by some smaller laboratories. iv. Partial information: There is no publicly available information on the yearly assessment of the laboratories or a documented yearly plan for the monitoring of the laboratories' offers and capacities. An inventory of the laboratories' capacities has not been available to the public.

**Certification bodies:** Certification (by a certification body) assures operators that a product, service, process, personnel, organization or management system conforms to specific requirements. Organizations that conduct audits for company certification, assist in the certification process, perform inspections on the issuance or renewal of certification, and that are equipped with licenses or are accredited to issue certifications are collectively referred to as "TICs (Testing, Inspection, Certification) bodies".

The certification body is accredited by GDA if it holds a certification in accordance with ISO/IEC17065, European Standard EN 45022, or is fully compliant with these standards. The certification body shall submit the results of the inspections carried out regularly and whenever requested. The detailed criteria for the approval and competence of certification bodies shall be established by decision of the Council of Ministers.

In Albania, there are several certification bodies accredited by GDA. Seven of these operate in the area of food safety, such as ISO 22000-1-2018. In Albania, key MAPs exporting operators are certified according to the European Organic Standard and the US Organic Standard (representing the main markets for Albanian MAPs). Organic certification is carried out by several certification bodies: Bio-Inspecta AG, Ecocert SA, ICEA, Oko-Garantie GmbH, CERES GmbH, Control Union Certifications B.V.,

IMO CH, IMC srl.

Historically, the only local certification body based in Albania has been Bio-Inspecta (former Alb-Inspect), which is accredited by Swiss Accreditation Services. In the light of recent legal changes, organic certification bodies could also be accredited by Albanian institutions (e.g. GDA). There are no Albanian TICs accredited for GlobalG.A.P. certification; this service is provided by foreign accredited bodies. There are scarce human resources for the TICs staff and the existence of a small market results in high fixed certification costs.

**Quality promotion stakeholders:** The main organisations involved in the development and dissemination of culture for quality in Albania are: i) the Albanian National Extension Service (ANES), ii) the Agriculture Technology Transfer Centres (ATTCs) and, iii) the Albanian Investments Development Agency (AIDA); Agricultural University of Tirana, other important stakeholders include business associations, media, international development projects, academia and consumers.

#### 4.3 Budgetary support

The central government and public administration in Albania demonstrate a high level of commitment to adapting to climate change, driven by pressure to align with the EU's CAP 2030 and fulfil the requirements of the 2030 Agenda. However, challenges persist in effectively translating policy formulation into implementation, particularly in the regional strategic frameworks such as the Green Agenda for Western Balkans (EC, 2020). One key challenge is the misalignment between the medium-term priorities outlined in frameworks such as the SARDF 2021-2027 and its action plan, and the priorities reflected in the Agriculture and Rural Development Program Fund (ARDPF). For instance, although SARDF (2021-2027) calls for adaptation measures to cope with climate change, no specific measures are provided for in the ARDPF during 2022 and 2023.

Although the overall budgetary support for agriculture has increased significantly from 2018 to 2022, reaching 3.2% of the Gross Value Added (GVA) in 2022 (EUR 85 million), this support remains insufficient to adequately address adaptation to climate change and meet the needs for development in rural areas. While previous interventions under programs like IPARD II included few

measures to cope with climate change, such as building of photovoltaic panels and energy efficiency investments, IPARD III holds potential for greener approaches. Apart from a few donor-funded initiatives to establish weather information systems in some regions, there is no support from ARDPF or other components of government budget to enhance farmers' access to information on the occurrence of climate shocks.

Furthermore, despite an unsuccessful attempt to promote crop yields insurance in 2018, there are no existing agriculture insurance services, although they are much needed to cope with climate-related risk in agriculture. Ultimately, projects on use of biological control to reduce the level of pesticide use in plants is being promoted by GIZ SRD project. However, the donor interventions are few and mainly used as pilot for demonstration and awareness raising.

Despite a conducive legal framework and national strategic documents, including action plans, the lack of active budgetary instruments poses a challenge for financing climate change adaptation measures domestically. Although the Ministry of Tourism and Environment (MTE) plays a central role in national financing for environmental protection, budget fluctuations and a slight decrease in funding from 2019 to 2022 underscore the need for sustained investment. Consequently, reliance on donor aid funding is expected to continue.

At the local level, municipalities are mandated to allocate at least 4% of their budget funds towards addressing climate change hazards, as per the Law on Civil Protection. However, a study by Janin et al. (2020) indicates that only 62% of the municipalities have allocated funds for disaster management from their annual budget, falling short of legal requirements.







## 5 The impact of climate change on the agricultural sector and its implications for quality

### 5.1 The impact of climate change and its implications for the agrifood sector in Albania

Solid evidence of the impacts of climate change on Albanian agriculture began to emerge in the late 2000s, although early indications date back even further. In 1993, one of the first studies on this subject, 'Implications of Climate Change for the Albanian Coast', was conducted under the Coastal Areas Management Programme of UNEP. Subsequent national communications to the UNFCCC by Albania, including the First National Communication (FNC) in 2002, the Second (SNC) in 2009, and the Third (TNC) National Communication, provided insights into climate change scenarios, impact assessments, and adaptation strategies, particularly for coastal regions. The fourth National Communication (UNDP, 2021) offers a more comprehensive outlook, including projections and vulnerability assessments across various social groups. Studies conducted by REC (2011) in Albania have predicted shifts in the harvesting period for cereals, winter heat, and grassland production due to increasing temperatures and reduced precipitation. These changes are expected to affect the reproductive cycles of weeds and pests, potentially leading to the emergence of new

diseases.

Sutton Et al. (2013) provided initial projections on the impacts of climate change, indicating mixed outcomes for the impacts on temperature and precipitation. Expectations were positive for yields of wheat and irrigated alfalfa, while negative predictions were made for yields of grapes and olives. Additionally, Sutton et al. (2013) suggested reduced yields for certain vegetables in lowland areas. However, these studies are outdated and do not address quality issues, which are crucial for market access.

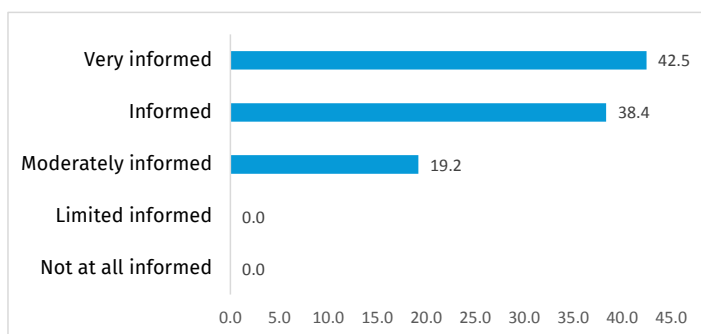
Charalampopoulos (2021) estimated that excessive heat events will likely damage crop yields, particularly in Albania where average temperatures peak during the summer. Fraga et al. (2020) provided empirical evidence of the impact of climate change on olives, predicting that Albania will experience yield losses and increased yield variability. The latest estimates by Müller and Hofmann (2022) indicate that Albania is experiencing reductions in precipitation and an increase in hot days, which negatively affect the yields of cereals and vegetables. Zhllima et al. (2021) analysed climate change risks and

farmers' adaptive capacity, highlighting concerns such as prolonged droughts, rising temperatures, increased occurrences of floods, and risks from plant and livestock diseases. Imami and Skreli (2022) further explored the observed impacts of climate change on agricultural production covering various aspects, including early flowering, disease spread, and damage from extreme weather events posing challenges for farmers and agronomists, who may struggle to provide adequate advice to mitigate the impacts.

Khan et al. (2021) highlighted the potential economic consequences of unchecked climate change, noting that without mitigation policies, a yearly increase in global temperature of 0.04°C (based on RCP 8.5) could lead to significant reductions in global GDP per capita, with Albania facing a potential decrease of up to 9% by 2100. The IMF estimates suggest that investing in climate-resilient infrastructure in Albania would require additional annual costs equivalent to about 1.1% of the GDP (IMF, 2022). However, these studies lack a comprehensive focus on agriculture.

While some studies related to the agrifood sector have observed changes in climate-related variables, such as those by Nelson et al. (2009), Sutton et al. (2013), Teqja et al. (2017), and more recently, Müller and Hofmann (2022), few have focused on the adaptation capacities of farmers and vulnerable groups. Pojani et al. (2013) and Rama (2016) provided insights into the views of Albanian farmers on climate change and adaptability in terms of water management and crop planning while Zhllima et al. (2021) on gender equality and climate change adaptation. In this report, we analyze the awareness and adaptation strategies of experts and farmers, aiming to bridge the gap in understanding adaptation efforts in response to climate change in Albania by keeping a focus on Medicinal and Aromatic Plants (MAPs). Global climate change will mostly impact "smallholder" farmers (more than 4/5 of farms in Albania can be considered as small farms or smallholders (FAO, 2020)), given that, by default, these farmers have limited capacities and resources. Smallholders have a significant need for information and advice, making the role of public advisory / extension services crucial. In this context, it is important to gain insight into the awareness and competence of agriculture experts related to climate change (including adaptation).

**Figure 5.1. Level of information among surveyed experts on the impact of climate change on agriculture**

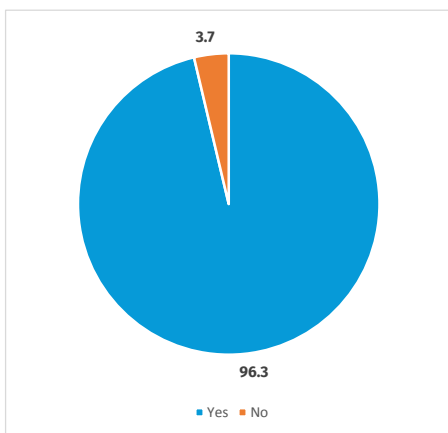


Note: Answer to the question "How informed are you on the impacts of climate change on agriculture?"

Source: Experts/extension survey

The results of the expert survey shows that a significant number of respondents consider themselves either informed or very informed about the impacts of climate change on agriculture, with the majority indicating they are very informed. However, given the nature of the audience (experts), the fact that most of them are not very informed (only almost 38 percent are very informed) it implies that there is a great need to improve awareness and information among the community of agriculture experts in Albania.

**Figure 5.2. Share of experts admitting to have observed signs of climate change in the last decade in their work area**

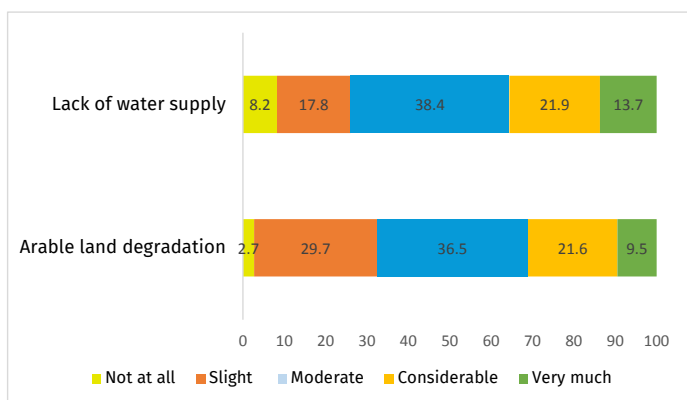


The vast majority of respondents have observed signs of climate change in the last 10 years in the areas where they work (extension experts are located across various regions of Albania). Even though estimating experts perception on climate changes signs is not an accurate evaluation, the number of responses reveal a local evidence of the climate change dimension.

Note: Answer to the question “Have you noticed signs of climate change in the last 10 years in the area where you work?”

Source: Experts/extension survey

**Figure 5.3. Expert estimates of the impact of climate events on water supply and land degradation**

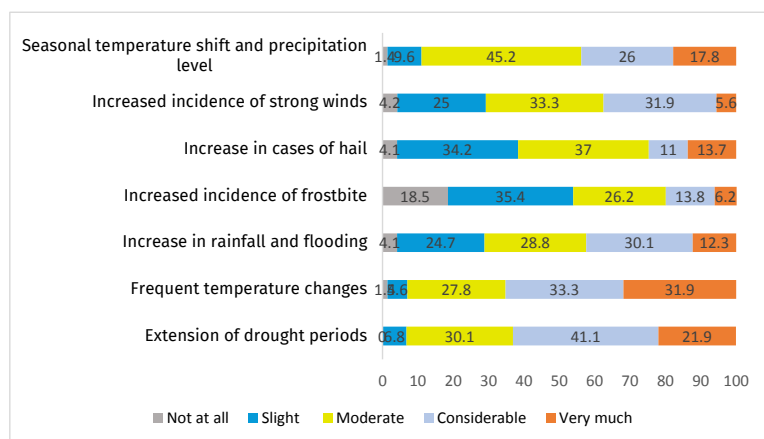


Over the past decade, respondents have observed a significant impact of climatic events in their work areas, particularly concerning arable land degradation and water supply. More specifically, the findings indicate that both arable land degradation and lack of water supply have had moderate to considerable impacts, with a significant number also reporting a very high impact on their work areas. The survey results show that arable land degradation has been observed moderately by 36.5% of respondents, considerably by 21.6%, and to a very high impacts by 9.5%. Similarly, lack of water supply has been observed moderately by 38.4% of respondents, considerably by 21.9%, and to a very high impacts by 13.7%.

