Food Security Report

# Food Security and Sustainable Development in the Turkic States

**Turkic Academy**
**November, 2024**

**Food Security Report** *(Preliminary version)*

**Food Security and**
**Sustainable Development in the Turkic States**

*Project Manager:*
Prof. Dr. Shahin Mustafayev, President of the Turkic Academy

*Authors:* Mr. Elchin Atababayev *(PhD, Team leader; author of the Regional overview),* Mr. Namik Shalbuzov *(PhD, Azerbaijan)*, Mr. Nurlan Kulbatyrov *(PhD, Kazakhstan)*, Ms. Zalina Enikeeva *(Master in Arts, Economics of Governance and Development, Kyrgyzstan)*, Ms. Elif Erkan *(Qualified Food Engineer, Türkiye)*, Mr. Abdulla Primov *(PhD, Uzbekistan).*

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*Design:* Zhandos Badeluly, Akerke Skakova



For inquiries, contact the Turkic Academy:
E-179 Street, No. 32, Diplomatic Town, Astana, Kazakhstan
Telephone: +7 7172 57 49 82
Web page: https://turkicacademy.org
E-mail: officetwesco@gmail.com

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# PREFACE

Food security remains one of the most pressing challenges the world faces today. To combat this, it is essential to develop and implement strategies that contribute to global food security.

Several factors such as climate change, population growth, rising food prices, and natural disasters directly impact food security. Moreover, the COVID-19 pandemic and ongoing conflicts have exacerbated hunger, affecting millions globally. According to the 2023 edition of the *State of Food Security and Nutrition in the World* report by the FAO, 2.4 billion people are experiencing moderate or severe food insecurity, with 900 million facing severe food insecurity. Alarmingly, over 3.1 billion people cannot afford a healthy diet, and many children under the age of five are suffering from malnutrition.

Food is central to the United Nations' Sustainable Development Goals (SDGs), particularly the second SDG, which seeks to "End hunger, achieve food security, improve nutrition, and promote sustainable agriculture". Achieving this goal by 2030 will require substantial changes in the global food and agricultural systems.

The fast-changing international landscape calls for the Turkic States to collaborate on several joint measures to address food security challenges. In this context, the Organization of Turkic States (OTS) has seen various initiatives proposed by its member states during past summits.

As an initiative of Uzbekistan, one of the OTS Member States, we have embarked on a journey of comprehensive cooperation with the FAO to implement joint projects across the region.

To ensure the success of these efforts, the OTS Secretariat has established various mechanisms and platforms, gathering representatives of the relevant authorities from member states. These collaborative frameworks are actively driving practical actions.

I am confident that this report, prepared by the Turkic Academy, will provide valuable insights into the scientific study of food security challenges in the Turkic region. Additionally, it will help turn our collective efforts into impactful, project-oriented initiatives in the economic sector.

I would like to extend my sincere gratitude to the team at the Turkic Academy, along with the researchers, specialists, and experts from the member states and others who contributed to this excellent body of work.

**Amb. Kubanychbek Omuraliev**
**Secretary General of the Organization of Turkic States**


# FOREWORD

It is a pleasure to introduce “Food Security and Sustainable Development in the Turkic States,” which analyzes the multifaceted opportunities, challenges, and potential strategies for addressing food security issues while promoting sustainable development across Turkic states. This report serves as a unique resource for those interested in understanding the intricate dynamics of food systems within these nations.

Food security and sustainable development are two deeply interconnected concepts that are crucial for the well-being of individuals, communities, and nations. Ensuring food security while promoting sustainable development is critical for addressing various challenges such as poverty alleviation, hunger eradication, environmental degradation, climate change adaptation and mitigation, and reducing social inequality.

The Turkic states face a range of challenges related to food production systems. These challenges include limited arable land; water scarcity exacerbated by climate change; outdated agricultural practices; economic disparities that affect access to resources; and geopolitical instability that can disrupt supply chains.

The agricultural sector, while often overshadowed by the more dominant mining and raw materials industries, plays a crucial role in the economies of Turkic states. A significant portion of the population relies on farming and rural livelihoods, underscoring the importance of agriculture not only as an economic driver but also as a means of sustaining communities.

Similar to global trends, the share of food expenditure within the total household budgets of Turkic states is on the rise. This shift highlights growing concerns regarding food affordability and accessibility, which are critical components of food security. As populations expand and urbanize, ensuring that all citizens have access to sufficient, safe, and nutritious food becomes paramount.

There are numerous opportunities for enhancing food security while fostering sustainable development in Turkic states. Investments in modern agricultural

technologies can improve crop yields and resource efficiency. Implementing integrated water resource management practices can help address water scarcity issues while ensuring sustainable irrigation practices.

Additionally, regional cooperation among Turkic states can facilitate knowledge sharing regarding best practices in agriculture and sustainability initiatives. By greater cooperation in this field, Turkic nations can enhance their resilience against external shocks such as climate change or market fluctuations. Moreover, increasing agri-food trade among Turkic states can catalyze economic growth while promoting stability.

The "Turkic World Vision-2040" remains a flagship document for the members of the Organization of Turkic States, underscoring their commitment to cooperation and support. This vision not only emphasizes economic growth but also highlights the importance of environmental sustainability and social equity. The principles outlined in this document are also part of the national strategies across member states, ensuring that food security is prioritized as a fundamental aspect of sustainable development.

Initiated by the Turkic Academy and in collaboration with the Secretariat of the Organization of Turkic States, this report has been meticulously prepared by a team of prominent experts from Turkic states specializing in food security, agri-food trade, and sustainable development. The authors have used reliable data sources and formulated practical recommendations that are crucial for addressing food security issues.

Two fundamental components of food security—domestic production and international agri-food trade—are clearly identified and explored throughout the report. While utilizing the Food and Agriculture Organization's definition of food security, the report reviews critical factors influencing food security, including digitalization, climate change resilience, smart agriculture practices, and logistical considerations. Furthermore, the report examines various measures of state support for producers across Turkic economies. This comparative analysis includes insights into similar indicators from neighboring and regional countries, providing context to understand where Turkic states stand in relation to broader trends.

The report has commendably referenced prominent flagship publications from relevant international organizations. Moreover, through demonstrating its Environmental, Social, and Governance (ESG) approaches, the report addresses aspects of hidden costs associated with food production and consumption. This is particularly important as it highlights the often-overlooked externalities that can impact both local communities and broader ecosystems.

The findings presented in this report underscore the importance of cooperative strategies among Turkic states to tackle shared challenges related to food security. It is our hope that this report will assist relevant institutions and policymakers in the Turkic states in their efforts, as well as provide valuable information for all stakeholders dedicated to enhancing food security and promoting sustainable development within the Turkic World.

**Prof. Dr. Shahin Mustafayev**
**President of the Turkic Academy**

## ABBREVIATION

| | |
|---|---|
| **ADB** | Asian Development Bank |
| **AIIB** | Asian Infrastructure Investment Bank |
| **Ag** | ERP related to the agriculture, forestry and fishery sectors; |
| **AOA** | WTO Agreement on Agriculture; |
| **bc** | black carbon; |
| **CAREC** | Central Asia Regional Economic Cooperation; |
| **CBD** | Convention on Biological Diversity; |
| **COP** | Conference of the Parties; |
| **ERP** | environment-related provision; |
| **EST** | FAO Markets and Trade Division |
| **FAO** | Food and Agriculture Organization of the United Nations |
| **FDI** | foreign direct investment; |
| **FSCPP** | Food Security Crisis Preparedness Plans |
| **GATS** | General Agreement on Trade in Services |
| **GDP** | gross domestic product |
| **GHG** | greenhouse gas |
| **GIS** | Geographical Information Systems |
| **GAFS** | Global Alliance for Food Security |
| **HS** | Harmonized Commodity Description and Coding System |
| **IFPRI** | International Food Policy Research Institute |
| **IPCC** | Intergovernmental Panel on Climate Change; |
| **LCP** | Low-carbon and climate-resilient pathways |
| **NDC**s | Nationally Determined Contributions |
| **OECD** | Organization for Economic Co-operation and Development; |
| **RTA** | regional trade agreement; |
| **SFS** | sustainable food systems; |
| **SEEA** | System of Environmental-Economic Accounting |
| **SOFA** | the State of Food and Agriculture |
| **TITR** | Trans-Caspian International Transport Route |
| **TREND** | Trade & Environment Database; |
| **WCO** | World Customs Organization |
| **WTO** | World Trade Organization |
| **UNDP** | United Nations Development Program |
| **UMICs** | Upper Middle - Income Countries |

| | |
|---|---|
| **UNEP** | United Nations Environment Program |
| **UNFCCC** | United Nations Framework Convention on Climate Change |
| **UNFCCC-NFP** | national focal point to UNFCCC |
| **UNSD** | Statistics Division of the United Nations |
| **UNSC** | United Nations Statistical Commission |
| **UNCTAD** | UN Trade and Development |
| **WCA** | World Program for the Census of Agriculture |
| **WHO** | World Health Organization |
| **VAT** | Value Added Tax |

**2030 Agenda:** Transforming Our World: The 2030 Agenda for Sustainable Development.

**Chemical formulae**

| | |
|---|---|
| **$CH_4$** | methane; |
| **CO** | carbon monoxide; |
| **$CO_2$** | carbon dioxide; |
| **$CO_2$eq** | $CO_2$ equivalents; |
| **$NH_3$** | ammonia; |
| **$N_2O$** | nitrous oxide; |
| **$SO_2$** | sulfur oxide; |

# CHAPTER I

# AGRI-FOOD REGIONAL OVERVIEW

## I.A. ACTUALITY OF ITEM

According to UNFAO by 2050, feeding a global population of almost 10 billion will require a radical transformation in how food is produced, processed, traded and consumed. Feeding this expanded population nutritiously and sustainably will require substantial improvements to global, regional and local agrifood systems so that they can provide decent employment and livelihoods for producers and every actor along the food chain, offer nutritious products for consumers, and do so without damaging our natural resources.

At the 2nd Meeting of the Ministers of Agriculture of OTS members (Baku, 2023) the Parties proposed to prepare annual "Turkic Agriculture and Food Security Outlook" as a first step to creation of a single data driven "digital agro-data platform" of the Turkic States. It is today's reality that the world is at the mercy of two elements – globalization and fragmentation. One way or another, each state will prioritize and try to protect its sovereignty and security. In one case it might be fragmentation led to a minimum of negative internal factors, but in another case it might be grouping led to strengthening of favorable factors.

According to this research, food security is an integral component of a state's national sovereignty and security. Member states of the Organization of Turkic States are not exceptions.

The FAO's definition of food security primarily focuses on final consumers. When we speak about food security to be ensured by each state, we mean that it consists of two main blocks: a) internal production; b) agri-food trade level.

And relying on these conceptual approaches, we invite you to enter the world of food security in member states. But food security can't exist beyond worldwide excepted SDGs. Growing demand for food, water scarcity, wide-scale permanent land degradation processes, migration processes, and shrinking biodiversity are just a few of the reasons that turned the matter of food security into mankind's goal number one.

Consolidated agri-food trade balance of OTS members at first glance may seem like an artificial construction. However, the trends of this indicator in member states and organizations as a whole show the sector's potential not only as a positive impact factor, but also as a potential driver to close the negative balance in countries with a negative trade balance.

General state of food security affairs in Turkic World, "swot-style" practice-academic analysis of multidimensional understanding of this terminology and its perspectives through SDGs prism constitute the carcass of this research vision. Therefore, each country's authors were driven by practice, academicism, a multidimensional approach, and SDG horizons.

What is Food Security?

In this research we understand the "food security" term in line with FAO definition where "food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life"[1]

[1] FAO. 1996. Rome Declaration on World Food Security and World Food Summit Plan of Action. World Food Summit 13-17 November, 1996. Rome. https://www.fao.org/home/search/en/?q=food+security+definition.

Statistical concepts and definitions of indicators related to food security are given in Annex 2 The food security definition's four-dimension approach guides the grouping of indicators.