Note: Answer to the statement “Please rate the impact of climatic events in your work area in the last 10 years”

Source: Experts/extension survey

**Figure 5.4. Experts’ estimate of the progress of key climate change related events during the last decade in their work area**

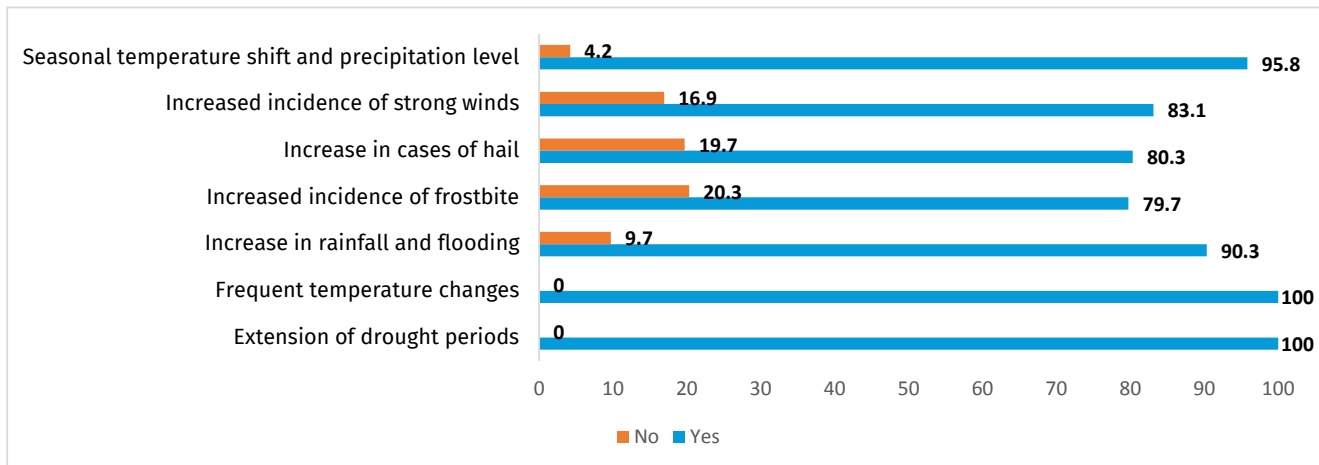


The survey findings suggest that drought periods, frequent temperature changes, and seasonal shifts in temperatures and precipitation have been perceived as having undergone considerable changes in the past decade. Additionally, there have been notable increases in rainfall and flooding, as well as moderate increases in cases of hail.

Note: Question “Please indicate the progress of the following events during the last 10 years in the area where you work.”

Source: Experts/extension survey

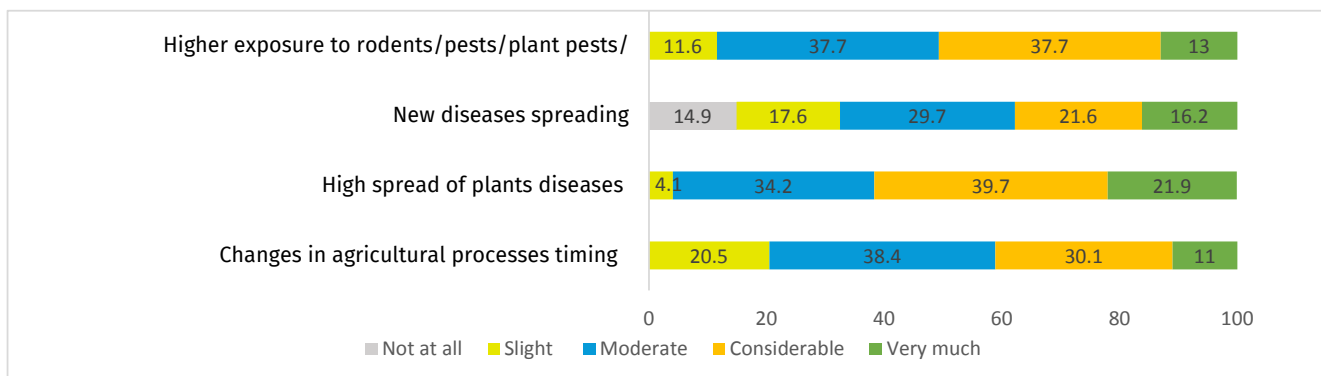


**Figure 5.5. Share of experts admitting that the main highlighted weather events are signs of climate change**

Note: Answer to the question “Do you think that the trends in these highlighted events are signs of climate change?”

Source: Experts/extension survey

The overwhelmingly positive responses to whether these trends are signs of climate change suggest a strong consensus among the respondents. All of them (100%) believe that extended drought periods and frequent temperature changes are due to climate change – similar views are observed also for the increase in rainfall and flooding (90.3% of the respondents), seasonal temperature shifts and precipitation levels (95.8%), increased incidence of strong winds (83.1%), increases in hail occurrences (80.3%), and increased incidence of frostbite (79.7%) (Figure 5.5).

**Figure 5.6. Expert estimates of the impact of climatic events in their work areas in the last decade**

Note: Question “Please indicate the progress of the following events during the last 10 years in the area where you work.”

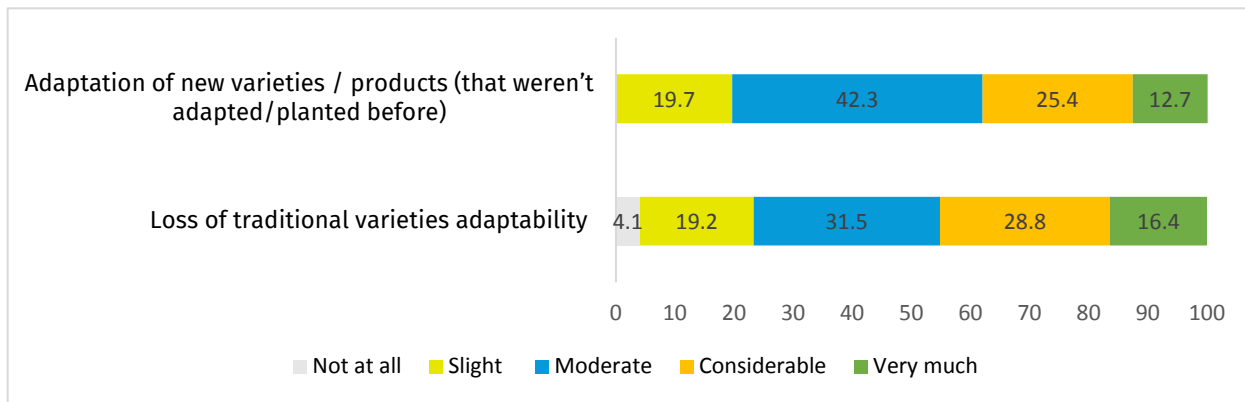
Source: Experts/extension survey

Changes in the timing of agricultural production processes have been notably disrupted, with respondents reporting impacts ranging from slight (20.5%) to very high impacts (11%). This indicates significant changes in the timing of agricultural activities, highlighting the challenges posed by climatic variability on farm operations.

The increased incidence of plant diseases has been a pressing concern, with a considerable proportion of respondents experiencing moderate (34.2%), considerable (39.7%), and very high impacts (21.9%) of climate change. The emergence of new diseases has also been noted, with 29.7% of the respondents reporting a moderate impact, 21.6% noting considerable impacts, and 16.2% experiencing very high impacts.

Furthermore, experts have observed a higher exposure to rodents, pests, and/or plant pests, with a significant proportion reporting moderate impacts (37.7%), considerable impacts (37.7%), and very high impacts (13%). These ratings suggest that climatic events have had a notable impact on changes in the timing of agricultural processes, high spread of plant diseases, spread of new diseases, and higher exposure to pests, with considerable proportions reporting moderate to very high impacts in each category (Figure 5.6).

**Figure 5.7. Expert estimates of the impact of climatic events on crops in their work area in the last decade**



Note: Answer to the statement “Please rate the impact of climatic events in your work area in the last 10 years”

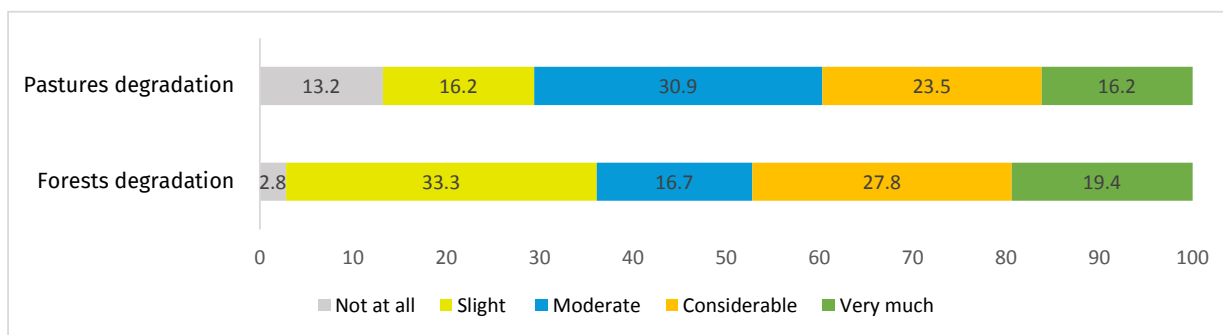
Source: Experts/extension survey

Another important issue is to examine the experts’ perception on the impact of climate change on crops (varieties) as well as pasture yield and quality. There are few studies on the impact of climate change on pasture yield and quality, which is closely linked to their floristic composition. This is due to the difficulty of simultaneously studying interactions between changes in environmental and soil characteristics, human activity, and the response of the numerous species composing the pastures. However, actual studies in the Mediterranean area show a decline in the quality of pasture production, linked to grazing intensity. Research findings highlight the critical

role of trees in agroforestry ecosystems in maintaining high nutritional quality in pastures (Hidalgo-Galvez et al. 2023).

Indeed, the survey reveals that this is also the case in Albania. Experts’ ratings suggest that climatic events have had notable impacts on the degradation of both forests and pastures, with a considerable number reporting moderate to very high impacts in each category. The absence of investments in the last three decades, especially in forests, has increased the vulnerability of these production systems.

**Figure 5.8. Expert estimates of the impact of climatic events on pastures and forests in their work areas in the last decade**



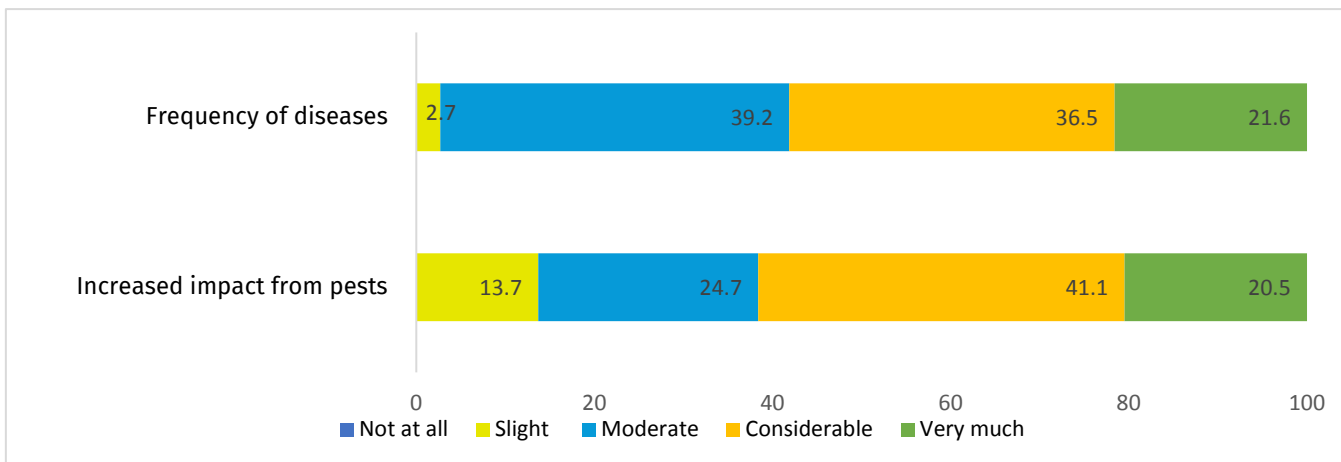
Note: Answer to the statement “Please rate the impact of climatic events in your work area in the last 10 years”

Source: Experts/extension survey

These survey findings highlight the diverse and significant impacts of diseases and pests on yields and product quality in the face of climate change. The frequency of diseases was found to be on the rise, further compromising product quality. Similarly to previous findings, none of the respondents reported no impact, with 2.7% reporting only slight impacts. A substantial number reported moderate impacts (39.2%), considerable impacts (36.5%),

and very high impacts (21.6%). A heightened impact of pests on crop yields and quality is also observed. None of the respondents reported no impact, while a substantial number reported slight impacts (13.7%). Moderate impacts were reported by 24.7% of respondents, while considerable (41.1%) and very high impacts (20.5%) were noted by a significant number of them (Figure 5.9).