**Food security dimensions:** In this report, food security dimensions refer to the four traditional dimensions of food security:

a. ***Availability*** – This dimension addresses whether or not food is actually or potentially physically present, including aspects of production, food reserves, markets and transportation, and wild foods.

b. ***Access*** – If food is actually or potentially physically present, the next question is whether or not households and individuals have sufficient physical and economic access to that food.

c. ***Utilization*** – If food is available and households have adequate access to it, the next question is whether or not households are maximizing the consumption of adequate nutrition and energy. Sufficient energy and nutrient intake by individuals is the result of good caring and feeding practices, food preparation, dietary diversity and intra-household distribution of food, and access to clean water, sanitation, and health care. Combined with good biological food consumed, this determines the nutritional status of individuals.

d. ***Stability:*** When the dimensions of availability, access, and utilization meet the necessary requirements, the entire system achieves stability, thereby guaranteeing food security for households. Stability issues can refer to short-term instability (which can lead to acute food insecurity) or medium- to long-term instability (which can lead to chronic food insecurity). Climatic, economic, social, and political factors can all be a source of instability.

Why OTS?

The Organization of Turkic States in four pillar flagship document "Turkic World Vision-2040"[2] declared its commitment to:

- Deepen economic cooperation and interaction among the Member States by harmonizing national economic development policies through regular dialogue and experience sharing,

- Increase the trade volume among the Member States through policies aimed at increasing trade complementarities, facilitating trade and eliminating quantitative restrictions and non-tariffs barriers to trade,

- Capitalize on existing and prospective regional transport corridors for the common interest of the Member States and integrating them into the Trans-Caspian International East-West Middle Corridor,

- incorporate the Member States into the regional and global supply and value chains via this Corridor,

- Streamline environmental issues in all relevant areas to ensure that Member States' economic growth is both sustainable and environmentally friendly,

- Ensure sustainable agriculture, self-sufficiency and food security in the Organization of Turkic States region,

[2] https://turkicstates.org/assets/pdf/haberler/turkic-world-vision-2040-2396-97.pdf

- Enhance agricultural cooperation through capacity building and technology transfer programs and partnerships with an emphasis on environmentally friendly, sustainable and organic farming,

- Encourage effective collaboration with international organizations in the agricultural sector.

Assessing the food security (insecurity) as an integral part of national security strategies the "Vision 2040" emphasizes for agriculture as a main source of food commodities the next steps:

***Agriculture***

- Mobilize public and private institutions, academics, civil society organizations, research institutions, farmer associations to achieve sustainable agricultural development

- Develop organic farming as an agricultural method to produce food using natural substances and processes with a limited environmental impact, and maintain a strict control and enforcement system

- Harmonize sustainable rural development programs and policies, promote modern practices and innovative technologies and encourage productive linkages in the agricultural sector by establishing partnerships between agri-clusters, farmers, and agri-businesses,

- Establish effective collaboration with relevant international organizations, such as FAO, IFAD, IOFS and UNDP.

- Conduct joint projects with UN specialized agencies and in partnership with other relevant stakeholders for implementing the 2030 Agenda for Sustainable Development and achieving Sustainable Development Goals (SDGs) in the Member States and across the globe.

The total territory size of OTS member countries is around 4,5 million square kilometers. The combined GDP exceeds 1.5 trillion US dollars, with an anticipated population of 170 million people

Generally, one can indirectly assess land-based agricultural production potential by looking at the size of the agricultural land, as shown in the table below.

**Table I.1. Agricultural lands potential assessment[3]**

| Country | Land Area (sq.km) | Share of agricultural lands (%) | Agricultural land (sq. km) |
|---|---|---|---|
| Azerbaijan | 82,650 | 57,8 | 47,806 |
| Kazakhstan | 2,699,700 | 79,2 | 2, 137, 959 |
| Kyrgyzstan | 191,800 | 54,0 | 103,661 |
| Türkiye | 769,630 | 49,5 | 380,890 |
| Uzbekistan | 440,653 | 58,3 | 256,906 |
| OTS (∑=5 countries) | 4,184,433 | 70,0 | 2,927,222 |
| World | 129,777,684 | 36,8 | 47,812,049 |

Source: World Bank Data.

[3] WB, 2022. https://data.worldbank.org/indicator/AG.LND.AGRI.ZS?view=chart.

The contribution of the agricultural sector to a country's economy is reflected in the table below:

**Table I.2. Agriculture contribution to countries economy[4]**

| Country | Agriculture, forestry & fishing, value added (current US $/millions) | | | | Growth during four years (%)*. |
|---|---|---|---|---|---|
| | **2019** | **2020** | **2021** | **2022** | **2019/2022** |
| Azerbaijan | 2,743 | 2,877 | 3,139 | 3,750 | 36,7 |
| Kazakhstan | 8,113 | 9,223 | 9,914 | 11,832 | 45,8 |
| Kyrgyzstan | 972 | 1,006 | 1,148 | 1,262 | 29,8 |
| Türkiye | 48,717 | 48,046 | 45,369 | 58,753 | 20,6 |
| Uzbekistan | 14,698 | 14,968 | 17,134 | 18,864 | 28,3 |
| OTS (∑=5 countries) | 75,243 | 76,120 | 76,704 | 94,461 | 25,5 |
| World | 3,524,710 | 3,716, 650 | 4,175,884 | 4,366,345 | 23,9 |

Source: World Bank Data.

* a simplified calculation;

Trade turnover among member states is more than 42 billion dollars, while trade turnover with the rest of the world exceeded 1,3 trillion US dollars.

Trade is inextricably linked to food security, nutrition and food safety. Trade affects a wide number of economic and social variables, including market structures, the productivity and composition of agricultural output, the variety, quality and safety of food products, and the composition of diets. The institutional framework, the system, that governs the development and application of international food safety standards is based on the Joint FAO/WHO Food Standards Program – the Codex Alimentarius Commission – and the WTO. The WTO deals with the rules for international trade; its SPS and TBT Agreements set out the framework in which international standards are applied by governments to ensure the safety and quality of internationally traded food products[5].

Why SDGs?

According to the WB Group's assessment, the food sector emits 16 gigatons of greenhouse gases annually. Given this significant amount, the food sector alone, without fossil fuel emissions, poses a significant risk to the Paris Agreement's goal of limiting global warming to 1.5°C by 2050. The report says that "Annual investments will need to increase by an estimated 18 times, to $260 billion a year, to halve current agrifood emissions by 2030 and put the world on track for net zero emissions by 2050."

17 goals, 169 targets and 230 indicators form the global objectives expected to guide the actions of the international community over the current 15 years (2016-2030)[6].

[4] WB, 2023. https://data.worldbank.org/country .

[5] Trade and Food Standards. FAO/WHO. 2017. https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https://workspace.fao.org/sites/codex/Shared%20Documents/Publications/Web/a-i7407e.pdf .

[6] https://www.fao.org/fao-who-codexalimentarius/sdgs/en/#c459191 .

On the other hand, the empowerment of the next generation of agrifood leadership will realize the SDG-based agrifood systems transformation.

### I.B. Methodology

Conceptual vision of the matter of "food security" stands on axioms that:

a) food security is unseparated part of national security;
b) food is vital human right and each citizen should be ensured with UN adopted k/calories dietary level and minimum food quality standards;
c) agriculture as a sector and rural settlements as locations remain as a main source of food;
d) up today, rural population constitutes a significant part of countries' population and its wellbeing directly links to migration processes;
e) rural areas cover a significant part of states labor forces;
f) food expenditures constitute the biggest part of citizens' "consuming basket" in all member countries;
g) food security is ensured through two main channels: i) internal production; ii) international trade;
h) land assessed as non-renewable asset of the country and is a subject of permanent monitoring related to possible degradation;
i) almost all OTS members face with water scarcity and that is why have to coordinate water policy while agricultural production takes off the biggest part of water use;
j) Food sector functionality directly determines the HORECA's stability and job generation, including in tourism.
k) food matters directly link to a half of SDGs as a minimum (poverty, hunger, land, water, biodiversity, etc.);
l) women in rural areas are considered as vulnerable groups and that is why all resilience actions should take into consideration this aspect alongside the ban of child labor;
m) agricultural sector is one of the essential "shippers" for transportation sectors of countries and is an important factor which is considered in corridor' infrastructure investments within "Middle Corridor" Project.

So, these twelve fundamental postulates constitute the cornerstones of our further analysis.

The methodology for preparing this report integrates both qualitative and quantitative research methods. It includes a comprehensive literature review of existing analyses, reports from international organizations, widely citated datasets, and governmental publications related to food security and sustainable development in the Turkic states. Visualized data analysis techniques such as trend analysis, comparative assessments, and statistical modeling are employed to provide a robust understanding of the current situation and potential future scenarios. We widely use different case studies, expert publications in the form of working papers, and interviews with key stakeholders for primary data collection pertaining to food security and sustainable development.

# I.C. REGIONAL OVERVIEW

## I.C.1. Consolidated regional overview of food security in five member countries of Organization of Turkic States

According to the ranking of the Global Food Security Index[7] member countries of OTS are ranked as follows:

**Table I.3. Global Food Security Indexes.**
**Weighted total of all category scores (0-100 where 100 = most favorable), 2022 year**

| Country | Rank 2022 (among 113 countries) | Score overall | Affordability | | Availability | | Quality & Safety | | Sustainability & Adaptation | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Score | Rank | Score | Rank | Score | Rank | Score | Rank |
| Azerbaijan | 66 | 59,8 | 78,1 | 48 | 56,2 | 68 | 54,5 | 83 | 44,6 | 91 |
| Kazakhstan | 32 | 72,1 | 78,0 | 49 | 67,2 | 23 | 76,3 | 32 | 65,4 | 22 |
| Kyrgyzstan | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Türkiye | 49 | 65,3 | 58,4 | 81 | 65,3 | 30 | 78,5 | 26 | 61,2 | 26 |
| Uzbekistan | 73 | 57,5 | 52,7 | 85 | 56,4 | 66 | 64,6 | 64 | 57,9 | 38 |
| Russia | 43 | 69,1 | 77,8 | 50 | 61,4 | 47 | 78,7 | 25 | 56,6 | 47 |
| China | 25 | **74,2** | 86,4 | 33 | 79,2 | 2 | 72 | 46 | 54,5 | 55 |

Source: The Economist. Global Food Security Index.

The methodology for the GFSI (***Global Food Security Index***) was developed by ***Economist Impact*** in consultation with a peer panel of experts. Each year, the methodology is reviewed to ensure that the index remains a credible, frequently referenced, and trusted source of information for stakeholders looking to better understand the global environment for food security. Data related to Russia and China is provided because these countries are OTS members' main trade partners.

The main sources used in the GFSI are EIU, the World Bank Group, and the UN Food and Agriculture Organization (FAO), the World Health Organization (WHO), the World Trade Organization (WTO), the OECD, Notre Dame Global Adaptation Initiative (ND-GAIN), the World Resources Institute (WRI), Yale Environmental Performance Index (EPI), the US Department of Agriculture (USDA), and national Agriculture and Health ministries.

The dynamics of indexes during four years (2019-2022) had different trends among analyzed countries.

[7] https://impact.economist.com/sustainability/project/food-security-index#rankings-and-trends .

**Table I.4. Trends of GFS Indexes within the 2019-2022 period**

| Country | Rank 2019[8] (among 113 countries assessed) | Overall score difference ($Ind_{2022}$ – $Ind_{2019}$) | Rank 2022 (among 113 countries) |
|---|---|---|---|
| Azerbaijan | 53 | - 5,0 | 66 |
| Kazakhstan | 48 | + 4,8 | 32 |
| Kyrgyzstan | N/A | N/A | N/A |
| Türkiye | 41 | - 4,5 | 49 |
| Uzbekistan | 71 | - 1,5 | 73 |
| Russia | 42 | - 0,6 | 43 |
| China | 35 | + 3,2 | 25 |

Source: The Economist. Global Food Security Index.

According to the compiled indexes, only Kazakhstan could keep the positive trend within those periods.

As it was undermined above, food security is ensured by two activities: domestic production and international agri-food trade.

### I.C.2. The current state of food security in a group of OTS member countries

Main global actors of food context in their assessment and measuring of hunger use a such indicator as prevalence of undernourishment PoU (SDG Indicator 2.1.1). The level of PoU indicators for OTS countries are given in table **I.5**.

**Table I.5. Prevalence of undernourishment**

| Region/Country | Number of undernourished people | Number of moderately or severely food-insecure people |
|---|---|---|
| | 2021-2023* (millions) | 2021-2023* (millions) |
| World | 722,0 | 2 311.7 |
| Upper-middle-income countries | 71,5 | 363,1 |
| Central Asia | 2,4 | 13,9 |
| Azerbaijan | n.r. | 1,3 |
| Kazakhstan | n.r. | 0,4** |
| Kyrgyzstan | 0,4 | 0,5 |
| Türkiye | n.r. | n.r. |
| Uzbekistan | n.r. | n.r. |

Source: The Economist. Global Food Security Index.