Figure 5.9. Experts' estimates of the impact of climate change on crop yields and quality



Note: Answer to the question “What are the impacts of climate change on yields and product quality?”

Source: Experts/extension survey

In addressing the challenges posed by climate-related events, agricultural communities have employed various adaptation strategies to cope with the evolving environmental conditions. The effectiveness and prevalence of these strategies are reflected in the responses of surveyed respondents, providing valuable insights into the adaptive measures employed in different regions.

One adaptation strategy is changing the way agricultural land is used, with 33.8% of respondents reporting a moderate impact and 23% reporting a considerable impact. This strategy involves modifying land management practices to adapt to changing climate conditions, such as changing crop rotation patterns or shifting to more climate-resilient crop varieties.

Another strategy involves selecting crops with less water demand and higher resistance, which garnered considerable support from respondents. However, some experts expressed concern that crop selection should be conducted sustainably in the cultivated MAPs, without compromising the diversity of MAPs. A significant portion of respondents (38.4%) reported a very high impact, underscoring the importance of crop selection in mitigating water stress and enhancing resilience to climate variability.

Furthermore, changing plant treatment protocols

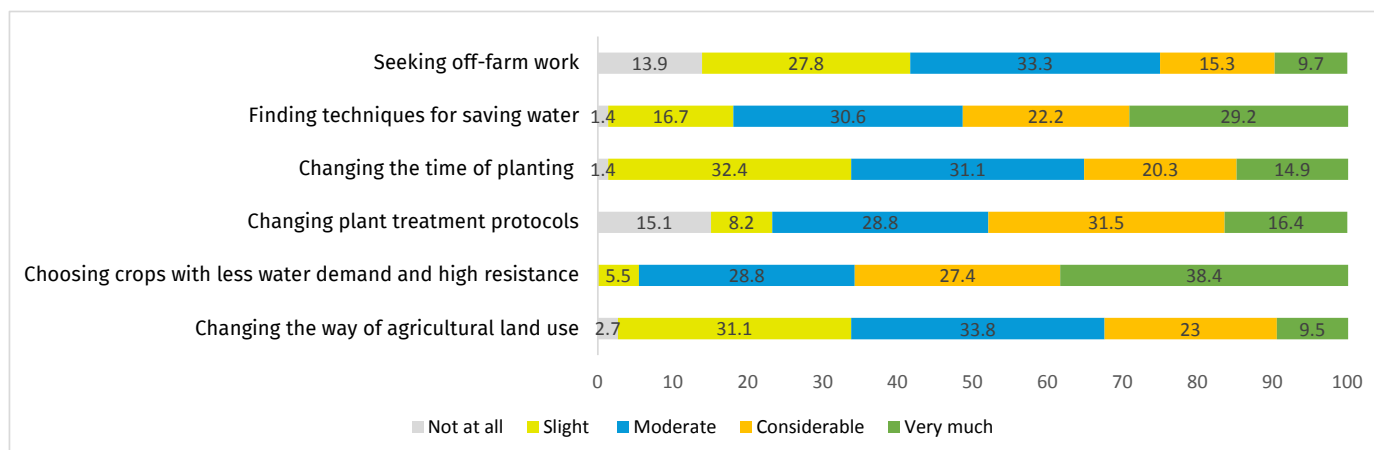
emerged as a vital adaptation strategy, particularly in response to the changing dynamics of pests and diseases. While 28.8% of respondents reported a moderate impact, 31.5% reported a considerable impact, highlighting the significance of adjusting pest and plant disease management strategies to combat emerging threats.

The adjustment of plant timing is also recognized as a crucial adaptation measure, with 31.1% of respondents reporting a moderate impact and 20.3% reporting a considerable impact. By aligning planting schedules with changing climate patterns, farmers can optimize crop growth and minimize susceptibility to adverse weather conditions.

Additionally, finding techniques for saving water is essential for mitigating the impacts of water scarcity, with 30.6% of respondents reporting a moderate impact and 22.2% reporting a considerable impact. These techniques may include implementing water-saving irrigation methods or shifting to drought-tolerant crop varieties.

Finally, seeking off-farm work emerged as a coping mechanism for some respondents, particularly in areas where agricultural viability is severely impacted by climate-related events. While 33.3% reported a moderate impact, 15.3% reported a considerable impact, underscoring the socio-economic challenges posed by climate change in rural communities (Figure 5.10).

**Figure 5.10. Experts' opinion on the recommended strategies to be used for coping with climate-related events in their work areas**



Note: Answer to the question “What are the adaptation strategies used for coping with climate-related events in your area?”

Source: Experts/extension survey

While there is a common perception that climate change only has negative impacts, this isn't entirely true—some positive effects have also been observed. For example, some crops can be produced or harvested earlier, or grown without heating even outside of their season, presenting new market opportunities. On the other hand, although draught (exacerbated by climate changes) poses a major challenge globally, it may present an opportunity for countries with abundant water resources, such as

Albania, which has a significant competitive advantage over competing countries less endowed with water resources.

While some of the disadvantages, threats and opportunities arising from climate change affect a broad array of agrifood products/value chains, there are also specific implications for individual value chains due to climate change. In the following subsection, our analysis is extended to key agrifood value chains.

## 5.2 Climate change impact on selected agrifood sectors in Albania

### Olive oil

Olives are characterized by strong year-to-year fluctuations in terms of yield and quality. Given that most olives are used for processing, the quality of raw olives strongly influences the quality of the olive oil. On the other hand, competition in both local and international markets is very strong, and high quality is essential in order to be able to sell, particularly to higher-value market segments. Consequently, this value chain is highly vulnerable to the effects of climate change, particularly in terms of its impact on quality.

The exposure of olives to climate conditions varies by regions. Heavy rain or hail during blossom period can affect yields and cause disease. However, the main problem is draught, since most olives are planted on hills, where irrigation prospects are more limited. On the

other hand, the increase in average temperatures has had a major impact on pest incidence and on suitable varieties.

Olive variety also plays a crucial role. Old, traditional varieties tend to resist weather-related challenges better than some new imported varieties. Some producers note that autochthonous olive varieties, which are older varieties, tend to cope better with climate changes compared to some newly introduced varieties – although the old groves where they have been planted may be in need of services such as pruning. During the 2023 production season, local autochthonous varieties such as Kalinjot have coped better with the draught and had higher yields as compared to some Italian or other foreign origin varieties (IFC, 2023a).

This aspect is also related to agro-climatic zones. Albania's olive cultivation is divided into two agro-climatic zones, traditionally separated by the Shkumbin River. Varieties

like Kalinjot that thrive in drier, warmer conditions are more suited to the southern region, similar to those commonly found in Greece. In contrast, the central agro-climatic zone favours other cultivars, such as the various types of “white olive” (ulliri i bardhë i Tiranës) or varieties that are typically grown in central Italy.

Climate change has the potential to alter the limit of agro-climatic zones and therefore the suitability of varieties to local climate conditions. A simulation of such changes and their relative impacts was pioneered by the Italian ENEA<sup>11</sup> a decade ago (Le Scienze, 2014)<sup>12</sup> and is now part of the researches carried out by the Med-CORDEX<sup>13</sup> initiative, which also deals with other Mediterranean crops.

### Vineyards and wine

Climate change has had an adverse impact on the vineyards and wine sector. Various diseases have recently surfaced or intensified. Vineyards are adversely affected by heavy rains or hail during blossoming time, which can affect yields, cause disease and reduce input efficacy. Due to frequent rains, in some cases farmers have to apply an excessive number of pesticide sprays. That results in higher costs, but also higher residuals (food safety concerns) and overall lower grape (and wine) quality (Imami and Skreli, 2022). Furthermore, climate change is impacting the ripening/harvesting calendar, which can adversely impact wine quality.

A previous study (Zhllima et al, 2018) shows that the primary concern for vineyard farmers is hail. This concern is followed by drought and frost, as shown in Table 5.1.

**Table 5.1. Farmers’ main perceived risk**

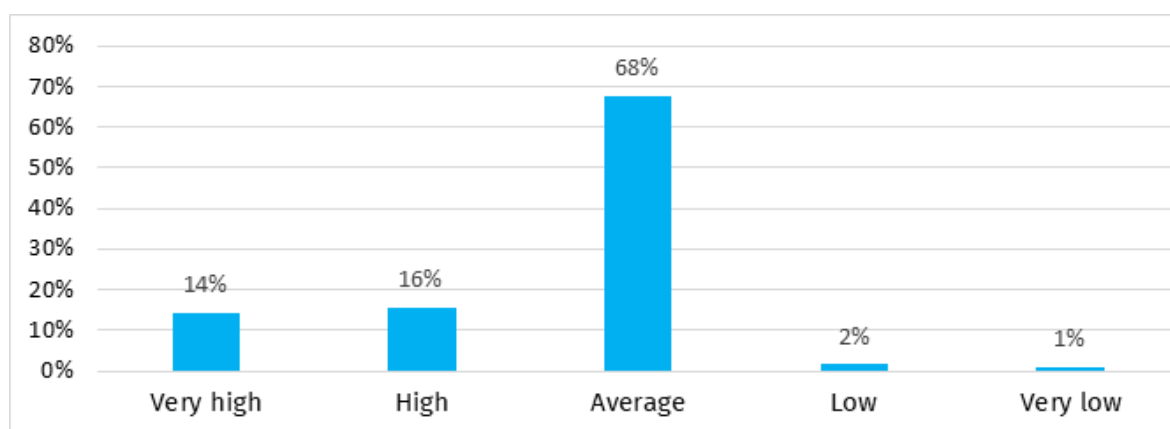
Source of Risk	Ranking
Hail	1
Drought	2
Frost	3
Storms	4
Floods	5

Note: Answer to the question: “Which are the most significant natural disasters that your farm may be exposed to in the next 10 years?”

Source: Zhllima et al (2018)

According to a recent study, 30 percent of the surveyed experts reported that the impact of climate change on grape production has been high or very high (Figure 5.11).

**Figure 5.11. Experts’ perceived impact of climate change on grape production**



Source: DSA (2021)

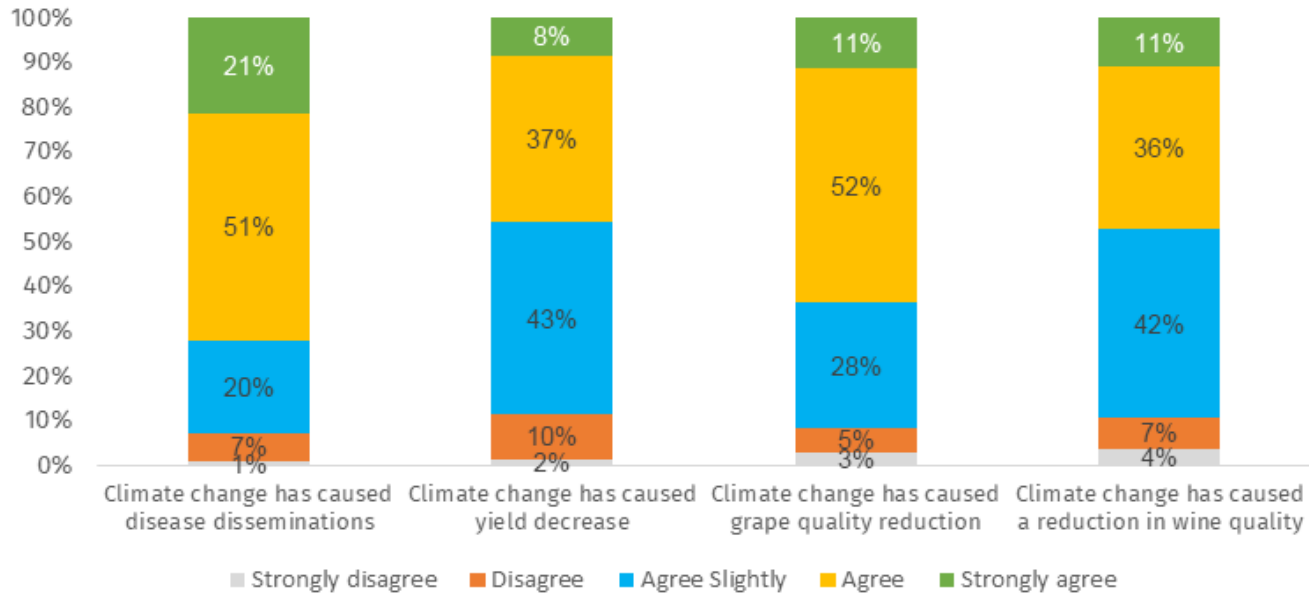
<sup>11</sup>ENEA – Ente Nazionale Energia e Ambiente is an Italian public body dealing with research and applications dealing with energy and environment. As part of its activities, it developed ENEA-Reg, a multi-component regional health system model.  
<sup>12</sup>Le Scienze, 2014, The effect of climate change on olive oil production, available at: <https://>

[www.lescienze.it/news/2014/03/25/news/produzione\\_olio\\_ulivi\\_variazioni\\_profitto\\_mediterraneo\\_italia-2068328/](http://www.lescienze.it/news/2014/03/25/news/produzione_olio_ulivi_variazioni_profitto_mediterraneo_italia-2068328/)

<sup>13</sup>See for more information the following link: <https://www.medcordex.eu/index.php/>

Most surveyed experts reported that climate change has resulted in the spread of plant diseases, falling yields, and worsening of grape and wine quality (see Figure 5.12).