*To reduce the margin of error, estimates are presented as three-year averages.

**based on national data.

[8]https://impact.economist.com/sustainability/project/food-security-index/resources/Global_Food_Security_Index_2019_report.pdf

The world is still struggling to recover from the global pandemic, hampered by a growing number of conflicts and extreme weather events. Inflationary pressures, particularly increases in the relative prices of food, continue to erode economic gains for many people's access to food in many countries.

**Table I.6. Unaffordability of a healthy diet by region, subregion, country and country income group, 2019–2022**[9]

| Region/Country | Number of people unable to afford a healthy diet (million) | | | | Percentage of people unable to afford a healthy diet (percent) | | | |
|---|---|---|---|---|---|---|---|---|
| | 2019 | 2020 | 2021 | 2022 | 2019 | 2020 | 2021 | 2022 |
| World | 2.823 | 2.968 | 2.876 | 2.826 | 36.4 | 37.9 | 36.4 | 35.4 |
| Upper-middle-income countries | 669 | 691 | 620 | 601 | 24,2 | 24,8 | 22,2 | 21,5 |
| Central Asia | 12,9 | 14,3 | 13,0 | 12,6 | 17,6 | 19,1 | 17,1 | 16,3 |
| Azerbaijan | 0,1 | 0,1 | 0,1 | 0,1 | 0,7 | 1,2 | 0,7 | 0,7 |
| Kazakhstan | 1,3 | 1,3 | 1,0 | 1,1 | 6,9 | 6,6 | 5,2 | 5,6 |
| Kyrgyzstan | 2,0 | 2,6 | 2,4 | 2,4 | 31,0 | 41,0 | 36,7 | 35,9 |
| Türkiye | 12,3 | 9,1 | 7,4 | 5,2 | 14,7 | 10,9 | 8,7 | 6,1 |
| Uzbekistan | 5,4 | 5,8 | 5,3 | 5,2 | 16,4 | 17,3 | 15,7 | 15,0 |
| OTS (∑ five countries) * | 21,1 | 18,9 | 16,2 | 14,0 | 14,1 | 12,4 | 10,5 | 8,9 |

Source: FAO,2024.

*For calculation of OTS' data, we accepted an approximation that the population of five OTS members was: 2019 – 149,9 million; 2020–151,9 million; 2021–154,2 million; 2022 – 157,9 million.

UNAFFORDABILITY OF A HEALTHY DIET: The unaffordability of a healthy diet is defined as the inability of a household or of an individual to pay the amount of money needed to acquire the least-cost combination of locally available foods that meets the requirement for a healthy diet, after having accounted for the portion of their income they have to reserve for acquiring all basic needs other than food.

The main indicator (denominated **"prevalence of unaffordability" [PUA]**) is an estimate of the percentage of individuals in a population whose disposable income, net of the amount needed to acquire all basic non-food goods and services, is lower than the minimum cost of a healthy diet. National estimates are obtained by contrasting the country-specific income distributions against a threshold (*r*) obtained by summing the cost of a healthy diet with the relevant cost of basic non-food needs (*n*). Along with the PUA, the **number of people unable to afford a healthy diet (NUA)** is also computed through multiplying the PUA by the reference population size.

[9] FAO, IFAD, UNICEF, WFP and WHO. 2024. The State of Food Security and Nutrition in the World 2024 – Financing to end hunger, food insecurity and malnutrition in all its forms. Rome. https://doi.org/10.4060/cd1254en

As comments to the table above, some tendencies should be marked linked to different countries.

***Azerbaijan***: To increase clarity, replace with: Azerbaijan saw a population increase of approximately 130 thousand during the period of 2019-2022.

According to the FAO publication, the number of people unable to afford a healthy diet was rather stable and fluctuated around 100,000.

***Kazakhstan***: Though the population of Kazakhstan increased for more than 800.000 people during the analyzing period of 2019-2022 years, the number of the unaffordable portion of the population decreased from 1,3 million to 1,1 million with a simultaneous decrease in percentage from 6.9% to 5,6%.

***Kyrgyzstan***: the country demonstrates growing in number of people unable to afford a healthy diet from 2,0 million to 2,4 million, with an increase in percentage from 31.0% to 35.9%. Though the population growth was around 350.000 within the period of 2019–2022, the more rapid increase in the number of unaffordable people indicates the strong problems in food security for the country.

***Türkiye:*** During the analyzed period, the country achieved significant results, as the number of unaffordable individuals dropped from 12.3 million to 5.2 million.

Consequently, the proportion of this population group has decreased from 14.7% to 6.1%.

We should take into account that during these four years (2019-2022) the population of the country increased by more than 2,1 million.

***Uzbekistan***. Formally, the table data above (FAO, 2024) shows a slight change in the number and percentage of unaffordable people, from 5,4 to 5,2 million and from 16,4 to 15,0% respectively. However, it should be noted that Uzbekistan's population increased by approximately 4,55 million during the 2019-2022 period. In other words, it means that the country provides rather strong efforts to improve the food security related measures.

Based on the unaffordability of healthy diet indicators, the assessment of food security by the five members of the Organization of Turkic States indicates a total decrease in this population group from 21 million to 14 million. In percentage terms, this represents a reduction from 14.1% to 8.9% of the total population.

**Table I.7. The cost of a healthy diet by region, subregion, country and country income**

| GROUP, 2019–2022 Region/ Country | Cost of a healthy diet | | | | |
|---|---|---|---|---|---|
| | 2019 | 2020 | 2021 | 2022 | Increase in % during 2019-2022 |
| | (PPP dollars per person per day) | | | | |
| World | **3.25** | **3.35** | **3.56** | **3.96** | **21,8** |
| Upper-middle-income countries | 3.46 | 3.54 | 3.74 | 4.20 | 21,4 |
| Central Asia | 3.31 | 3.52 | 3.78 | 4.14 | 25,0 |
| Azerbaijan | 3.00 | 3.09 | 3.28 | 3.74 | 24,7 |
| Kazakhstan | 2.24 | 2.35 | 2.52 | 2.79 | 24,6 |
| Kyrgyzstan | 3.25 | 3.46 | 3.81 | 4.20 | 29,2 |
| Türkiye | 3.87 | 3.71 | 3.82 | 4.50 | 16,2 |
| Uzbekistan | 4.48 | 4.71 | 5.09 | 5.67 | 26,6 |

Source: FAO,2024.

The cost of a healthy diet (CoHD) indicator provides national level estimates of the cost of acquiring the cheapest possible healthy diet in a country, defined as a diet comprising a variety of locally available foods that meet energy and nutritional requirements[10]. The cost of a healthy diet is the amount of money it takes to buy the cheapest, locally available foods that can be used to make a diet that meets the energy and food-based dietary guidelines (FBDGs) for a person with a daily energy balance of 2,330 kcal.

Regarding the cost of a healthy diet among OTS members, the majority of countries exhibit similar tendencies, with Kyrgyzstan showing a slight fluctuation. In this aspect, Türkiye demonstrated minimal vulnerability towards the cost of a healthy diet basket (16,2%). Such factors as cost of logistics, the share of imported agri-food products, structure of domestic production, state policy, etc. may influence this indicator. But in any case, the growth of cost in the region of Central Asia exceeded the world average indicator and average of upper-middle-income countries.

Countries related food security physical parameters are presented in table # 8.

**Table I.8. Food security physical parameters**

| Country | Parameters | |
|---|---|---|
| | Dietary energy supply used in the estimation of prevalence of undernourishment (kcal/cap/day)[11] | Average protein supply (g/capita/day) (3-year - 2020-2022) |
| Azerbaijan | 3427 | 98 |
| Kazakhstan | 3383 | 111 |
| Kyrgyzstan | 2660 | 92 |
| Türkiye | 3232 | 116 |
| Uzbekistan | 3333 | 105 |

Source: FAO statistics data.

### I.C.3: Food safety matters in OTS countries

Generally, all countries of OTS follow the international food safety standards framework set by the Codex Alimentarius Commission. At the same time, each country has its own set of laws and regulations related to food safety matters. The main laws of countries' food safety regulations are given in table below. Table # 9 outlines the set of laws and regulations related to food safety in OTS countries.

[10] Herforth, A., Bai, Y., Venkat, A., Mahrt, K., Ebel, A. & Masters, W.A. 2020. Cost and affordability of healthy diets across and within countries. Background paper for The State of Food Security and Nutrition in the World 2020. FAO Agricultural Development Economics Technical Study No. 9. Rome, FAO. https://doi.org/10.4060/cb2431en

[11] https://www.fao.org/faostat/en/" \l "data/FS

**Table I.9. Set of laws**

| Country | Set of laws, regulations |
|---|---|
| **Azerbaijan** | 1.Civil Code. http://www.e-qanun.az/code/8<br>2. Law of the Republic of Azerbaijan "About Food Safety" 5-th May 2022, №523-VIQ. https://e-qanun.az/framework/49857<br>3. Customs Code. http://www.e-qanun.az/code/21<br>4. Law on Phytosanitary Control (No. 102-IIIQ, dated 12.05.2006) http://www.e-qanun.az/alpidata/framework/data/12/c_f_12384.htm<br>5. Law on Protection of Environment (No. 678-IQ, dated 08.06.1999). http://www.e-qanun.az/framework/3852<br>6. Decree on Ensuring the Activity of the Food Safety Agency of the Republic of Azerbaijan (No. 1681, dated 13.11.2017). http://e-qanun.az/framework/36883<br>7. Decision on Approval of Rules for registering food safety and maintaining the state register of entities operating in the field of food products (No. 303, dated 16.07.2018). http://e-qanun.az/framework/39600<br>8. Decision on Adoption of Unified List of Goods Falling Under Veterinary, Sanitary and Phytosanitary Control (No. 231, dated 17.06.2016). http://www.e-qanun.az/framework/33103 |
| **Kazakhstan** | 1. Law of the Republic of Kazakhstan "On the safety of food products" dated July 21, 2007 N 301. https://kodeksy-kz.com/ka/o_bezopasnosti_piwevoj_produktsii.htm<br>2. Code of the Republic of Kazakhstan "On the health of the people and the healthcare system". https://adilet.zan.kz/rus/docs/K2000000360<br>3.Entrepreneur Code of the Republic of Kazakhstan. https://adilet.zan.kz/eng/docs/K1500000375<br>4. Law "On Technical Regulation". https://adilet.zan.kz/rus/docs/Z2000000396<br>5. Law "On Veterinary Medicine". https://adilet.zan.kz/rus/docs/Z020000339_<br>6. Law "On Protection of Consumer Rights". https://adilet.zan.kz/rus/docs/Z100000274_<br>7. On State regulation of development of agricultural complex and rural territories https://adilet.zan.kz/eng/docs/Z050000066 |
| **Kyrgyzstan** | 1. TR TS 021/2011 "On the Safety of Food Products"<br>2. TR TS 022/2011 "Food Products in Terms of Their Labeling"<br>3. TR TS 023/2011 "Technical Regulation on Juice Products from Fruits and Vegetables"<br>4. TR TS 024/2011 "Technical Regulation on Fat-and-Oil Products"<br>5. TR TS 027/2012 "On the Safety of Certain Types of Specialized Food Products, Including Dietary Therapeutic and Dietary Preventive Nutrition" |

| | |
|---|---|
| | 6. TR TS 029/2012 “Safety Requirements for Food Additives, Flavorings, and Technological Aids”<br>7. TR TS 033/2013 “Technical Regulation on the Safety of Milk and Dairy Products”<br>8. TR TS 034/2013 “Technical Regulation on the Safety of Meat and Meat Products”<br>9. TR TS 040/2016 “On the Safety of Fish and Fish Products”<br>10. TR EAEU 044/2017 “On the Safety of Packaged Drinking Water, Including Natural Mineral Water”<br>11. TR EAEU 051/2021 “On the Safety of Grain”<br>12. Law “On the Protection of Consumer Rights”<br>13. Civil Code of the Kyrgyz Republic<br>14. Code of the Kyrgyz Republic on Offenses |
| **Türkiye** | 1.Turkish Food Codex Regulation. www.gkgm.gov.tr<br>2.Law No. 5996 on veterinary services, plant health, food and feed.<br>3.Regulation on Food Hygiene. Law of Authorization: 5996.<br>4.Plant Quarantine Law (Law No:6968). http://www.kkgm.gov.tr/regulation/regulations.html<br>5.Animal Health Law (Law No: 3285). |
| **Uzbekistan** | 1. Law of the Republic of Uzbekistan № 483-I “On Food Quality and Safety”. www.lex.uz<br>2. The Decree of the President of Uzbekistan “On measures to further ensure the country’s food security”, on January 16, 2018, № 5303. https://lex.uz/docs/-3506750<br>3. STRATEGY for the development of agriculture of the Republic of Uzbekistan for 2020 – 2030. 23 October 2019 г., № 5853, https://lex.uz/docs/-4567334<br>4. Law of the Republic of Uzbekistan “On the accreditation of conformity assessment bodies”. on February 27, 2023, № 820. https://lex.uz/en/docs/6907220<br>5. Law of the Republic of Uzbekistan: “On certification of products and services”.<br>https://www.standart.uz/en/page/view?id=31<br>6. Law of the Republic of Uzbekistan: “On the protection of consumer rights”. www.lex.uz |

Source: Countries legislation reviews/countries chapters.