**Figure 5.12: Experts' reported views on the impact of climate change on the sector**



Source: DSA (2021)

To address climate change in the vineyard industry, strategies include investing in protective measures like nets for hail and irrigation systems, which are particularly crucial for vineyards on hills with limited irrigation options. Additionally, it is essential to identify grape varieties that are well-suited to specific regions and to enhance knowledge on climate adaptation methods. Farmers require updated guidance on plant management and pesticide protocols to effectively navigate the evolving industry standards and emerging innovations (IFC, 2023b) (see the last section for detailed recommendations).

### Fruits and vegetables

As highlighted earlier in the report, export-oriented value chains are more exposed to the impacts of climate change in terms of yields, quality and timing, considering that the export markets are more demanding and competitive than the local markets - the fruit and vegetable sector is among the main export-oriented agrifood sectors. According to previous assessments (UNIDO, 2023a), the most evident climate change impacts on protected crops, which represent the core of the Albanian F&V exports and the most profitable primary production segment, can be summarized as follows:

- Increased prevalence of extreme weather conditions, increasing the risks of damage to production infrastructures and crop failure, with an overall increase of production costs due to increased

investments, such as weather hazard protections (e.g., nets in fruit orchards);

- Increased and/or modified prevalence of pests and diseases, with a consequent need to adopt more flexible, risk-based agronomic practices. This sometimes conflicts with the increasingly strict legal requirements on the use of PPP limits, potentially necessitating the introduction of entirely new agronomic practices or the replacement of permanent crops with annual ones<sup>14</sup>;
- Salinization: Some core production areas for early vegetables, such as Lushnje, are increasingly affected by drought and salinization;
- Changes in factors affecting international competitiveness. The rising temperatures in the Western Balkan (WB) countries poses a threat to the trade competitiveness of certain early vegetable crops in Albania.

<sup>14</sup>For instance, the rising incidence of pests combined with stricter MRL regulations led to a significant reduction in the size of pear orchards in Emilia-Romagna, a region that was previously one of the primary European clusters for pear production.

Increasing temperatures lengthen the production season in non-heated greenhouses, which constitute the majority of greenhouses in Albania. This extended season opens up opportunities for cultivating crops in more profitable seasons, such as winter tomatoes.

In two recent surveys (Zhllima et al. 2022; Imami et al, 2019) experts shared their views on the expected impact of climate change on the production of greenhouse vegetables, as well as melons and watermelons production, both in protected crops and open fields. The main outcomes of the surveys are summarized in table 5.2 below.

**Table 5.2. Expected impact of climate change on the production of greenhouse vegetables and melons & watermelons (percentage of respondents)**

Product category	Expected Impact		
	High	Medium	Low
Greenhouse vegetables	10%	64%	27%
Melons and watermelons	10%	74%	23%

Source: UNIDO (2023a)

Although greenhouse production tends to be more “immune” to climate change as compared to field crops, several risks remain. Major concern include heavy hail, snow, and storms. Exposure to such risks varies also by region/area. Other negative impacts are related to the incidence and severity of greenhouse pests, which are becoming a major setback for vegetable cultivation. Climate change is influencing the incidence of pests and diseases, host-pathogen interactions, distribution and ecology of insects, their time of emergence, their migration to new areas and their ability to overwinter. As also highlighted above, another major challenge affecting greenhouses close to coastal areas is salinization (as most rely on well-irrigation). Climate change also has a positive impact on greenhouse vegetables. Recently, there have been cases of farmers producing tomatoes through the winter without heating and selling their produce at a very high price. Twenty to thirty years ago, production during the cold winter months was impossible. On the other hand, neighbouring countries (such as Northern Macedonia) can also make use of unheated greenhouses in the winter, diminishing Albania’s competitive position.

<sup>15</sup>Aflatoxins are a family of toxins produced by certain fungi that are found on agricultural crops such as maize. The main fungi that produce aflatoxins thrive in the warm and humid regions of the world. Aflatoxin-producing fungi can contaminate crops in the field, during harvest, and while in storage. Exposure to aflatoxins is associated with an increased risk of cancer. Therefore, there are limits on the level of aflatoxin that milk may contain.

Naturally, in Albania, where conditions are warmer, produce from unheated greenhouses matures earlier as compared to colder neighbouring countries. Over time, this time gap may be altered due to climate change (Imami and Skreli, 2022).

### Livestock – dairy and meat

Milk and meat are similarly affected by climate change-related risks - in the case of cattle and small ruminants, farms usually have a mixed orientation. Thus, the impact of climate change may be simultaneous or similar for both dairy/milk and meat value chains.

Cattle farmers tend to produce a significant share of animal feed on-farm. Therefore, climate change can affect dairy or meat production indirectly, through the impact on animal feed production (i.e. fodder crops). Climate change can trigger changes in the patterns of seasonal field fodder production. Farmers must secure alternative sources of feed by relying more on conserved feeding. For example, throughout the spring and early summer of 2019 and 2023, there were excessive rains in Albania. One negative impact of excessive rain during certain periods of the year is that cereals and forage develop faster and higher levels of aflatoxin<sup>15</sup>, a toxin produced by fungi which can negatively affect milk quality and safety standards (IFC, 2023c).

Increasing problems with access to water and reduced pasture resources also constitute key factors, already noted over a decade ago as heavily affecting sheep breeding in Southern Albania. In some areas of Saranda region, it is not profitable to keep lambs after March, due to the scarcity of water and pastures, while water availability in highland summer pastures in the nearby region of Gjirokastër has decreased, also due to a lack of maintenance at watering points. As a result, the products of small ruminant breeding in Saranda-Gjirokaster region, once considered the leading production area in terms of quality and one of the main breeding areas for small ruminants in terms of quantity, has declined (UNDP, 2010).

### 5.3 Climate change impact and implications for the MAPs sector in Albania

Despite the demonstrated resilience of both wild and cultivated MAPs, cultivated areas with limited irrigation could become highly vulnerable and experience losses

in terms of yield and quality. Studies on the impact of climate change on MAPs are scarce (Skreli and Imami, 2019; Zhllima et al, 2022). Extreme weather events are already affecting the availability and supply of MAPs in the global market, and projected increases in such events are likely to have a further adverse impact on MAPs yields.

**According to experts, climate change is expected to have the following impacts on MAPs (UNIDO, 2023b):**

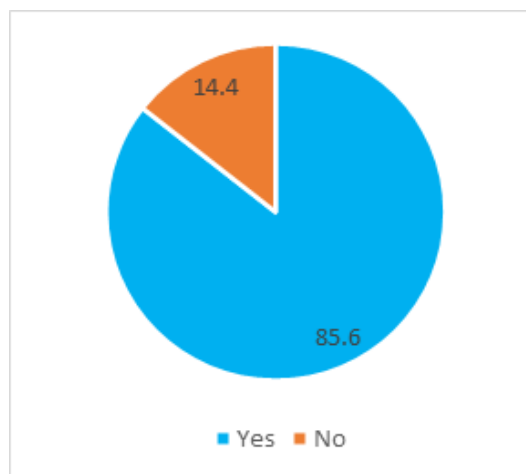
- Heightened population dynamics of insects and emergence of new pests
- Shifting patterns in pest and disease development and evolution of new pest strains.
- The quality of MAPs seed production is also being affected by crop/weed interactions, loss of pollinator biodiversity, and genetic diversity.
- Alteration of MAPs’ phenology, seed reproduction, flowering, anthesis/pollen viability, pollination/fertilization, seed dormancy, seed yield, and ultimately seed quality.
- Decreased productivity and quality due to high temperatures. Temperature-related stress can affect the production of secondary metabolites and other compounds that typically form the foundation of medicinal properties of plants.
- Several threats are posed to MAPs species. Different MAPs species can respond differently to climate change. Some species may respond to increased environmental stresses not only with declines in biomass production, but also with changes in chemical content, potentially affecting quality or even safety of medicinal products (Applequist et al, 2020).
- Climate change affects MAPs (similarly to other plants) directly through changes in temperature, precipitation patterns, and extreme weather events, as well as indirectly through alterations in soil quality, water availability, and pest and disease pressure. These changes can impact the chemical composition and medicinal properties of MAPs, ultimately affecting their quality and efficacy (Sharma et al, 2020). For example, although several studies have found evidence of high resistance of MAPs to climate change (Patni et al, 2022), increased temperatures can lead to changes in the production of essential oils, which are responsible for the medicinal properties of many MAPs.
- The survival and genetic integrity of some MAPs endemic to geographic regions or ecosystems are at

risk (Manish et al, 2016; Munt et al, 2016; Aishwath and Ratan; 2016). Some species can move to higher latitudes or altitudes, whereas other species face the threat of extinction.

Warmer temperatures and changes in humidity levels can create more favourable conditions for pests and diseases to thrive, leading to increased pressure on other plants. Water stress and soil erosion can impact the growth and development of open field plants, leading to reduced quality and yield. Furthermore, high temperatures and declining precipitations in some areas and heavy rains and floods in other areas and periods of the year are causing vulnerabilities in terms of soil content, crop/weed interaction and biodiversity, which have direct implications for quality.

Most surveyed MAPs farmers are aware of climate change – more specifically, 85.6% of the respondents are aware of climate change, while 14.4% are not.

**Figure 5.13. Farmers’ statements on climate change awareness**



Note: Answer to the question “Are you aware of climate change?”

Source: MAPs farms survey

The assessment reveals concerning patterns across several weather phenomena. Flooding frequency has seen slight or moderate increases, according to 48% and 27% of the respondents respectively. Similarly, hail frequency has experienced slight increases according to 30% of the respondents and moderate increases according to 69% of them. The duration of drought has considerably increased according to 95% of the respondents, signalling a significant impact on agricultural regions. The frequency of wind storms has also seen a slight increase according to 83% of the respondents.

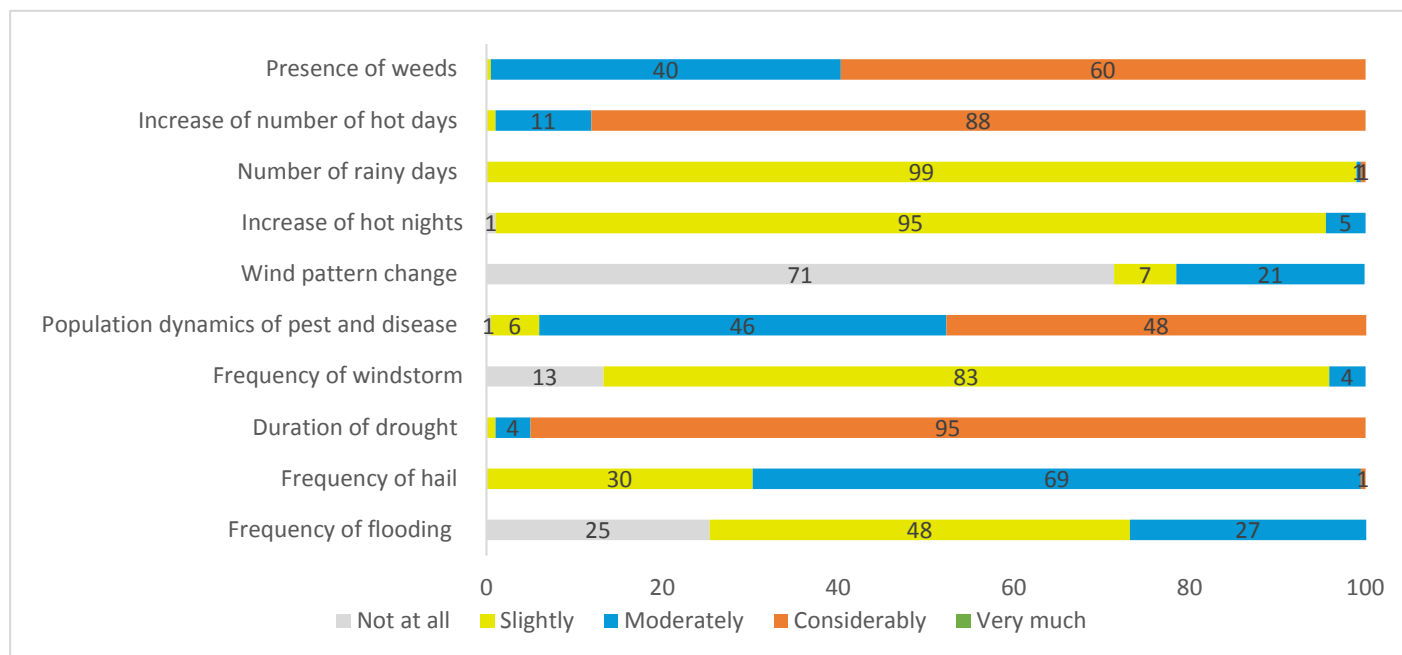


Moreover, hot nights have slightly increased according to 95% of respondents, the number of days with high precipitation has seen a slight uptick according to 99% of them. The frequency of hot days has considerably increased according to 88% of the respondents, posing challenges for heat-sensitive crops and livestock.