These regulations set the requirements for the safety, quality, and labeling of food products, as well as the conditions for their production, storage, and transportation. Another importance of the regulatory framework concerns the potential of the halal products market, where OTS countries could operate together.

## I.D. International Agri-food Trade

Agri-food trade is an integral part of a country's overall external trade. Before analyzing a country's agri-food trade, it would be logical to assess the foreign trade of its member states in general. The table below provides the main input data.

**Table I.10. Value of International Trade by Economies (billions of $ US)[12]**

| Country | Export Volume of Goods and Services | | | | Import Volume of Goods and Services | | | |
|---|---|---|---|---|---|---|---|---|
| | 2019 | 2020 | 2021 | 2022 | 2019 | 2020 | 2021 | 2022 |
| Azerbaijan | 23.4 | 16.4 | 26.0 | 44.6 | 20.0 | 16.2 | 17.6 | 22.3 |
| Kazakhstan | 65.4 | 52.1 | 65.7 | 90.9 | 50.0 | 46.6 | 50.0 | 60.5 |
| Kyrgyzstan | 3.0 | 2.4 | 2.2 | 2.8 | 5.9 | 4.3 | 6.3 | 10.4 |
| Türkiye | 248.0 | 207.9 | 286.6 | 344.5 | 239.0 | 243.4 | 301.0 | 404.1 |
| Uzbekistan | 17.2 | 14.8 | 16.4 | 20.2 | 27.3 | 23.5 | 28.8 | 35.5 |

* Source: IMF Direction of Trade Statistics for trade in goods and IMF Balance of Payments Statistics for trade in services.

Table # 10 illustrates that only Azerbaijan and Kazakhstan exhibit a positive balance in foreign trade, with exports exceeding imports. It is obvious that revenues from natural resources are the main drivers of positive trade balance for these two countries.

Balances of international agri-food trade of member countries demonstrate a different situation. For example, Azerbaijan, under the umbrella of a positive general trade balance, performs the growing year by year of the negative agri-food trade balance (Table # 11). Kazakhstan keeps a positive balance in both categories, while Kyrgyzstan, Türkiye and Uzbekistan, in spite of the deficit in general trade balance, perform positive balance in agri-food trade.

***It is clear that agri-food trade consists of agri-food export and agri-food import.***

We analyzed (Table # 12) the agri-food exports of five OTS countries, separating out data related to the Russian Federation and China, which are the most significant and potentially promising markets for agri-food exports. We simultaneously calculated the data for OTS by summing the data from all five members.

[12] Turkic Academy and OTS (2023). Report on Turkic Economies 2023: Digital Trade and Investment. Turkic Academy and the Secretariat of the Organization of Turkic States, Astana and Istanbul. file:///C:/Users/DELL/Desktop/OTS-Elchin-Submission/turk-ekonomileri-raporu-2023-dijital-ticaret-ve-yatirim-26-tr.pdf

**Table I.11. Agri-food trade of member countries within 2019-2022 years, (Trademap)**

| Country | Indicators | Years (millions of US dollars) | | | | |
|---|---|---|---|---|---|---|
| | | 2019 | 2020 | 2021 | 2022 | 2023 |
| Azerbaijan | Export | 772,2 | 759,9 | 816,2 | 912,4 | 969,2 |
| | Import | 1.926,1 | 1.903,8 | 2.361,2 | 2.691,8 | 2.581,4 |
| | Turnover | 2.698,3 | 2.663,7 | 3.177,4 | 3.604,2 | 3.550,6 |
| | Balance sheet | -1153,9 | -1143,9 | -1.545,0 | -1.779,4 | -1.612,2 |
| Kazakhstan | Export | 3.284,5 | 3.266,2 | 3.756,7 | 5.585,4 | 5.330,7 |
| | Import | 3.896,9 | 4.057,6 | 4.941,6 | 6.024,7 | 6.192,2 |
| | Turnover | 7.181,4 | 7.323,8 | 8.698,3 | 11.610,1 | 11.522,9 |
| | Balance sheet | -612,4 | -791,4 | -1.184,9 | -439,3 | -861,5 |
| Kyrgyzstan | Export | 251,1 | 250,5 | 329,4 | 441,4 | 366,2 |
| | Import | 655,4 | 594,5 | 865,6 | 1.171,6 | 1.158,5 |
| | Turnover | 906,5 | 845,0 | 1.195,0 | 1.613,0 | 1.524,7 |
| | Balance sheet | -404,3 | -344,0 | -536,2 | -730,2 | -792,3 |
| Türkiye | Export | 19.734,9 | 20.710,0 | 25.008,4 | 29.873,8 | 30.926,6 |
| | Import | 14.687,8 | 15.214,3 | 17.788,7 | 23.209,2 | 24.054,8 |
| | Turnover | 34.422,7 | 35.924,3 | 42.797,1 | 53.083,0 | 54.981,4 |
| | Balance sheet | 5.047,1 | 5.495,7 | 7.219,7 | 6.664,6 | 6.871,8 |
| Uzbekistan | Export | 1.574,2 | 1.522,7 | 1.502,1 | 1.791,2 | 806,4 |
| | Import | 2.086,0 | 2.301,7 | 3.150,1 | 4.114,6 | 2.709,0 |
| | Turnover | 3.660,2 | 3.824,4 | 4.652,2 | 5.905,8 | 3.515,4 |
| | Balance sheet | -511,8 | -779,0 | -1.648,0 | -2.323,4 | - 1.902,6 |
| OTS Total* | Export | 25.616,9 | 26.509,3 | 31.412,8 | 38.604,2 | 38.399,1 |
| | Import | 23.252,2 | 24.071,9 | 29.107,2 | 37.211,9 | 36.695,9 |
| | Turnover | 48.869,1 | 50.581,2 | 60.520,0 | 75.816,1 | 75.095,0 |
| | Balance sheet | 2.364,7 | 2.437,4 | 2.305,6 | 1.392,3 | 1.703,2 |

Source: ITC, Trademap.

*Author calculations.

Export = ∑ Export of 01-24 Code of Harmonized System;

Import = ∑ Import of 01-24 Code of Harmonized System;

Turnover = ∑Export + ∑Import;

Balance Sheet (Saldo) = ∑Export - ∑Import;

OTS Total = ∑ 5 countries;

Regarding the **agri-food export's** basic indicators assessment, we have to mark that during the **2019-2023** years:

***a) Azerbaijan*** was able to increase its agri-food exports by 18%, but the share of Russia is still high and exceeds 71%. The share of agri-food exports to OTS countries grew from 1,6% to 6,5%. Despite COVID restrictions, the total value of agri-food exports increased by 197 million dollars over the course of four years.

***b) Kazakhstan*** increased its agri-food exports by around 70%, and the distribution of proportions among the Russian Federation, China, and OTS group remained almost the same.

***c) Kyrgyzstan,*** in spite of its comparatively small size of agri-food exports, increased its value by around 76%, but its share of the Chinese market declined sharply. Agri-food exports to OTS countries increased from 37% to 48%.

***d) Türkiye's*** agri-food export growth exceeded 50% which was equivalent to more than 10 billion US dollars with similar dispersion of main partners' shares in agri-food export value.

***e) Uzbekistan***'s export value growth was not so significant (14% during four years), but we evidenced redistribution of flow in favor of Russian market while OTS group' share declined almost twice.

Regarding the **agri-food import's** basic indicators assessment, we have to mark that during the **2019-2023** years:

***a) Azerbaijan*** increased its agri-food import in value more than 750 million dollars, of which more than 200 million dollars were from Russia and more than 200 million dollars were from OTS member countries. This sharp increase, coupled with COVID restrictions and global cost/price growth, highlights systemic resilience issues in various sectors and the vulnerability of global food supply chains. Overall, Azerbaijan's negative agri-food balance sheet deteriorated by approximately 500 million dollars during this period.

***b) Kazakhstan*** during this five-year period (2019-2023) also increased its agri-food import value from 3.897 million US $ to 6.192 million US dollars. The negative agri-food trade balance increased by approximately 250 million US dollars, from -612 million to -862 million US dollars.

***c) Kyrgyzstan*** has increased its agri-food import value by 497 million dollars (a growth of 74%), with 325,1 million dollars coming from Russia. The value of imports from the OTS group increased by 41,4 million dollars, despite the concurrent decline in the share of imports from OTS countries.

***d) Türkiye's*** imports of agri-food products increased by nearly 10 billion US dollars, from 14.688 million to 24.055 million US dollars. This occurred mainly due to the to the import growth of cereals, fats, and oils. Nevertheless, Türkiye was able to preserve the positive trend in the agri-food trade balance and strengthen it from 5.047 million to 6.872 million US dollars.

***e) Uzbekistan*** has also shown growth in its imports of agri-food products, although there was a decrease in the 2023 year. In general, the ratio of imports to exports of

agri-food products increased from -512 million US dollars to -1.903 million US dollars between 2019 and 2023. As in case with Türkiye, cereals and meat products' import grew more rapidly.

Summarizing agri-food products' import-export general trends in OTS five countries during the 2019-2023 period, one can mark the next:

- All countries demonstrate strong growth of export potential (with exception Uzbekistan' data for 2023 year);
- All countries demonstrate rather massive growth in agri-food products import;
- Azerbaijan, Kazakhstan, Kyrgyzstan and Uzbekistan preserve negative trade balance (export – import=balance) during the whole analyzing period;
- In spite to sensitive growth in import volume, Türkiye was able to keep a positive balance due to strong growth of export potential;
- Approximation of OTS as a unit also demonstrates a positive agri-food trade balance, but it occurs due to variables of Türkiye while the rest of countries have a negative trade balance.

The above description was a general observation of the agri-food trade balances of countries and OTS as a unit.

For analyses of specifics of trade's balance, we provided a review of trade relationships with the main regional agri-food trade actors. Linkage to the Russian market in export operations was critical mainly for Azerbaijan. In import operations, linkage to the Russian market exceeded 30% in value for Azerbaijan, Kazakhstan, and Kyrgyzstan. At the same time, it should be emphasized that the ratio of dependency of Kazakhstan from the Russian market for such positions as wheat and cereals in general was negative, or, in other words, by a negative import dependency ratio of -53 percent, Kazakhstan is a net exporter of calories.