Population dynamics of pests and diseases has

considerably increased for 48% of the respondents, indicating a growing challenge for agricultural management. Changes in wind patterns have been reported with moderate increase by 21% of the respondents. Lastly, the presence of weeds has considerably increased according to 60% of the respondents, potentially impacting crop yields and biodiversity.

**Figure 5.14. Share of farmers' statement on climate change awareness**



Note: Answer to the question “How much have the following phenomena changed?” (percentage of respondents)

Source: MAPs farms survey

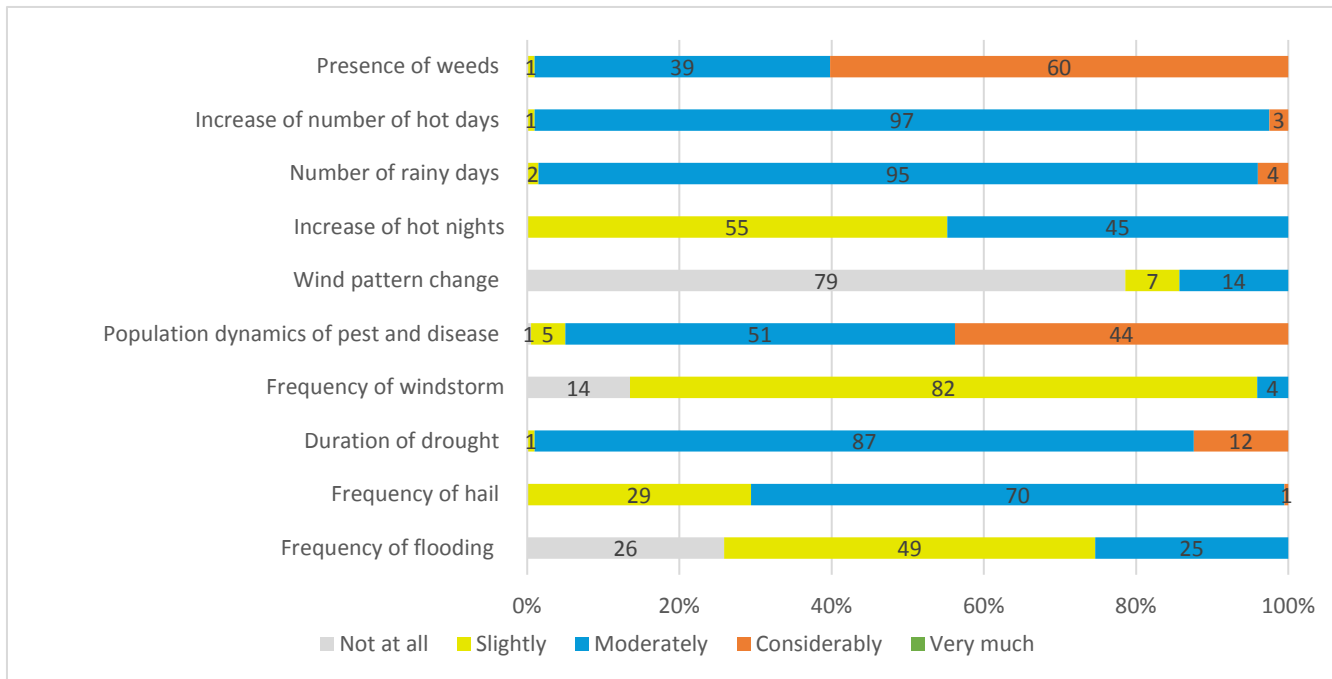
Survey findings indicate that flooding frequency has been observed to have a slight impact by 49% of respondents and a moderate impact by 25%, indicating a notable but not overwhelming effect on MAPs quality. Similarly, the frequency of hail has a slight impact according to 29% of respondents, while 70% perceive a moderate impact, suggesting a more significant threat to MAPs cultivation.

Wind storms are also identified as a moderate factor affecting the quality of MAPs, with 82% of the respondents reporting a slight impact. In addition, changes in wind patterns are perceived to have little impact, with 79% of the respondents reporting no impact. Only 7% report a slight impact and 14% reporting moderate impact.

The duration of drought emerges as a major concern, with 87% of the respondents reporting a moderate impact and 12% reporting a considerable impact. This indicates a substantial challenge for MAPs growers, as prolonged drought periods can severely impact plant health and yield.

The increase in hot nights poses additional challenges for the cultivation of MAPs, with 55% of the respondents reporting a slight impact and 45% reporting a moderate impact. Similarly, 97% of the respondents perceive a moderate impact and 3% perceive a considerable impact from an increase in hot days (Figure 5.15).

**Figure 5.15. Farmers’ awareness on the level of occurrence of main weather events**

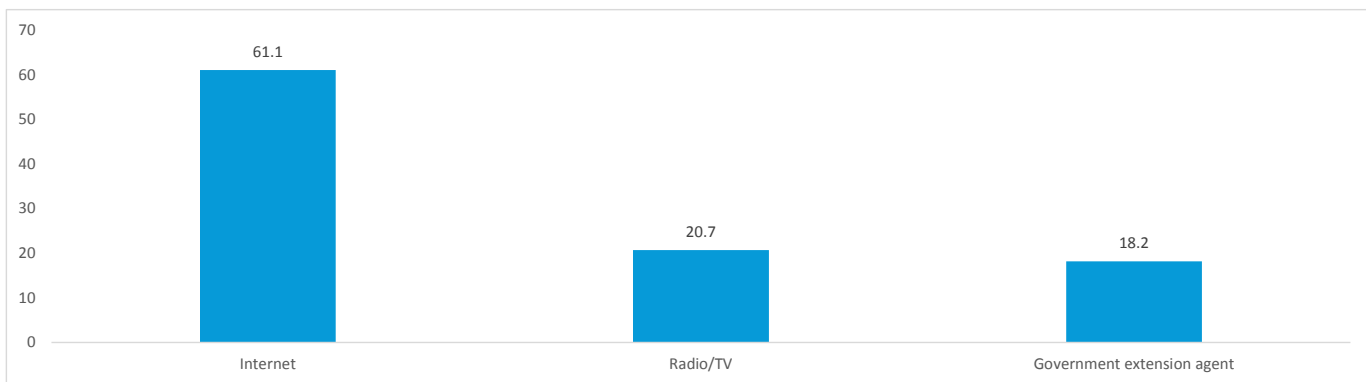


Note: Answer to the question “What impact do climate-related phenomena have on the quality of MAPs?” (percentage of respondents)

Source: MAPs farms survey

As a result of the above, the weather information has become a very important factor for preventing shocks. The main source of climate information is internet (61 percent of the respondents), followed by mass media (e.g. TV and radio) (21 percent) and government extension staff (18 percent).

**Figure 5.16. Farmers’ main sources of weather information**



Note: Answer to the question “Which are the main sources of climate information?” (percentage of respondents)

Source: MAPs farms survey

As regards concerns about climate change impacts, a substantial majority, comprising 82% of the respondents, either agree or strongly agree with the notion that climate change poses significant risks to farm operations. Specifically, 64% agree, while 18% strongly agree. This indicates a prevalent acknowledgment of the potential challenges and disruptions that climate change may inflict upon agricultural practices.

Similarly, respondents demonstrate a shared perception regarding future extreme weather events, with a combined 80% either agreeing or strongly agreeing that such occurrences, including increased days of high temperatures, heightened drought frequency and severity, and abnormal winter seasons, are likely to become more frequent. Specifically, 62% agree, while 18% strongly agree on this factor (Table 5.3).

**Table 5.3. Views and concerns of surveyed MAPs farmers about climate change (percentage of respondents)**

Category	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I am concerned about the potential impacts of climate change on my farm operations.	0%	4%	14%	64%	18%
I believe that extreme weather events (increased days of high temperatures, increased drought frequency and severity) will happen more frequently in the future.	0%	4%	16%	62%	18%

Source: MAPs farms survey

QI can play a significant role in climate change adaptation for MAPs in several ways. Establishing standards for the cultivation, harvesting, processing, and storage of MAPs can help ensure product quality and consistency. This is particularly important as climate change can affect the chemical composition and medicinal properties of plants. By maintaining high quality, the effectiveness and safety of MAP products market operators can be guaranteed in a stable market even under changing environmental conditions. Therefore, experts urge for fast improvement of the QI in Albania.

QI can support research and development efforts aimed at identifying climate-resilient MAP varieties, optimizing cultivation techniques, and developing new products. The selection of MAPs varieties can help mitigate the impacts of climate change on MAPs and ensure a stable supply of high-quality medicinal and aromatic products. According to the market operators, the main weakness in

the system remains the establishment of the traceability systems for MAP products, enabling consumers to verify the authenticity and origin of the products.

Interventions carried to improve traceability would increase trust and confidence in MAP products for the internal and export markets, particularly in the context of increasing concerns about food safety and quality. For instance, MAPs exporters are experiencing high losses due to the absence of conformity assessment infrastructure and lack of traceability for PAs. The controls on market entry, particularly in major destination markets like the EU, are on the rise. For instance, in 2023 the maximum accepted levels of glyphosates were reduced from 0.03 to 0.00. Therefore, coping with the risks of contamination from other plants is becoming a very costly process. Due to the high level of alkaloids, an increasing number of cases of banned deliveries is emerging.





## 6 **Conclusions and recommendations**

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The findings of the survey conducted among extension experts in various regions of Albania offer a comprehensive insight into the perceived impact of climate change on agricultural practices and environmental conditions over the past decade. The respondents have demonstrated a unanimous acknowledgement of the signs of climate change. Notable observations include prolonged drought periods, frequent temperature fluctuations, and seasonal shifts in temperature and precipitation. This collective awareness underscores a widespread recognition among experts regarding the influence of climatic events in shaping the agricultural landscape of the country.

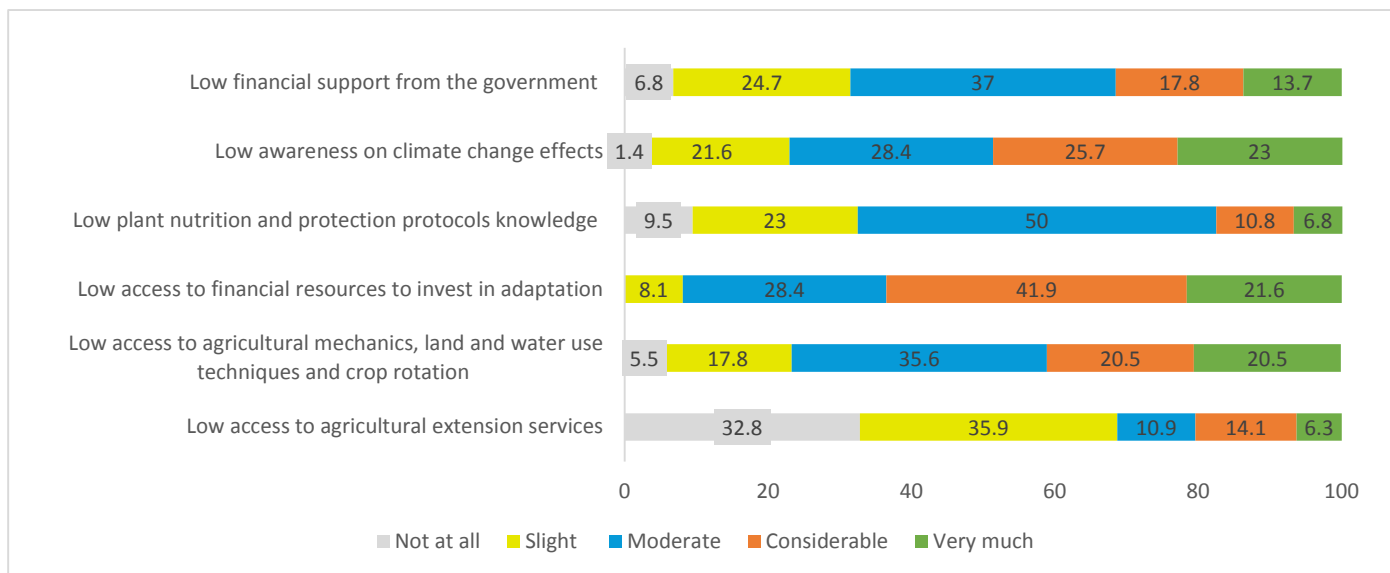
The profound impacts of these climatic events on agriculture and the environment are evident in the reported challenges. Arable land degradation and a shortage of water supply emerge as significant hurdles, with respondents indicating moderate to considerable impacts. Furthermore, alterations in the timing of agricultural processes, the prevalence of plant diseases, increased exposure to pests, and the degradation of forests and pastures are highlighted as areas where climate-related events have caused substantial effects.