**Table I.12. Agri-food export of OTS member countries during 2019-2022 years***

| Country | Indicators (**EXPORT**) | YEARS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 2019 | | 2020 | | 2021 | | 2022 | |
| | | Mln. US $ | % | Mln. US $ | % | Mln. US $ | % | Mln. US $ | % |
| Azerbaijan | All states | 772,2 | **100,0** | 759,9 | **100,0** | 816,2 | **100,0** | 912,4 | **100,0** |
| | Rus. Fed. | 572,6 | 74,2 | 561,8 | 73,9 | 582,3 | 71,3 | 647,0 | 70,9 |
| | China P.R. | 1,6 | 0,2 | 2,7 | 0,4 | 2,5 | 0,3 | 1,5 | 0,2 |
| | OTS | 13,6 | 1,8 | 28,8 | 3,8 | 28,9 | 3,5 | 59,4 | 6,5 |
| Kazakhstan | All states | 3.284,5 | **100,0** | 3.266,2 | **100,0** | 3.756,7 | **100,0** | 5.585,4 | **100,0** |
| | Rus. Fed. | 433,2 | 13,2 | 380,3 | 11,6 | 542,3 | 14,4 | 543,8 | 9,7 |
| | China P.R. | 366,5 | 11,2 | 407,0 | 12,5 | 200,9 | 5,3 | 545,3 | 9,8 |
| | OTS | 1.102,4 | 33,6 | 1.179,2 | 36,1 | 1.402,1 | 37,3 | 2.031,6 | 36,4 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Kyrgyzstan | All states | 257,9 | **100,0** | 246,5 | **100,0** | 298,3 | **100,0** | 441,4 | **100,0** |
| | Rus. Fed. | 78.71 | 31 | 81,69 | 33% | 101.41 | 34% | 154.87 | 35% |
| | China P.R. | 25,76 | 10 | 13,88 | 6% | 17,38 | 6% | 1,82 | 0,4% |
| | OTS | 95,51 | 37 | 104,80 | 43% | 121,74 | 41% | 210,72 | 48% |
| Türkiye | All states | 19.735,0 | **100,0** | 20.710,0 | **100,0** | 25.008,4 | **100,0** | 29.873,8 | **100,0** |
| | Rus. Fed. | 1.064,1 | 5,4 | 1.376,8 | 6,6 | 1.649,5 | 6,6 | 2.130,0 | 7,1 |
| | China P.R. | 233,8 | 1,2 | 218,4 | 1,1 | 360,7 | 1,4 | 321,5 | 1,1 |
| | OTS | 273,9 | 1,4 | 329,2 | 1,6 | 425,7 | 1,7 | 589,9 | 2,0 |
| Uzbekistan | All states | 1.574,2 | **100,0** | 1.522,0 | **100,0** | 1.502,1 | **100,0** | 1.791,2 | **100,0** |
| | Rus. Fed. | 199,1 | 12,6 | 281,9 | 18,5 | 331,0 | 22,0 | 560,3 | 31,3 |
| | China P.R. | 78,6 | 5,0 | 107,6 | 7,1 | 153,2 | 10,2 | 144,3 | 8,1 |
| | OTS | 797,6 | 50,7 | 563,8 | 37,0 | 398,1 | 26,5 | 393,2 | 22,0 |
| OTS Total | All states | 25.617,0 | **100,0** | 26.508,6 | **100,0** | 31.412,8 | **100,0** | 38.604,3 | **100,0** |
| | Rus. Fed. | 2.343,4 | 9,1 | 2.681,4 | 10,1 | 3.237,5 | 10,3 | 4.036,0 | 10,5 |
| | China P.R. | 706,3 | 2,8 | 749,6 | 2,8 | 734,7 | 2,3 | 1.014,5 | 2,6 |
| | OTS | 2.281,0 | 8,9 | 2.210,8 | 8,3 | 2.376,6 | 7,6 | 3.255,8 | 8,4 |

Source: ITC, Trademap.

*Summarized calculations for OTS rows are made by author rely on countries data.

All states = Total World

Rus. Fed. – Russian Federation;

China P.R. – People Republic of China;

OTS= 5 countries → members of Organization of Turkic States (OTS);

Import dependency, contribution to food supply, and net imports per capita for key commodities in countries of Central Asia.

**Table I.13. Import dependency in Central Asia**

| Indicator / Country | Wheat and wheat products | | | Sunflower oil | | | Cereals and products, excluding wheat | | |
|---|---|---|---|---|---|---|---|---|---|
| | Import Dependency Ratio (weights) | Net-imports per capita/ year (kg) | Share of product in food supply (kcals, %) | Import Dependency Ratio (weights) | Net-imports per capita / year (kg) | Share of product in food supply (kcals, %) | Import Dependency Ratio (weights) | Net-imports per capita / year (kg) | Share of product in food supply (kcals, %) |
| Kazakhstan | -1.45 | -420 | 25 | 0,1 | 2 | 11 | -0,38 | -88 | 5 |
| Kyrgyzstan | 0,36 | 54 | 37 | 1,0 | 6 | 3 | 0,02 | 4 | 10 |
| Uzbekistan | 0,26 | 65 | 42 | 0,79 | 5 | 3 | 0,18 | 6 | 4 |

Note: Based on FAOStat (2022), using 2017-2019 averages.

Import Dependency Ratio = (Imports - Exports) / (Domestic Production + Imports - Exports) per product group, in weights.

Net-imports per capita/year = (Imports - Exports)/Population Size.

Among the three observing Central Asian countries, the import dependency ratio, which captures the share of imports in total calories that are available domestically, Uzbekistan and Kyrgyzstan show aggregate import dependency ratios for calories: 23 percent and 15 percent, respectively. With a negative import dependency ratio of -53 percent, Kazakhstan is a net exporter of calories. Given the high reliance on wheat and wheat products as a source of calories, several Central Asian countries face very high food security risks stemming from trade disruptions with Russia and intra-regional grain trade (WBG,2022).

**Table I.14. Agri-food import of OTS member countries during 2019-2022 years***

| Country | Indicators (**IMPORT**) | YEARS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 2019 | | 2020 | | 2021 | | 2022 | |
| | | Mln. US $ | % | Mln. US $ | % | Mln. US $ | % | Mln. US $ | % |
| Azerbaijan | All states | **1 926,1** | **100** | **1 903,8** | **100** | **2361,2** | **100** | **2691,8** | **100** |
| | Rus. Fed. | 685,2 | 36 | 736,4 | 39 | 772,0 | 33 | 891,3 | 33 |
| | China P.R. | 14,6 | 0,8 | 16,7 | 0,9 | 16,2 | 0,7 | 29,9 | 1,1 |
| | OTS | 245,4 | 12,7 | 195,2 | 10,3 | 267,4 | 11,3 | 466,6 | 17,3 |
| Kazakhstan | All states | **3 896,9** | **100** | **4 057,6** | **100** | **4 941,6** | **100** | **6 024,7** | **100** |
| | Rus. Fed. | 1 879,6 | 48,2 | 2 066,6 | 50,9 | 2 678,2 | 54,2 | 3 207,1 | 53,2 |
| | China P.R. | 186,9 | 4,8 | 157,5 | 3,9 | 165,2 | 3,3 | 235,8 | 3,9 |
| | OTS | 380,4 | 9,8 | 376,3 | 9,3 | 415,5 | 8,4 | 512,4 | 8,5 |
| Kyrgyzstan | All states | **655,4** | **100** | **594,5** | **100** | **865,6** | **100** | **1 171.6** | **100** |
| | Rus. Fed. | 218,3 | 33,3 | 227,6 | 38,3 | 345.0 | 39,9 | 547.0 | 46,6 |
| | China P.R. | 46.6 | 7,1 | 19.6 | 3,3 | 31.1 | 3,6 | 46.4 | 4,0 |
| | OTS | 265,6 | 40,1 | 220.7 | 37,1 | 317.4 | 36,7 | 321.3 | 27,4 |
| Türkiye | All states | **14 687,8** | **100** | **15 214,3** | **100** | **17 788,6** | **100** | **23 209,2** | **100** |
| | Rus. Fed. | 2 613,4 | 17,8 | 3 165,7 | 20,8 | 4 325,9 | 24,3 | 5 499,4 | 23,7 |
| | China P.R. | 386,8 | 2,6 | 440,3 | 2,9 | 360,3 | 2,0 | 472,2 | 2,0 |
| | OTS | 203,9 | 1,4 | 119,5 | 0,8 | 156,2 | 0,9 | 218,2 | 0,9 |
| Uzbekistan | All states | **2 086,0** | **100** | **2 301,7** | **100** | **3 150,1** | **100** | **4 114,6** | **100** |
| | Rus. Fed. | 475,9 | 22,8 | 695,8 | 30,2 | 806,0 | 25,6 | 917,6 | 22,3 |
| | China P.R. | 63,2 | 3,0 | 52,6 | 2,3 | 55,4 | 1,8 | 70,5 | 1,7 |
| | OTS | 807,4 | 38,7 | 939,9 | 40,8 | 1 171,4 | 37,2 | 1 621,1 | 39,4 |
| OTS Total | All states | **23 252,2** | **100** | **24 071,9** | **100** | **29 107,1** | **100** | **37 211,9** | **100** |
| | Rus. Fed. | 5 872,4 | 25,3 | 6 892,1 | 28,6 | 8 927,1 | 30,7 | 11 062,4 | 29,7 |
| | China P.R. | 698,1 | 3,0 | 686,7 | 2,9 | 628,2 | 2,2 | 854,8 | 2,3 |
| | OTS | 1 911,7 | 8,2 | 1 851,6 | 7,7 | 2 327,9 | 8,0 | 3 139,6 | 8,4 |

Source: ITC and Country Reports.

*Summarized calculations for OTS rows are made by author rely on countries data.

All states = Total World; Rus. Fed = Russian Federation; China P.R. = People Republic of China; OTS= 5 countries → members of Organization of Turkic States (OTS);

Kazakhstan increased the import of agri-food products from 3 896,9 million US dollars to 6 024,7 million US dollars over a four-year period between 2019 and 2022.

The Russian share was more than half of the value. The share of OTS countries has slightly fallen with the dominating share of Uzbekistan in imports.

As cereals constitute the significant share of daily diet the "CEREAL IMPORT DEPENDENCY RATIO (PERCENT)" indicator is used as one of the universal indicators for assessment of country food security. FAO's data on variables are presented in the table below.

**Table I.15. Cereal import dependency ratio (percent)[13]**

| Country | Years | |
|---|---|---|
| | 2009-2011 (%) | 2018-2020 (%) |
| World | 0.0 | -1.7 |
| Azerbaijan | 40.2 | 31.5 |
| Kazakhstan | 100.0* | -87.2 |
| Kyrgyzstan | 24.1 | 18.5 |
| Türkiye | 0.7 | 11.3 |
| Uzbekistan | 17.7 | 29.1 |

Source: FAO, Statistical Year Book 2023.

This variable holds exceptional value for Kazakhstan due to its strong draft in 2010.

The cereal import dependency ratio is one of the most widely used indicators to assess a country's food security. The dynamics of this indicator demonstrate the multidirectional trends for different countries during a ten-year period of 2010-2020.

Azerbaijan and Kyrgyzstan managed to reduce the ratio from 40.2% to 31.5% and from 24.1% to 18.5%, respectively, while this indicator increased for Türkiye and Uzbekistan. Kazakhstan remained a cereal net exporter.

Unless Uzbekistan, all countries of the OTS group achieved sensitive growth of mutual agri-food trade, particularly in export value, during the 2019-2022 years. Further logistic infrastructure development is expected to encourage the mutual trade intensity.

Agri-food export values (US $) among OTS members during 2019-2022 years are reflected in four tables below:

[13] FAO. 2023. World Food and Agriculture – Statistical Yearbook 2023. Rome. https://doi.org/10.4060/cc8166en

**Table I.16. Agri-food export value among OTS countries in 2019**

| 2019 | Destination / Exporter | Azerbaijan | Kazakhstan | Kyrgyzstan | Türkiye | Uzbekistan | OTS total (US $) |
|---|---|---|---|---|---|---|---|
| | Azerbaijan | | 3,6 | 0,8 | 8,0 | 1,2 | 13,6 |
| | Kazakhstan | 56,9 | | 184,6 | 99,3 | 761,6 | 1.102,39 |
| | Kyrgyzstan | 1,6 | 55,2 | | 31,2 | 5,5 | 93,46 |
| | Türkiye | 167,2 | 47,0 | 18,7 | | 41,0 | 273,88 |
| | Uzbekistan | 8,2 | 303,8 | 382,5 | 103,2 | | 797,63 |

Source: ITC, Trademap. Compilation of author.

**Table I.17. Agri-food export value among OTS countries in 2020**

| 2020 | Destination / Exporter | Azerbaijan | Kazakhstan | Kyrgyzstan | Türkiye | Uzbekistan | OTS total (US S) |
|---|---|---|---|---|---|---|---|
| | Azerbaijan | | 8,0 | 0,9 | 10,7 | 9,2 | 28,80 |
| | Kazakhstan | 14,7 | | 168,1 | 30,2 | 966,2 | 1.179,20 |
| | Kyrgyzstan | 2,8 | 62,3 | | 20,9 | 23,8 | 109,80 |
| | Türkiye | 227,2 | 50,0 | 13,1 | | 39,0 | 329,20 |
| | Uzbekistan | 8,0 | 277,5 | 255,8 | 22,5 | | 563,78 |

Source: ITC, Trademap. Compilation of author.

**Table I.18. Agri-food export value among OTS countries in 2021**

| 2021 | Destination / Exporter | Azerbaijan | Kazakhstan | Kyrgyzstan | Türkiye | Uzbekistan | OTS total (US S) |
|---|---|---|---|---|---|---|---|
| | Azerbaijan | | 8,0 | 4,8 | 12,7 | 3,4 | 28,90 |
| | Kazakhstan | 42,3 | | 191,0 | 74,0 | 1.094,8 | 1.402,15 |
| | Kyrgyzstan | 1,5 | 76,9 | | 26,9 | 16,4 | 121,72 |
| | Türkiye | 265,5 | 60,5 | 24,6 | | 75,1 | 425,71 |
| | Uzbekistan | 14,1 | 226,6 | 131,6 | 25,8 | | 398,11 |

Source: ITC, Trademap. Compilation of author.

**Table I.19. Agri-food export value among OTS countries in 2022**

| | Destination / Exporter | Azerbaijan | Kazakhstan | Kyrgyzstan | Türkiye | Uzbekistan | OTS total (US S) |
|---|---|---|---|---|---|---|---|
| 2022 | Azerbaijan | | 30,3 | 3,6 | 19,4 | 6,1 | 59,40 |
| | Kazakhstan | 114,5 | | 226,0 | 152,8 | 1.538,2 | 2.031,57 |
| | Kyrgyzstan | 3,2 | 91,1 | | 29,0 | 87,4 | 181,71 |
| | Türkiye | 336,5 | 110,0 | 53,1 | | 90,3 | 589,93 |
| | Uzbekistan | 35,1 | 267,0 | 59,8 | 31,4 | | 393,21 |

Source: ITC, Trademap. Compilation of author.

In addition to the quantitative analysis, it would be reasonable to include a qualitative analysis of the agri-food trade among OTS member countries. Below we provide the three main (in value of trading- export and import) agri-food products classified on the basis of the Harmonized System (HS) for each country.

**Table I.20. Three main agri-food products mostly bilaterally traded among OTS members within 2020-2022 years***

**A) Azerbaijan**

| Azerbaijan agrifood export to: | | | Countries of destination | Azerbaijan agrifood import from: | | |
|---|---|---|---|---|---|---|
| 2020 | 2021 | 2022 | | 2020 | 2021 | 2022 |
| - Beverages & Spirits (22);<br>- Edible fruits (08);<br>- Sugar& Confection. (17); | - Edible fruits (08);<br>- Oil seeds (12);<br>- Beverages & Spirits (22); | - Sugar & Confection (17);<br>- Beverages & Spirits (22);<br>-Edible fruits (08); | **Kazakhstan** | - Cereals (10)**;<br>- Preparat. of cereals (19);<br>- Edible vegetables (07); | - Cereals (10);<br>- Edible vegetables (07);<br>-Preparat. of cereals (19); | - Cereals (10);<br>- Edible vegetables (07);<br>- Cocoa & preparations (18) |
| - Animal & Veg. fats (15);<br>- Beverages & Spirits (22);<br>- Cocoa & preparat. (18); | - Sugar& Confection. (17);<br>- Animal & Veg. fats (15);<br>- Tobacco & substit. (24); | - Tobacco & substit. (24);<br>- Animal & Veg. fats (15);<br>- Sugar& Confection. (17); | **Kyrgyzstan** | - Edible vegetables (07);<br>- Oil seeds (12);<br>- Edible fruits (08); | - Edible vegetables (07);<br>- Oil seeds (12)<br>- Edible fruits (08); | - Edible vegetables (07);<br>- Edible fruits (08);<br>- Preparat. of cereals (19); |

| | | | | | | |
|---|---|---|---|---|---|---|
| - Preparations of vegetables, fruit, nuts(20);<br>- Oil seeds & oleaginous fruits(12);<br>- Residues & waste from the food industries(23); | - Residues & waste from the food industries (23);<br>- Oil seeds & oleaginous fruits (12);<br>- Products of animal origin, not elsewhere specified (05); | - Oil seeds & oleaginous fruits (12);<br>- Products of animal origin, not elsewhere specified (05);<br>- Residues & waste from the food industries (23); | **Türkiye** | - Edible fruit and nuts; peel of citrus fruit or melons (08); - Preparations of cereals, flour, starch or milk (19);<br>-Miscellan eous edible preparations (21); | - Edible fruit and nuts; peel of citrus fruit or melons (08);<br>- Preparations of cereals, flour, starch or milk (19);<br>-Miscellan eous edible preparations (21); | - Edible fruit and nuts; peel of citrus fruit or melons (08);<br>- Preparations of cereals, or milk (19);<br>-Miscellan eous edible preparations (21); |
| Sugars and confectionery (17);<br>- Animal fats (15);<br>- Edible fruit & nuts (08); | Sugars and confectionery (17);<br>- Animal fats (15);<br>- Edible fruit & nuts (08); | - Edible fruit & nuts (08);<br>- Animal fats (15);<br>- Cocoa & preparat. (18); | **Uzbekistan** | - Edible fruit & nuts (08);<br>- Edible vegetables (07);<br>- Oil seeds & oleaginous fruits (12); | - Edible fruit & nuts (08);<br>- Edible vegetables (07);<br>- Oil seeds & oleaginous fruits (12); | - Edible fruit & nuts (08);<br>- Edible vegetables (07);<br>- Oil seeds & oleaginous fruits (12); |

* agrifood products here are understood as product groups of 01-24 digits of Hyrmonized System;

** (...) – two-digit product group code in the harmonized system; the sequence of products is given in descending order of cost.

Source: ITC, Trademap.

### B) Kazakhstan

| Kazakhstan agrifood export to: | | | Countries of destination | Kazakhstan agrifood import from: | | |
|---|---|---|---|---|---|---|
| 2020 | 2021 | 2022 | | 2020 | 2021 | 2022 |
| - Cereals (10)**;<br>- Preparat. of cereals (19);<br>- Edible vegetables (07); | - Cereals (10);<br>- Edible vegetables (07);<br>- Preparat. of cereals (19); | - Cereals (10);<br>- Edible vegetables (07);<br>- Cocoa & preparat. (18); | **Azerbaijan** | - Beverages & Spirits (22);<br>- Edible fruits (08);<br>- Sugar& Confection. (17); | - Edible fruits (08);<br>- Oil seeds (12);<br>- Beverages & Spirits (22); | - Sugar& Confection. (17);<br>- Beverages & Spirits (22);<br>-Edible fruits (08); |
| -Tobacco (24);<br>-Beverges (22);<br>-Products of the milling (11); | -Tobacco (24);<br>-Beverages (22);<br>-Cereals (10); | - Beverages (22);<br>-Tobacco (24);<br>- Animal fats (15); | **Kyrgyzstan** | - Dairy produce (04);<br>-Preparations of cereals (19);<br>-Live animals (01); | - Dairy produce (04);<br>-Preparations of cereals (19);<br>-Live animals (01); | - Dairy produce (04);<br>-Preparations of cereals (19);<br>-Beveraes (22); |

| | | | | | | |
|---|---|---|---|---|---|---|
| - Edible vegetables & certain roots and tubers (07); - Oil seeds & oleaginous fruits; miscellaneous grains,(12); -Cereals(10); | -.Edible vegetables & certain roots & tubers (07); - Oil seeds & oleaginous fruits; miscellaneous grains,(12); - Cereals(10); | -.Edible vegetables & certain roots & tubers (07); - Cereals(10) - Oil seeds & oleaginous fruits; miscel lan eous grains(12); | **Türkiye** | -Cocoa & cocoa preparations (18); - Tobacco and manufactured tobacco substitutes (24); - Preparations of cereals, or milk; (19); | - Edible fruit & nuts; (08); - Dairy produce; birds' eggs; natural honey (04); Miscellaneous edible preparations (21); | - Edible fruit & nuts; (08); - Cocoa & cocoa preparations (18) -Miscellan eous edible preparations (21); |
| - Cereals (10); - Products of the milling industry (11); - Animal fats (15); | - Cereals (10); - Products of the milling industry (11); - Animal fats (15); | - Cereals (10); - Products of the milling industry (11); - Animal fats (15); | **Uzbekistan** | -Edible fruit & nuts (08); - Edible vegetables (07); - Beverages (22); | -Edible fruit & nuts (08); - Edible vegetables (07); - Beverages (22); | -Edible fruit & nuts (08); - Edible vegetables (07); - Beverages (22); |

### C) Kyrgyzstan

| **Kyrgyzstan agrifood export to:** | | | Countries of destination | **Kyrgyzstan agrifood import from:** | | |
|---|---|---|---|---|---|---|
| 2020 | 2021 | 2022 | | 2020 | 2021 | 2022 |
| - Edible vegetables (07); - Oil seeds (12); - Edible fruits (08); | - Edible vegetables (07); - Oil seeds (12) - Edible fruits (08); | - Edible vegetables (07); - Edible fruits (08); - Preparat. of cereals (19); | **Azerbaijan** | - Animal & Veg. fats (15); - Beverages & Spirits (22); - Cocoa & preparat. (18); | - Sugar& Confection. (17); - Animal & Veg. fats (15); - Tobacco & substit. (24); | - Tobacco & substit. (24); - Animal & Veg. fats (15); - Sugar& Confection. (17); |
| - Dairy produce (04); -Preparations of cereals (19); -Live animals (01); | -Dairy produce (04); -Preparations of cereals (19); -Live animals (01); | -Dairy produce (04); -Preparations of cereals (19); -Beveraes (22); | **Kazakhstan** | -Tobacco (24); -Beverges (22); -Products of the milling industry (11); | -Tobacco (24); -Beverages (22); -Cereals (10); | - Beverages (22); -Tobacco (24); - Animal fats (15); |
| - Edible vegetables (07); - Edible fruit & nuts (08); - Products of animal origin (05); | - Edible vegetables (07); - Edible fruit & nuts (08); - Products of animal origin (05); | - Edible vegetables (07); -Products of animal origin (05) - Edible fruit & nuts (08); | **Türkiye** | - Edible fruit & nuts (08); - Miscella-neous (21); - Sugars (17) | - Edible fruit & nuts (08); -Tobacco (24); - Miscella-neous (21); | - Edible fruit & nuts (08); -Residues (23); - Preparations of vegetables (20); |

| | | | | | | |
|---|---|---|---|---|---|---|
| -Live animals (01);<br>- Edible vegetables (07);<br>- Edible fruit & nuts (08); | - Edible vegetables (07);<br>- Live animals (01);<br>- Edible fruit & nuts (08); | - Live animals (01);<br>- Edible vegetables (07);<br>- Cereals (10); | **Uzbekistan** | - Edible fruit & nuts (08);<br>- Edible vegetables (07);<br>- Preparations of cereals (19); | -Edible fruit & nuts (08);<br>- Edible vegetables (07);<br>- Beverages (22); | - Edible fruit & nuts (08);<br>- Edible vegetables (07);<br>- Preparations of cereals (19); |