Climate change has affected export-oriented value chains. This is expected to significantly threaten the country's competitiveness in global markets. In F&V production, the impact of climate change has been particularly important, with severe impacts coming from extreme weather conditions, drought and temperature increase. Climate change has also had a strong negative impact on both the yield and quality of olives (and olive oil), as well as vineyards and wine—products for which quality is critically important. Specifically for the MAPs sector, which was the main focus of this report, the results provide valuable insights into the perceptions and challenges that farmers face in responding to climate change in agriculture. These findings suggest that certain climate-related phenomena, such as drought, have

had notable to considerable impacts on the quality of MAPs. The majority of respondents perceive a moderate to considerable impact of climate-related phenomena on MAPs quality, emphasizing the need for adaptive measures in MAPs cultivation and management. The high level of awareness among respondents regarding climate change underscores the urgency of addressing its impacts on agricultural systems.

The consensus among respondents regarding concerns about the impact of climate change underscores the importance of prioritizing climate resilience in agricultural planning and policy-making. Extension/expert surveys show that several significant obstacles hinder climate change adaptation in agriculture. These include low access to agricultural extension services, limited knowledge of plant nutrition and protection protocols, restricted access to agricultural machinery, and inadequate techniques for land and water use and crop rotation. Additionally, limited access to financial resources and weak government support for adaptation efforts also pose considerable challenges (see Figure 6.1).

The identified challenges hindering the farmers' ability to respond to climate change, such as limited access to resources, knowledge gaps, and inadequate government support, underscore the need for targeted interventions and support mechanisms. Strengthening agricultural extension services, improving access to key farming information tools, such as agro-meteorology, providing financial resources for adaptation efforts, developing agriculture insurance, enhancing awareness and knowledge dissemination, and improving government support policies are crucial steps in overcoming these challenges and building climate-resilient agricultural systems.

**Figure 6.1. Experts' perceived challenges hindering responsive measures to climate change in agriculture**

Note: Answers to the question “What are the main challenges that prevent farmers to respond to climate change in agriculture?”

Source: Expert/extension survey

The experts survey responses provide valuable insights into the perceived importance of support policies aimed at enhancing climate change adaptation capacities. Government support for crop varieties rotation emerges as moderately important. In contrast, providing grants for farm innovations garners widespread support. There is a strong consensus on the importance of increasing investments in irrigation and drainage infrastructure. This reflects the recognition of the critical role that water management plays in mitigating the impacts of climate change on agricultural productivity.

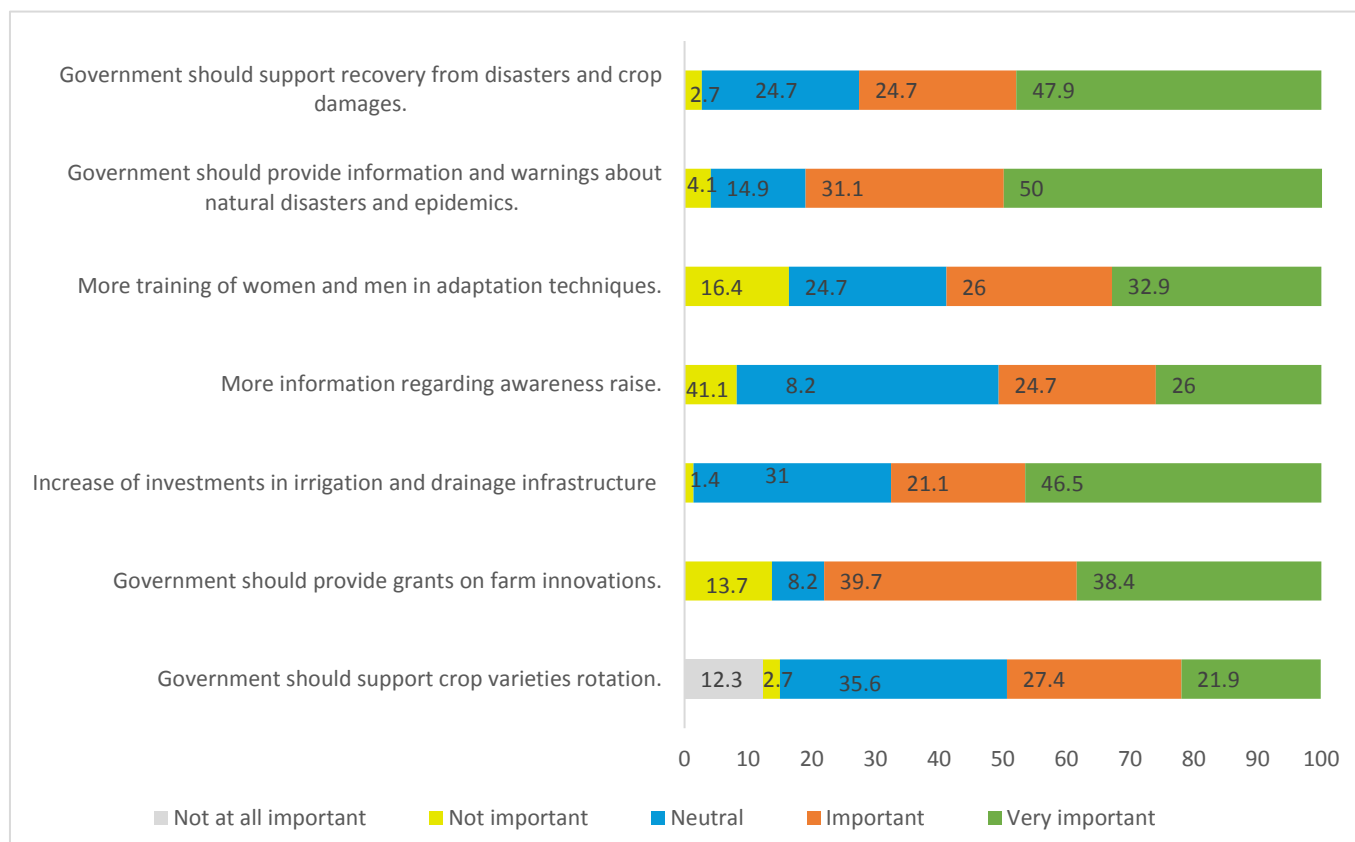
Disseminating more information to raise awareness is perceived as moderately important. This suggests a need for targeted educational initiatives to enhance understanding and adoption of climate-smart practices among farmers. Training of women and men on adaptation techniques also garners positive reception. This underscores the importance of gender-sensitive

approaches in building adaptive capacities within agricultural communities<sup>16</sup>.

The provision of information and warnings by the government about natural disasters, as well as government support for recovery from disasters and crop damages are overwhelmingly deemed very important. Providing information and warnings about natural disasters and epidemics, along with covering damages through grants, is important for reducing farmers' vulnerability to losses. Overall, the expert survey results highlight a strong consensus on the importance of government support policies in enhancing climate change adaptation capacities, with particular emphasis on grants for farm innovations, investments in irrigation and drainage infrastructure, and provision of information and warnings about natural disasters and epidemics (see Figure 6.2).

<sup>16</sup>The gender dimension is analysed in a separate report.

**Figure 6.2. Expert opinions on the necessary support policy for improving climate change adaptation capacities**



Note: Answers to the question “What support policies could be required in the future in order to improve climate change adaptation capacities?”

Source: Expert/extension survey

In response to these findings, a set of recommendations can be proposed to enhance climate change adaptation and resilience within the Albanian agricultural sector.

### 1. Evidence-based policy-making and institutional cooperation

**Rec 1.1: Provide evidence-based policy-making and support alignment with the EU acquis.** The Sofia Declaration on the Green Agenda for the Western Balkans, adopted in 2020, aims to tackle the challenges of climate change and the green and digital transition. It assists Western Balkan countries/territories in aligning their environmental regulations with the European acquis. The Green Agenda for the WB is based on the European Green Deal and the related Economic and Investment Plan for the Western Balkans. The issue of climate change in agriculture is increasingly addressed in relevant policy documents of the WB countries. Translating the strategic objectives into practice, however, remains a challenge and requires improved institutional cooperation.

### 2. Supporting innovation and advisory services

**Rec 2.1: Support research and innovation and promote good agricultural practices through new forms of financing and cooperation.** Continued research into climate-resilient crop varieties, sustainable agricultural practices, and adaptation strategies is essential for mitigating the effects of climate change on crop quality. The situation calls for the promotion of these measures through an improved coordination and operation of an Agriculture Knowledge Information System (AKIS). More funding should be provided in order to conduct applied research. The MARD can establish EIP-Agri-like Operational Groups in order to solve issues related to crop variety selection and plant protection. The Agricultural University of Tirana should strengthen



academic capacities for applied research (e.g. PAs control and climate change aspects), promote quality and provide testing services. To bolster agricultural resilience to climate change, collaboration between national hydro-meteorological services, the Agricultural University Tirana (AUT), and regional agricultural extension centres is proposed. Through this service, agricultural extension centres can supply farmers with climate data tailored to their regions, aiding informed decisions on crop management. Training for extensionists and IT infrastructure upgrades at extension centres will ensure the provision of timely climate information and support, meeting the evolving agricultural demands.

**Rec 2.2: Improve capacity building and advisory services by investing in institutional capacities and human resources:** Climate change has put many experts in a difficult position; many feel unable to advise farmers on how to tackle risks. There is a desperate need for expertise, including in areas of plant protection, soil assessment and suitability of climate conditions (Imami et al, 2019). It seems that certain crop varieties (e.g. vineyards), that could once be grown in a particular region, are no longer suitable, and vice versa. This is threatening the rich biodiversity of the country, which needs to be preserved. Therefore, there is a need to prepare a detailed national and regional mapping of suitable varieties and to provide producers and local experts with the advice and knowledge they need. Implementing training programs and capacity-building initiatives will equip farmers with the necessary skills and knowledge to implement climate-smart agricultural practices effectively.

**Rec 2.3: Introduce Climate-Smart Agriculture (CSA) as another mitigating intervention:** CSA is an approach that aims to sustainably increase agricultural productivity, adapt to climate change, and reduce greenhouse gas emissions. It encompasses many of the practices mentioned above, along with others like

precision agriculture and agro-ecology. Facilitating the interaction between farmers and weather providers at extension centres enhances the understanding and utilization of climate information, boosting the effectiveness of the centres in agricultural decision-making. One example is the use of the Prognosis Centre for Pest Disease Protection, which was a technological innovation in the fruit sector Albania (see Box 1), as shown below. There is a need to improve agro-meteorological services and introduce an early warning system to guide the adaptation of agronomic practices to the changed and increasingly variable situation. Information collected through prognosis centres should be used by ATTC, other research institutions (e.g. Agricultural University of Tirana) and extension services to provide farmers with guidance and up-to-date information on climate change and adaptation, through suitable platforms designed to deliver relevant information and guidance effectively.

**Rec 2.4: Introduce digital transformation:** Digital transformation of agriculture is one of the key points in the newly adopted Strategy for Agriculture, Rural Development and Forestry (SARDF 2021-2027). However, there are no measures to support the establishment of a digitalised monitoring system and the use of digital solutions for water conservation and climate warning<sup>17</sup>.

**Rec 2.5: Expand the use of Integrated Pest Management (IPM) strategies:** These strategies can help control pests and diseases without relying heavily on chemical pesticides, which can have adverse environmental impacts. This can include using biological controls, crop rotation, and resistant crop varieties. Introduction of crop varieties that are more resilient to climate change can help maintain crop quality and yields. This includes varieties that are drought-tolerant, heat-tolerant, or resistant to pests and diseases that may become more prevalent due to changing climate conditions.

<sup>17</sup>Very recently, the Agricultural University has partnered with the Leibniz Institute of Agricultural Development in Transition Economies in Halle (Saale) (IAMO), with funding from the German Federal Ministry of Food and Agriculture (BMEL), to establish a Geoinformation Centre for the Western Balkans at AUT. The mission of the Centre is to support the agricultural sector of all Western Balkan countries in the EU accession process by enhancing human capacities in spatial data analysis, the use of Geographic Information Systems (GIS), and remote sensing technologies. The system is expected to be very useful for all Western Balkans in providing timely updates and prognosis of major climatic trends, as well as potential patterns of impact on agriculture.

### Box 1: Case study: The Prognosis Centre for Pest Disease Protection

The SNV (Stichting Nederlandse Vrijwilligers or Foundation of Netherlands Volunteers) ProMali project has supported the establishment of a prognosis centre for controlling diseases and pests for orchard farmers in the Korçë region. The centre, located at ATTC Korçë, was a useful tool for farmers because it enabled a higher effectiveness of plant protection against pests, resulting in increased production, improved fruit quality and safety, and reduced plant protection expenditures. The system was very user-friendly. Apple producers could call a specific phone number to receive automatic information and counselling on the spraying strategy at a specific time. The technical system of the prognosis centre consists of: a weather station, which collects data on weather conditions (temperatures, rainfall, air humidity, solar lighting, etc.); a spore detector, which detects whether spores have been released in nature; a computer server where the weather data is retrieved and stored; and a computer program that simulates the possibility of the occurrence of diseases based on weather data. The system used the latest technology for modelling diseases and pests in apple orchards and turned out to be very useful for disease control.