### D) Türkiye

| **Türkiye agrifood export to:** | | | Countries of destination | **Türkiye agrifood import from:** | | |
|---|---|---|---|---|---|---|
| 2020 | 2021 | 2022 | | 2020 | 2021 | 2022 |
| - Edible fruit & nuts (08)<br>- Preparations of cereals, flour (19);<br>- Miscel- laneous edible prep. (21); | - Edible fruit & nuts (08)<br>- Preparatio ns of cereals, flour (19);<br>- Miscel- laneous edible prep. (21); | - Edible fruit & nuts (08)<br>- Preparations of cereals, flour (19);<br>- Miscel- laneous edible prep. (21); | **Azerbaijan** | - Preparations of vegetables, fruit (20);<br>- Oil seeds & oleaginous fruits (12);<br>- Residues from the food indust. (23); | - Residues from the food indust. (23);<br>- Oil seeds & oleaginous fruits (12);<br>- Products of animal origin (05); | - Oil seeds & oleaginous fruits (12);<br>- Products of animal origin, (05);<br>- Residues from the food industr. (23); |
| - Cocoa & cocoa preparat. 18);<br>- Tobacco & substitutes (24);<br>- Preparations of cereals (19); | - Edible fruit & nuts (08);<br>- Dairy prod. & edible prod. of anim. orig. (04);<br>-Miscellaneous preparat. (21); | - Edible fruit & nuts (08);<br>- Cocoa & cocoa preparat. (18);<br>-Miscella- neous preparat. (21); | **Kazakhstan** | - Edible vegetables (07);<br>- Oil seeds & oleaginous fruits (12);<br>- Cereals (10); | - Edible vegetables (07);<br>- Oil seeds & oleaginous fruits (12);<br>- Cereals (10); | - Edible vegetables (07);<br>- Cereals (10);<br>- Oil seeds & oleaginous fruits (12); |
| - Preparations of vegetables, fruit (20);<br>- Edible fruit & nuts (08);<br>- Sugars and confectionery (17); | - Preparations of vegetables, fruit (20);<br>- Edible fruit & nuts (08);<br>- Sugars and confectionery (17); | - Preparations of vegetables, fruit (20);<br>- Edible fruit & nuts (08);<br>- Residues from the food indust. (23) | **Kyrgyzstan** | - Edible vegetables (07);<br>- Edible fruit & nuts (08);<br>- Products of animal origin (05); | - Edible vegetables (07);<br>- Edible fruit & nuts (08);<br>- Products of animal origin (05); | - Edible vegetables (07);<br>- Edible fruit & nuts (08);<br>- Products of animal origin (05); |
| - Live trees & other plants (06);<br>-Miscellaneous preparat. (21);<br>- Residues from the food industries (23); | - Meat and edible meat offal (02);<br>- Live trees and other plants (06);<br>- Edible fruit & nuts (08); | -Miscellaneo us preparat. (21);<br>- Cocoa & preparations (18);<br>- Live trees & other plants (06); | **Uzbekistan** | - Edible fruit & nuts (08);<br>- Edible vegetables (07);<br>- Oil seeds & oleaginous fruits (12); | - Edible fruit & nuts (08);<br>- Edible vegetables (07);<br>- Oil seeds & oleaginous fruits (12); | - Edible fruit & nuts (08);<br>- Edible vegetables (07);<br>- Products of animal origin (05); |

### E) Uzbekistan

| Uzbekistan agrifood export to: | | | Countries of destination | Uzbekistan agrifood import from: | | |
|---|---|---|---|---|---|---|
| 2020 | 2021 | 2022 | | 2020 | 2021 | 2022 |
| - Edible fruit & nuts (08);<br>- Edible vegetables (07);<br>- Oil seeds & oleaginous fruits (12); | - Edible fruit & nuts (08);<br>- Edible vegetables (07);<br>- Oil seeds & oleaginous fruits (12); | - Edible fruit & nuts (08);<br>- Edible vegetables (07);<br>- Oil seeds & oleaginous fruits (12); | **Azerbaijan** | - Sugars and confectionery (17);<br>- Animal fats (15);<br>- -Edible fruit & nuts (08); | - Sugars and confectionery (17);<br>- Animal fats (15);<br>- Edible fruit & nuts (08); | - Edible fruit & nuts (08);<br>- Animal fats (15);<br>- Cocoa & preparat. (18); |
| -Edible fruit & nuts (08);<br>- Edible vegetables (07);<br>- Beverages (22); | -Edible fruit & nuts (08);<br>- Edible vegetables (07);<br>- Beverages (22); | -Edible fruit & nuts (08);<br>- Edible vegetables (07);<br>- Beverages (22); | **Kazakhstan** | - Cereals (10);<br>- Products of the milling industry (11);<br>- Animal fats (15); | - Cereals (10);<br>- Products of the milling industry (11);<br>- Animal fats (15); | - Cereals (10);<br>- Products of the milling industry (11);<br>- Animal fats (15); |
| -Edible fruit & nuts (08);<br>-Edible vegetables (07);<br>-Preparations of cereals (19) | -Edible fruit & nuts (08);<br>- Edible vegetables (07);<br>- Beverages (22) | -Edible fruit & nuts (08);<br>-Edible vegetables (07);<br>-Preparations of cereals (19); | **Kyrgyzstan** | -Live animals (01);<br>Edible vegetables (07);<br>Edible fruit & nuts (08); | Edible vegetables (07);<br>- Live animals (01);<br>- Edible fruit & nuts (08); | - Live animals (01);<br>- Edible vegetables (07);<br>- Cereals (10); |
| -Edible fruit and nuts (08);<br>-Edible vegetables (07);<br>-Oil seeds & oleaginous fruits (12); | - Edible fruit and nuts (08);<br>- Edible vegetables (07);<br>- Oil seeds & oleaginous fruits (12); | 1.Edible fruit and nuts (08);<br>2.Edible vegetables (07);<br>3. Products of animal origin (05); | **Türkiye** | - Live trees & other plants (06);<br>-Miscellaneo us edible preparat. (21);<br>- Residues & waste from food industr. (23); | - Meat and edible meat offal(02);<br>- Live trees & other plants (06);<br>3. Edible fruit & nuts (08); | - Miscellane ous edible preparat. (21);<br>2. Cocoa & cocoa preparat. (18);<br>3. Live trees & other plants (06); |

According to its Framework[14] the CAREC (all OTS members are represented in this Programme) countries will harness international food trade to modernize agriculture and enhance food security by facilitating food trade, diversifying the direction of food exports and imports, and expanding exports of high-value food products. To reduce their dependence on imports of staple food products, the CAREC countries are promoting domestic production of these products. They will continue to leverage imports to ensure the availability of a greater variety of food products at lower prices. They will cooperate in diversifying the direction of food exports and imports to reduce their vulnerability to changes in food demand or production in trading partners and disruptions in cross-border food supply chains. The CAREC countries' collaboration in trade facilitation and export promotion will focus on:

- modernization of customs administration, border crossing points and sanitary and phytosanitary (SPS) measures;
- promote cross-border e-commerce and paperless trade in food products.

The CITA 2030 (CAREC Integrated Trade Agenda) and the development of the ABEC (Almaty-Bishkek Economic Corridor) and STKEC (Shymkent-Tashkent-Khujand Economic Corridor) will primarily fund it.

[14] Cooperation Framework for Agricultural Development and Food Security in the CAREC region. CAREC Secretariat 24 November 2022. https://www.carecprogram.org/uploads/CAREC_MC_2022_2a_Agriculture-Food-Security-Framework-EN.pdf

# I.E. EXTERNAL FACTORS, DRIVERS AND ANALYSIS

## I.E.1. Impact of Trans-Caspian International Transport Route. Assessment of regional trade costs

Beyond the vital need for food product which is a subject of trading there is a "cost" factor which determines the trading process. Conditionally, we can identify three phases of cost formation: behind the border, at the border, and between the borders. Or in another words, we can refer the "behind the border" definition to documentation, the "at the border" refers to border-crossing procedures and the "between the borders" refers to transportation. The table below compiles the components that constitute each of the listed phases.

**Table I.21. Trade cost components**

| TRADE COSTS | | | |
|---|---|---|---|
| # | **behind the border** | **at the border** | **between the borders** |
| | Documentation | border-crossing procedures | transportation |
| 1. | Commercial invoice | Border Control | Modes of Transport |
| 2. | Packing list | Immigration | Route |
| 3. | CMR Consignment Note | Transport Control | Type of vehicle |
| 4. | TIR Carnet | SPS/Phyto/Veterinary Control | Loading and unloading |
| 5. | Insurance | | Trans-loading |
| 6. | SPS Certificate | | |
| 7. | Country of origin | | |
| 8. | Road Permit | | |

Source: Z.Karimova, ADB,2023[15].

For the tracking of cross-border trade efficacy the instrument called CPMM (Corridor Performance Measurement Monitoring)[16] is used. It is implemented under CAREC Program. CAREC Program (The Central Asia Regional Economic Cooperation) is a partnership of 11 countries and Azerbaijan, Kazakhstan, Kyrgyzstan and Uzbekistan (members of OTS) participate in this Program with aim to promote development, accelerate growth and reduce poverty through cooperation. Monitoring results clearly indicated that **one third** of shipments were related to food.

In 2017 CAREC introduced agriculture and water as a new cluster in the CAREC 2030 Strategy as part of selective expansion of operational priorities. The overall emphasis of both sectors is on promoting expanded agriculture trade in the region to support the CAREC 2030 goal of sustainable economic development and shared prosperity in the region. Under agriculture, support for sanitary and phytosanitary measures (SPS) and trans-boundary animal disease control were identified as important for integrating CAREC countries into global agricultural value chains. In the water sector, securing

[15] Karimova,Z., ADB,2023. Evolution of trade costs in the region and regional trade facilitation initiatives. Presentation.

[16] https://cpmm.carecprogram.org/

water supply through coordinated river basin management and improved irrigation was considered important for value chain integration[17].

In its classification CAREC identifies six main transportation routes (Corridors) in CA and Caucasus region. Conditionally it refers as #2 to Middle Corridor. Corridor 2 is an important passageway for regional east-west linking the economies of East Asia to Central Asia, the Caucasus, and the Mediterranean, with the PRC (People Republic of China) in the east and Georgia in the west, passing through nine CAREC member countries. There are four sub-corridors, all of which start in the PRC and ultimately link to Georgia and Iran[18].

**Table I.22. Key Indicators of Shipments from Poti, Georgia to Central Asia**

| Countries | KAZ | KGZ | UZB |
|---|---|---|---|
| **Routes** | **Poti-Uralsk** | **Poti-Bishkek** | **Poti-Tashkent** |
| Distance (km) | 2,661.71 | 5,169.00 | 3,361.17 |
| Transit Time (hr) | 67.92 | 104.42 | 82.07 |
| Activities Time (hr) | 194.23 | 350.83 | 296.10 |
| Total Time (hrs) | 262.15 | 455.25 | 378.17 |
| Transport Rate ($) | 1,830.00 | 2,280.00 | 1,871.67 |
| Activities Cost ($) | 709.50 | 1,139.50 | 722.62 |
| Total Trip Cost ($) | 2,539.50 | 3,419.50 | 2,594.28 |
| SWOD (km/h) | 39.20 | 49.50 | 41.21 |
| SWD (km/h) | 11.33 | 11.35 | 10.40 |
| Transport Rate ($/500 km) | 343.92 | 220.55 | 278.43 |
| Activities Cost ($/500 km) | 133.69 | 110.22 | 107.37 |
| Total Trip Cost ($/500 km) | 477.61 | 330.77 | 385.80 |

hr = hour, KAZ = Kazakhstan, KGZ = Kyrgyz Republic, km = kilometer, km/h = kilometer per hour, SWD = speed with delay, SWOD = speed without delay, UZB = Uzbekistan.

Source: Asian Development Bank.

T.Kenderdine and P.Bucsky (2021) assessed the EU trade with Middle Corridor countries by main agricultural products as below in table:

**Table I.23. Agricultural products trade categories**

| EU trade by categories | Rail | | Sea | |
|---|---|---|---|---|
| | Tons (1.000) | | Tons (1.000) | |
| | Imports | Exports | Imports | Exports |
| Agricultural products and live animals | 5,4 | 41 | 784 | 1,297 |
| Food stuffs and animal fodders | 64,6 | 184 | 1,479 | 1,558 |

Source: ADB Institute, 2021.

[17] CAREC Program | Development Effectiveness Review 2020. https://www.carecprogram.org/uploads/MC-2021-Docs-3-CAREC-2030-Development-Effectiveness-Report-20211711-EN.pdf

[18] CAREC CORRIDOR PERFORMANCE MEASUREMENT AND MONITORING ANNUAL REPORT 2019. © 2020 Asian Development Bank. file:///C:/Users/DELL/Desktop/carec-cpmm-annual-report-2019.pdf

According to the reports of ADB, within the period of 2019-2021, the shipping cost in CAREC regions noticeably increased, including both road and rail modes. Graphically, it can be illustrated as below:

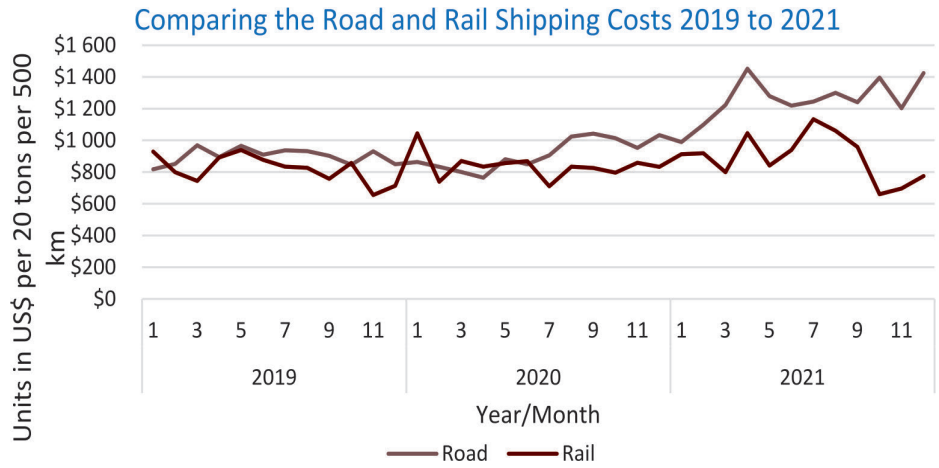


***Figure I.1. Shipping costs***

Source: ADB, CPMM Annual Reports 2019 to 2021.