The forecasting system of the prognosis centre was transferred to ATTC Korçë, which was responsible for maintaining it in cooperation with other institutions, such as the Agricultural University of Tirana (AUT). However, due to gaps in human resources management, ATTC Korçë ceased to maintain and run this innovative system (the person that had been trained for the project left ATTC and was not replaced).

This is a clear example of how useful can innovation be in the agricultural sector, especially in plant protection, but also how important and challenging it is to achieve sustainability. Currently, small private investments are also being made to expand digital technology in agriculture. Climate monitoring stations (enabled by mobile operators such as Vodafone) and sensors for assessment of main indicators in field and greenhouse production systems have been established and are accessible at low investment costs, with initial costs ranging from EUR 1-2 thousand and approximately EUR 100 in annual maintenance costs, through which farmers can obtain up-to-date information and guidance related to weather conditions and plant protection.

Source: FAO (2020) and notes from field interviews

**Rec 2.6: Support sustainable practices:** Crop diversification is required to cope with the risks associated with temperature fluctuations and moisture requirements, thereby reducing the impact of extreme weather events. Water management practices and soil management practices (conservation tillage, cover cropping, and organic farming) can improve crop yields in times of drought and maintain soil structure, fertility, and water retention, making crops more resilient to climate change. Providing grants and incentives for farm innovations, such as developing drought-resistant crop varieties, sustainable land management practices, and integrated pest management strategies, can significantly contribute to adaptive strategies

## Box 2: Adoption of biological pest control

Increasing focus on intensive cultivation in protected environment led to an increased and often excessive or inappropriate use of agricultural inputs (fertilizers, PPP, water). Production activities are often poorly planned, managed and controlled: basic conditions in most cases are not controlled (soil quality, fertility, risk of salinization, etc.), use of inputs is not carefully measured and their quality not sufficiently ensured, with consequent impacts on quantity, quality and safety of the production. Scarce culture for quality and consequently low compliance with standards results in lower quality and prices (profitability) of products.

The pressure to adopt more environmental-friendly production methods in greenhouse production while maintaining high productivity is steadily rising, due to: i) the need to align with the EU Green Deal, ii) the ever-increasing food safety and quality requirements for products intended for export, especially in EU countries, and iii) the increased consciousness of domestic consumers regarding the importance of limiting the use of chemicals for food safety, environmental protection and overall sustainability of the production process.

In this context, GIZ SRD II project is testing more environmentally friendly options for pest control in greenhouse production and improved productivity, focusing on the production of tomatoes and peppers, the improved use of natural pollination and the introduction of methods with lower environmental impact, prioritizing the main pests such as the tomato leafminer (*tuta absoluta*), the white fly and aphids. GIZ/SRD II programme is supporting the implementation of biological pest control in greenhouse vegetables at pilot level, which can be scaled up to benefit more farmers. Considering this example, Donors can work closely with agricultural schools and VET institutions with greenhouses to improve their capacities and facilitate demonstrations and tests related to biological control. A school director, who is also a large greenhouse farmer, strongly recommended using vocational schools for this purpose, not only to train students, but also to extend outreach to farmers.

Source: Field interviews and Imami (2023)

### Rec 2.7: Promote the perseverance of biodiversity and the use of autochthonous varieties and conserve endangered wild flora:

As highlighted earlier in the report, there is evidence that some autochthonous varieties perform better under the stress of climate change. ATTCs can play an important role in cooperation with AUT, to demonstrate/pilot new technologies and promote best practices. Furthermore, local governments play a crucial role in safeguarding local resources, such as pastures and forest areas, and in motivating users to adopt sustainable practices. Capitalizing on this opportunity requires mobilizing applied research in coordination with the engagement of extension services and capacity building. In the case of MAPs, in order to mitigate future vulnerabilities to climate change, it is crucial to conserve the endangered wild flora. This will include the cultivation of MAPs by adapting the selection of varieties and cropping cycles. Agroforestry practices and other nature-based solutions are recommended to integrate species that are well adapted to the local habitat and capable of thriving under the new climatic conditions. Autochthonous varieties also represent a market potential considering (agri)tourism growth trends. Classical examples of pro-diversity business interventions include organic certification and the promotion of local / autochthonous varieties for agritourism, focusing on crops which are more resistant to climate change and in demand in the market.

### Box 3: Climate change resilience and market demand – the potential autochthonous varieties

In the context of growing tourism and agri-tourism, there is a growing interest in autochthonous varieties (e.g. vegetables). On the other hand, evidence suggests that autochthonous varieties often tend to perform better in the context of climate change. The Genetic Bank, hosted by the Institute of Plant Genetic Resources at the Agricultural University of Tirana, holds many different germplasm samples of actual or potential interest to people working with genetic resources (breeders, farmers, seed producers, agricultural centres, researchers, etc.), which have been collected throughout the country. Conserved plants include economically significant species for food and agriculture (including traditional varieties such as landraces, primitive and modern cultivars, as well as their wild relatives), fruit trees, fodder, MAPs and forest fruit trees. There are also efforts by agricultural schools such as the one in Bushat, Shkodër to establish genetic banks and provide seeds of autochthonous varieties to farmers.

Source: Field interviews and Imami (2023)

### 3. Investments / financial support

#### Rec 3.1: Improve irrigation and drainage systems.

There is a pressing need to enhance infrastructure, particularly through increased investments in irrigation and drainage systems. This step aims to mitigate the impacts of water scarcity and flood events.

#### Rec 3.2: Develop measures to reduce losses:

Providing risk coverage through crop insurance is crucial, and it should also include incentives to develop new services and improve access to them. Currently, there is no functional crop insurance service in Albania. Despite efforts made to support the provision of this service in 2018 by MARD through a support measure from ARDPF, there was no demand or supply from insurance companies for this service. Few studies have been conducted in the framework of research work (Zhuli, 2018; Zhllima et al, 2018).

#### Rec 3.3: Improve post-harvest facilities and logistics.

This is the case for the whole horticulture sector in general, and for MAPs specifically – for the latter, there is a need for improved storage (to avoid contamination and preserve quality) and drying facilities and basic sorting/cleaning equipment and machinery. Given the climate change, exposure to extreme temperatures, draughts and

heavy rains, having proper storage and drying facilities has become paramount. Support for using solar power to dry MAPs can be considered, benefiting from recent pilot initiatives. Connecting Natural Values and People (CNVP), with the support of the Embassy of Sweden in Tirana, has tested innovative MAP drying technologies relying on solar power, which are easy to construct and cheap to operate (CNVP, 2022).

### 4. Improve QI and associated services

Improving quality infrastructure and associated services is crucial to mitigate the impact of climate change on quality. The Quality Infrastructure System (QIS) should be adjusted to address these quality implications. Robust Quality Infrastructure Systems better position developing economies to achieve sustainable development by increasing prosperity, meeting the needs of people, and protecting the planet. In turn, a well-functioning, internationally harmonized and recognized QI system is essential for climate protection, as QI provides confidence not only for the assessment of the impact of services and products on our climate, but also for monitoring national and international commitments such as those emerging from the Paris Agreement<sup>18</sup>, as well as from the Sustainable Development Goals (SDGs), especially Goal 13<sup>19</sup>. The following measures can be taken.

<sup>18</sup>The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at the UN Climate Change Conference (COP21) in Paris, France, on 12 December 2015. It entered into force on 4 November 2016.

<sup>19</sup>Goal 13 aims to "Take urgent action to combat climate change and its impacts" while acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change.

**Rec 4.1. Increase the efforts for standardization:**

Standards play a vital role in addressing climate change by supporting sustainability initiatives, such as environmental management and carbon footprint reduction. Voluntary Sustainability Standards (VSS) are guidelines adopted voluntarily to demonstrate commitment to sustainable practices, which cover environmental, social, and economic aspects

**Rec 4.2. Promote accreditation:**

Accreditation ensures the competence, consistency, and impartiality of conformity assessment bodies (CABs). Conformity assessment bodies test, inspect, certify, verify, and validate aspects like energy efficiency and GHG emissions reduction. There is a limited range and quality of testing services available in Albania. International trade of dried MAPs and essential oils requires a large number of different tests, often specific for each MAP. Laboratories should be accredited as infrastructure and certified with ISO/IEC 17025. Private laboratories need to expand the number of accredited tests. TIC bodies should be able to provide auditing, inspection and certification services. In order to have their certifications recognized abroad, they should be accredited and certified themselves with ISO/IEC 17065. GDA capacity building should focus on Albanian TIC bodies and testing entities; capacity building should primarily include technical assistance and training; twinning initiatives with EU member states' equivalent bodies could be also promoted. GDA should acquire the capacity to: i) accredit Albanian TIC bodies and support them in the ISO/IEC 17065 certification process; ii) increase the number of accredited and certified testing facilities, as well as the number of accredited FSVI testing services.

**Rec 4.3. Develop laboratory infrastructure and increase accessibility of laboratory services.**

Testing laboratories support compliance with specifications and regulations. The current shortcomings include insufficient numbers of certified laboratories, limited availability of accredited tests and analyses, high service costs, etc..

**Rec 4.4. Increase inspection capacities:**

Inspection verifies the safety and operation of assets, contributing to carbon emissions reduction and energy efficiency.

**Rec 4.5. Strengthen certification bodies:**

Certification confirms compliance with regulations and standards related to environmental and energy management, as well as carbon footprint measurements. Additionally, the absence of locally accredited certification bodies, particularly for certifications like GlobalGAP, further exacerbates the issue, leading to increased service costs and reduced monitoring capabilities. This is important as several voluntary certifications prioritize climate change and environmental protection measures.

**Rec 4.6. Metrology, the science of measurement, is essential for understanding and monitoring climate change, providing precise and globally comparable measurement results.**

There is a need to support GDM in updating the strategic plan (scope of calibration for the VCs). The GDM capacities to inform the market operators on metrology legislation has to increase, especially on legal requirements related to MAPs sector in key markets, with a focus on the measurement of humidity, pesticide residues, bacteria and metal (lead) contamination.

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## 8 Appendix: VSS categories and overall EU buyers demand for VSS<sup>21</sup>

### A1. VSS categories, private organisations owning them and main TIC

The Voluntary Sustainability Standards – VSS are standards linked to the Sustainable Development Goals; these VSS are commonly divided into nine sub categories, namely: i) Due diligence, ii) Credibility, iii) Traceability, iv) Food Safety, v) Quality, vi) Sustainable business, vii) Human and Labour rights viii) Environment and climate change and, ix) Gender. Each VSS can be included in one or more categories, depending on its scope.

Some ISO standards such as ISO 45001 (Occupational health & Safety), ISO 14001 (Environmental management system) and, ISO 50001 (Energy management) are also linked to SDG, but cannot be classified as VSS according to UNCTAD definition.

There is a large number of VSS. The ITC Standards Map database (Standard Map, 2022) considers over 300 VSS<sup>22</sup>, many of which are part of VSS families, such as GlobalG.A.P., which is made of core standards, production-oriented specific modules (which generate a separate standard) and add-on modules. Some large buyers, such as supermarket chains, collaborate with auditing firms to

develop their own standards (e.g. Tesco with GlobalG.A.P., with the Nurture 11.4 add-on module)

Regardless of the fact that most VSS include modules for fruit and vegetables and MAP<sup>23</sup>, few of them are commonly required in Western Balkans, the most common being summarized in table 8.1 below.

It is possible that multiple certificates are required, each relevant to a specific stage of the supply chain. For example, it is possible that GlobalG.A.P. is required for general agriculture practices (GlobalG.A.P. IFA v6) and, in addition, IFS for food safety, even if the same level of certification could be obtained with a GlobalG.A.P. add-on module, such as Produce Safety Assurance and/or Product Handling Assurance - PHA

More broadly, buyers are increasingly demanding the adoption of voluntary standards. In many cases, specific requirements that are not associated with a formalised standard are requested.

Certifications such as GlobalG.A.P. and Smeta emerged as very important factors to be considered as serious and reliable counterparts on the European market.

<sup>21</sup>This subsection is largely based on UNIDO (2023b) report developed by DSA.

<sup>22</sup>The database covers all countries worldwide, but has a specific focus on a limited number of agricultural commodities, excluding fruits and vegetables and MAPs. The database provides information on the following topics: i) a review of over 300 sustainability standards, ii) a tool for multi-criteria comparison of different standards, iii) a tool for self-assessment vs. a specific standard and, iv) monitoring trends of certification schemes (area, number of producers, variation in last year). Among different monitoring features, the database provides: iv.1) an overview of the most common standards adopted for different crop categories and countries, iv.2) trends and figures regarding the use of different standards (surface, number of certified enterprises, growth over time).

<sup>23</sup> For example, RA – Rainforest Alliance has specific sub-modules for sage, oregano, thyme, lavender and Helichrysum. However, there is no known demand for RA MAPs certifications from Western Balkans producers.

**Table 8.1. Main VSS adopted for fresh fruits and vegetables and fresh and processed MAP**

Issuer and standard/scheme	Main features	Main markets where is required
Issuer: Global G.A.P. Standards: IFA v6	Sustainable Agriculture practices;	All EEA markets, especially Northern Europe and supermarkets
Issuer: Sedex Standard: Smeta	Social audit on workers' conditions;	UK, Germany and other EEA countries; several supermarket chains adopt SMETA
Other Standards required for MAPs import in EEA markets, but not commonly required from WB producers		
Issuer: Global G.A.P. Standards: buyers-specific modules	Nurture Module v11.4 – Tesco; AH-DLL GROW (AlberthHeijn and Delhaize); Coop Italia pesticide transparency;	Nurture Module: UK; AH-DLL: Netherlands, Belgium; CIPT: Italy;
Issuer: Global G.A.P. Standards: Environmental and social responsibility add on modules	Biodiversity, SPRING (water use); GRASP (workers welfare, health, safety);	
Issuer: Global G.A.P. Standard: ETRS - Ethical Trade and Responsible Sourcing	Made up of a Global Standard and a separate ETRS Risk Assessment; Standard is based on six indicators for ethical trade and responsible sourcing management system; ETRS Risk Assessment is a diagnostic vs. five key ethical trade and responsible sourcing indicators to achieve the Global Standard;	Most EEA countries;
Issuer: Amfori Audit system: BSCI	Social audit system; Focused on supply chain; Does not lead to certification; Can be used as preparatory system for SA8000 certification;	
Issuer: SAI Audit system: SA8000	Social responsibility certification;	
Issuer: Ecocert Standards: Fair for Life	Fair trade – linked to supply chain;	Buyers, mainly in EEA, (France, Switzerland, Belgium, Netherlands, Germany main countries)
Issuer: Ecocert Standards: Fair for Life	Corporate responsibility – social, environmental; Several companies dealing with essential oils (Serbia, Bulgaria);	France and other EEA countries
Issuer: Rainforest Alliance Standard: Sustainable Agriculture Standards V1.3: i) farm; ii) supply chain	Main indicators (88%): environmental, human and labour rights, due diligence, credibility; also gender indicators; Includes wild and cultivated MAPs and herbal teas; 1 certified company in Albania; In Europe applicable to Albania, Bulgaria, Croatia, Germany, Poland, Spain;	Most high income countries;

Issuer and standard/scheme	Main features	Main markets where is required
Issuer: LCG Group Standard: BRCGS	Food safety and quality in processed products (non-primary products); Several specific standards for supply chain segments or components (e.g. packaging);	
Issuer: GFSI Standards: IFS Food 7	Food safety and quality in processed products (non-primary products);	Mainly Germany and France
Issuer: Fairtrade Standards: Family of 7 standards	Family of standards relevant to different aspects of sustainability in terms of labour, environment, fair trading conditions; Specific standards for small growers; Applicable to producers in some emerging countries, not including any European country;	
Standards widely adopted in EEA and USA, but not applicable to Albania		
Issuer: Rainforest Alliance Standard: UTZ	Focused on sustainable value chains; With the introduction of RA Sustainable Agriculture Standards v1.3 is gradually phased out;	

## A2. Summary description of most relevant VSS

### Ecocert Fair for Life and For Life

Fair for Life and For Life standards and certifications schemes are complementary

Fair for Life (FFL) and For Life (FL) are considered by the issuer as two complementary standards sharing a common ground:

- Respect human rights and fair working conditions;
- Respect ecosystems and promotion of biodiversity, sustainable agricultural practices;
- Positive local impact.

The two standards focus on different aspects:

- FFL is a product certification programme for fair trade and responsible supply chains;
- FL is a certification programme addressed to companies willing to demonstrate their corporate social responsibility. FL product certification is also an option.

### Fair for Life

“Fair for Life is a certification programme for fair trade in agriculture, manufacturing and trade. It was created in 2006 by the Swiss Bio-Foundation in cooperation with the IMO Group and then taken over by the Ecocert Group in 2014 to meet a specific demand from organic farming stakeholders”.

Fair for Life is based on the concept of “responsible supply chains”, giving value to exemplary supply chains, where stakeholders have chosen to act responsibly by implementing good economic, social and environmental practices, including practices such as long-term contracts with fixed prices and volumes, which facilitates the establishment of fair partnerships along the supply chain.

So far, there are over 700 Fair for Life certified companies, whose supply chains involve over 235,000 suppliers and workers. There are no certified Fair for Life companies in Western Balkans, except one in Greece dealing with non-food products.

Depending on the percentage of certified Fairtrade components a product can be labeled as “Fair Trade” (over 80% of fair trade components) or “Made with Fair Trade Ingredients”)

Among the certified Fair for Life companies there are also EU cosmetic producers, which buy essential oils for their activity. More in general, certified Fair for Life enterprises could be interesting as buyers, as they should seek long-term and stable contracts and fair prices.

### **For Life**

For Life standard and certification is a standard for corporate social and environmental responsibility, i.e. it is focused on a single company rather than on its value chain, including suppliers.

The For Life certified enterprises are less numerous than those ones certified Fair for Life; A Serbian company dealing with essential oil export is the only For Life certified company in Western Balkans

### **GFSI International Featured Standard -IFS Food 7**

The Global Food Safety Initiative (GFSI) IFS Food 7 standard is a benchmarked standard for food manufacturers, wholesalers, distributors, agents and brokers. It is mostly used when products are processed or when there is a risk of contamination during packaging in primary packaging. Emphasis is placed on food safety and the quality of processes and products. IFS Food 7 is more commonly used in German and France, but is recognised all over Europe.

It does not cover primary production.

### **SMETA – Sedex Members Ethical Trade Audit**

Sedex - Supplier Ethical Data Exchange, is an online system to keep data on ethical and responsible practices and allows suppliers and customers to share this information.

SMETA is an audit, designed by Sedex, to help protect workers from unsafe conditions, overwork, discrimination, low pay and forced labour. It is focused on standards of labour, health and safety, environmental performance, and ethics within the audited company or at a supplier site.

SMETA focuses on the whole value chain, i.e. not only on internal corporate performance in terms of responsible practices, but is extended to its suppliers; in the case of Albanian exporters of fruit and vegetables and MAP, they should be SMETA audited in order to supply SMETA certified or BSCI complying buyers.

SMETA is conceptually similar to BSCI (see below); however, it includes some additional parameters, such as maximum working hours.

According to Sedex, SMETA is the world's most widely used labour audit. Supermarket chains such as Tesco, Lidl and Coop Swiss are among SMETA certified supermarket chains.

More in general, SMETA is designed for a wider European market, as compared with BSCI, which is more focused on EU-countries. However, there is mutual recognition between SMETA certified and BSCI audited companies,

meaning that a BSCI audited supplier is considered a suitable partner for a SMETA certified buyers and vice-versa.

One of the enterprises surveyed in this study was certified SMETA

### **SA8000 certification and BSCI social audit system**

The Business Social Compliance Initiative – BSCI is a social audit methodology focused on working conditions along the supply chain. Producers that meet all BSCI requirements are can go further and achieve the SA8000 social management certification.

The BSCI audit system is developed by Amfori, while the SA8000 certification was developed by Social Accountability International (SAI).

BSCI is focused, as SMETA, on standards of labour, health and safety, environmental performance, and ethics. Compliance is to be ensured along the value chain, i.e. within the audited company or at a supplier site. This means that suppliers of BSCI audited buyers should also be BSCI compliant or SMETA certified.

BSCI is conceptually similar to SMETA (see above), but is primarily designed for EU subjects, while SMETA was designed for a wider European range of customers.

There is mutual recognition between BSCI audited and SMETA certified companies, meaning that a SMETA certified supplier is considered a suitable partner for a BSCI audited buyers and vice-versa.

### **Rainforest Alliance**

Developed by Rainforest Alliance, a non-profit organisation, the Sustainable Agriculture Standards V1.3 is a benchmarked standard, including indicators of different categories.

The main categories, representing 86% of total weight include: i) due diligence, ii) credibility, iii) labour and human rights and, iv) environmental. Other indicators include gender, traceability, sustainable business.

The Sustainable Agriculture Standards is articulated on two standards: i) for farmers and NTFP collectors and, ii) for responsible supply chains.

The UTZ certification programme for sustainable agriculture was included in Rainforest Alliance in 2018. With the introduction of the 2020 RA version of the Sustainable Agriculture Standards (version 1.3) the UTZ certification programme is gradually phased out.

The RA Sustainable Agriculture Standards is one of the few standards with specific provisions for MAPs (cultivated and processed for herbal teas) and NTFP (wild non-timber forestry products, including MAP). RA can

therefore certify sustainable value chains for wild MAPs collection (a NTFP category).

In Albania, there is a single RA certified operator, dealing with MAPs supply chain.

### **Fairtrade**

Fairtrade is the mark corresponding to a set of standards owned by Fairtrade International, an NGO involving national representatives, e.g. UK Fairtrade Foundation.

Fairtrade International is structured into two organisations: i) Fairtrade International EV, an NGO that develops and adapts the standards over time; ii) FLO-CERT GmbH is the TIC associated to Fairtrade standards; however, while FLO-CERT is in charge of certification, licensing and regulating the use of the mark is the task of each national representative.

There are seven groups of standards, each with related product-specific standards: i) Standards for small-scale producers; ii) Standards for hired labour organizations (companies); iii) standards for contract production; iv) trader standards (for traders dealing with Fairtrade products); v) Climate standards (for carbon credits); vi) textile standard (covering the whole supply chain and; vii) gold standards (small-scale mining activities).

The standards are primarily focused on the establishment of equitable relations between value chain actors (e.g. fair prices paid to primary producers or fair payment for work), working conditions (e.g. freedom of association, not using child labour) and environmental indicators. Not all the standards are applicable to all countries: in most standards, it is specifically indicated to which products and countries they are referred. In Albania, according to UNIDO (2023c) approximately 2% of the surveyed companies are certified Fairtrade.

### **A.3 Standards related to cultural and religious values**

The most common standards of this category are those products classified as “Halal” and “Kosher”. In Albania, there is a full supply chain specialized in “Halal” products, but not MAPs exporters. On the contrary, in the Albanian domestic market, it is quite rare to find “Kosher” certified products, while 10% of the enterprises considered in the study are certified as “Kosher”.

The main features referred to Kosher and Hala certification for fruit and vegetables and fresh and processed MAPs are described herein below.

#### **Halal standards**

Halal standards refer to those products whose consumption is considered compatible with Muslim

religion<sup>24</sup>. There is not a single Halal standard; different countries may apply different standards; different certifying agencies also apply different standards. Halal principles are applied to all products, including food products, essential oils and products having essential oils as components, such as cosmetics.

Three standards in Halal Food certification were agreed upon and went into effect at a conference held by the member nations of the Islamic Countries Standardization Institute due to research conducted under the framework of the Organization of Islamic Cooperation. Halal food standards contain Islamic laws that must be observed in various phases of the manufacturing process, including sourcing, preparation, processing, categorization, packing, labelling, regulating, loading, unloading, transportation, distribution, and storage. MAPs are “halal” except those ones that produce drunkenness; however, the standards foresee the risk of contact contamination: any “halal” product which is mixed or comes in contact with not allowed products (e.g. cherries under spirit or herbal spirits) can no longer be classified as “halal”.

#### **Kosher standards**

The word “kosher” is a Jewish word that roughly translates “fit or suitable”. Under Kosher standards, all food falls into three categories: i) meat, ii) milk, iii) all other food (“pareve”)

Fresh horticulture products and grains are, in their natural unprocessed state, kosher and pareve. They do not need kashrut certification and can be used with either dairy or meat. However, once a vegetable is combined with a dairy or meat product, it becomes dairy or meat respectively.

A major issue, especially in organic productions is the possible presence of insects on the product. The prohibition against consuming insects, even very tiny ones — as long as they are visible to the naked eye — is mentioned five times in the Torah and is very strict. As a consequence, all products certified Kosher should be carefully tested for the absence of any visible insect.

First, the certification agency will examine a sample of the crops. If this sample is determined to be clean, the next step consists of a site inspection. In this inspection, certifiers will examine the entire cycle of operations, including the condition of growing plants and how they are handled after harvest.

Once certification is achieved, each crop must continue to be inspected before and after washing. The after-wash inspection is the most difficult to pass as any evidence of insect matter, no matter how minimal, will render the entire crop unsuitable for Kosher certification. In some

cases, Rabbis must be present for the washing process to ensure that everything is done to the highest standards and purity is achieved. Other issues are relevant to the processing activities, such as equipment which has processed non-kosher products must be completely

cleaned before processing a lot to be certified as Kosher. Kosher market niches are quite important in some markets, as is the case for dried MAPs to be exported to the USA.

<sup>24</sup> "Halal" means "allowed"

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