On average, the cost of road freight for a 20-ton/500-kilometer shipment increased from $800 to $1,400, a nearly 75% increase between the years 2019 and 2021. Government subsidies during the pandemic period partially explain the slower growth of rail freight. But regarding the border-crossing time, the rail mode demonstrated a reverse tendency – more rapid increase in time spent at the border.

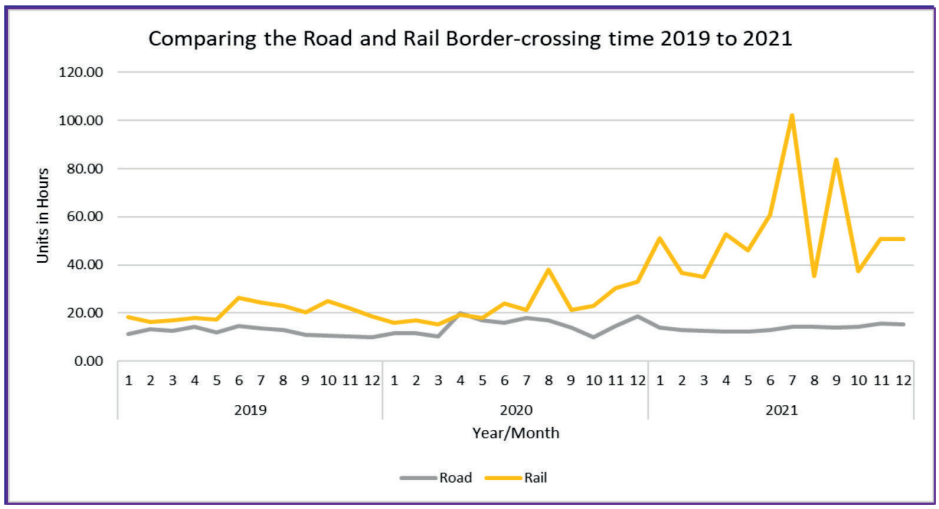


***Figure I.2. Border-crossing time***

Source: ADB, CPMM Annual Reports 2019 – 2021.

**B) Facilitation of Regional Trade Initiatives**

The CPMM evaluates a set of trade facilitation indicators (TFİs) to illustrate the overall annual performance and efficiency of the CAREC corridors. The indicators, which are measured over time and across corridors, provide a comparative picture that enables the assessment and validation of the impacts of transport and trade initiatives in the region. The TFIs include:

- (i) time taken to clear a border-crossing point (BCP);
- (ii) cost incurred at a BCP;
- (iii) cost incurred to travel a corridor sector;
- (iv) speed to travel along CAREC corridors[19]

In its 2019 Annual Report which includes also "Trade Facilitation Indicator Trend 2010-2019" analysis the CAREC indicates the next data related to Corridor 2: Trucks in Caucasus moved at speeds of 40 km/h , with the Poti-Tbilisi-Tsiteli Khidi road section supporting SWOD of 40-50 km/h. From Krasny, most BCP to Baku trucks moved at SWOD of more than 50 km/h.

Key Lessons Learned from the Time Release Study:

**(i)** One-stop shop principle is very effective in simplifying border-crossing procedures.

**(ii)** Advanced declaration is moderately helpful to expedite border crossings.

**(iii)** Additional controls and SPS controls lengthened border-crossing time significantly.

Trans-Caspian Interanational Transport Route (TITR) plays an important role in facilitating international trade through its transportatioin infrastructure network systems. ADB experts conducted a regional economic impact assessment of transportation infrastructure investments using a computable general equilibrium analysis[20]. The public and private infrastructure investments in Central and West Asia during the period 2010-2014 represent2.9% of the GDP. However, the necessary infrastructure investment will account for 6,2% of the GDP in 2016-2030 (ADB, 2015)[21]. This implies that the infrastructure investment in Central and West Asia should increase by about 29% every 5 years to meet future needs. Combining the regression results of the coefficients, the athors assumed that, in general case, the trade costs in the modes of rail, air, sea and road will fall by 4,3%, 5,9%, 7,3% and 1,9% respectively.

In summary, the analytical results in this step suggest that a) infrastructure investments in Central and West Asia should rise by nearly one-third every five years to meet future needs; b) this study conducts a scenario-based analysis based on the regression estimates; and c) a noteworthy finding is that investing in transportation infrastructure can significantly lower interregional trade costs.

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[19] CAREC Corridor Performance Measurement and Monitoring Annual Report 2019. © 2020 Asian Development Bank. file:///C:/Users/DELL/Desktop/carec-cpmm-annual-report-2019.pdf

[20] Li, X., K. Wang, and Z. Chen. 2021. Regional Economic Impacts of Trans-Caspian Infrastructure Improvement: Implications for the Post-COVID-19 Era. ADBI Working Paper 1274. Tokyo: Asian Development Bank Institute. Available: https://www.adb.org/publications/regional-economic-impacts-trans-caspian-infrastructureimprovement-post-covid

[21] ADB. 2015. "Data and Resource of Infrastructure Needs, Asia and the Pacific." https://data.adb.org/dataset/infrastructure-needs-asia-and-pacific .

At the same time other experts express a different evaluations and impact assessments related to Middle Corridor. T.Kenderdine and P.Bucsky[22] recommed not to ignore the administrative nature of infrastructure development drivers from PRC side while transportation need flow from EU side is of demand driven nature.

T.Kenderdine and P.Bucsky (2021) mark that "excepting Republic of Turkey, the Middle Corridor countries are all post-Soviet economies, and the development of a Middle Corridor institutions ultimately connects the PRC through this post-Soviet economic geography to the advanced, developed markets of the European Union. It is thus important to consider the Middle Corridor from the perspective of the institutionalization of the three regions involved, the PRC, the European Union, and the post-Soviet economies plus Turkey. A simple breakdown of the three regions that we examine presents the PRC as industrializing, the Middle Corridor economies as semiindustrialized, and Europe as post-industrial"[13].

It would be rather interesting to share here with policy recommendations for Middle Corridor States forwarded by mentioned above T.Kenderdine and P.Bucsky:

- Liberalize trade to attract greater trade and transport volumes and expand the Middle Corridor logistics grouping into formal trade bloc;
- Develop a regional trade zones;
- Develop intraregional economic integration policies to harmonize industrial development in Central Asia and the Caucasus.

Other researcher of Middle Corridor A. Sharafeyeva (2023) confirms that "in the five Central Asian countries, self-imposed high trade costs in both monetary terms and in terms of uncertain time to trade, coupled with remoteness from seaports and major global markets, are among the reasons that exports in this region are being impeded. Their governments must therefore continue their work to create a better enabling environment to streamline their cross-border trade. The policies should focus on minimizing the time uncertainty in exporting goods. This can be achieved by enhancing logistics, including transport systems and information and communication technology; making border-crossing procedures simpler and more predictable; and addressing other factors that contribute to high costs and levels of uncertainty in the conduct of trade. Improving the institutions of international trade and greater digitalization and automation could facilitate trade transactions by streamlining the flow and minimizing the risks of trade. Customs points should be equipped with contactless inspection and artificial intelligence image sensing to improve cross-border trade in the region"[23].

The common challenges that agri-food value chain actors face along the Middle Corridor can be classified as below:

**A) Infrastructure:**

lack of cooling wharehouses;

lack of refregirated containers;

**B) Transportation modes:**

- lack of specialized vehicles (for examples for live cattles);

[22] Kenderdine, T. and P. Bucsky. 2021. Middle Corridor—Policy Development and Trade Potential of the Trans-Caspian International Transport Route. ADBI Working Paper 1268. Tokyo: Asian Development Bank Institute. Available: https://www.adb.org/publications/middle-corridor-policy-development-trade-potential

[23] Alfinura Sharafeyeva, ADB EAST ASIA WORKING PAPER SERIES NO. 59 March 2023. https://www.adb.org/sites/default/files/publication/867021/eawp-059-trade-costs-time-exports-central-asian-countries.pdf.

**C) staff capacity:**

-lack of skilled staff and specialized companies (for example, managers for live cattle transportation, accompaning veterinarians and etc);

**D) Information Delivery:**

There is insufficient or no exchange of transportation-related information (invoices, SPS certificates, etc.) in real-time mode to avoid delays in border crossing or mode changing phases, especially when it involves time-sensitive products like fruits or meat.

I would like to summarize the analysis of the Middle Corridor's impact on regional food security and propose a two-dimensional approach, based on the interests of OTS member countries.

First, it is an integral chain of the Belt and Road Initiative launched by the PRC for trading with industrialized Europe. And OTS can play an aggregator role for its members, maximizing the benefits of transitional actions. And the second dimension – the Middle Corridor infrastructure—is an internal transportation network of 170 million people in OTS, which should ensure permanent transportation functionality, including agri-food trade, particularly its perishable parts, in cost-acceptable manners.

Greater volume, lesser timing, competitive cost, and infrastructure investments into the Middle Corridor are among the preconditions to ensure food security in the region through agri-food trading and large-scale agri-food production.

According to ADB senior economists (Eugene Zhukov, Lyaziza Sabyrova, Roman Mogilevski, 2023)[24] For the sustainable development of the Middle Corridor and other trade diversification efforts, the following actions are needed:

- Prepare a well-thought-out strategy of the Middle Corridor development coordinated between multiple stakeholders
- Reduce trade costs and introduce green solutions through lowering non-tariff barriers and infrastructure development
- Implement reforms supporting the development of entrepreneurship and lower production costs to improve the ability to react swiftly to emerging market opportunities
- Diversify export destinations and import sources, which includes more active participation in the multilateral trade system and accession to the World Trade Organization for economies that have not joined the organization
- Strengthen regional cooperation for the development of cross-border infrastructure, logistics, human resources, production quality assurance systems, and other purposes.

The joint venture (JV) «Middle Corridor Multimodal Ltd», created by Kazakhstan, Azerbaijan and Georgia to develop the railway segment of the Middle Corridor and an intention of China to join this JV can be assessed as a positive and promising signal for Corridor' perspectives.

Generally, in 2023, 2.7 million tons of cargo passed through Middle Corridor (an increase of 86% by 2022), and in 2024 the volume may exceed 4.2 million tons[25].

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[24] Zhukov E., Sabyrova L., Mogilevsky R., 2023. The ability of the economies of the Caucasus and Central Asia to effectively respond to external shocks critically depends on their cooperation in diversifying trade and transport routes. The right policies and development of the Middle Corridor is a key to success. https://blogs.adb.org/blog/five-steps-economic-resilience-caucasus-and-central-asia

[25] https://news.day.az/economy/1675129.html

## I.E.2. OTS MEMBER COUNTRIES IN CONTEXT OF WTO RELATIONSHIP

The WTO Agreement on Agriculture explicitly recognizes the need to take account of food security — both in the commitments that WTO members have made to date and in ongoing negotiations.

Trade can improve food availability where it is scarce — and can also improve economic access to food by creating jobs and raising incomes. A more predictable trading system can also improve stability, another key component of food security[26].

OTS member countries current status in WTO briefly compilated in table below.

**Table I.24. Current status of OTS members in the WTO**

| Country | Status in WTO | Since | Additional obligations (if any) |
|---|---|---|---|
| Azerbaijan | Observer | Working Party - on 16 July 1997 | |
| Kazakhstan | Member | 30 November 2015 | |
| Kyrgyzstan | Member | 20 December 1998 | |
| Türkiye | Member | 26 March 1995 | |
| Uzbekistan | Observer | Working Party - on 21 Dec. 1994 | |

Source: WTO official site.

As three of five members of OTS are WTO members simultaneously and they have to follow WTO rules in trade issues, it would be logical to describe the countries profiles through WTO duties related to agricultural products trade.

**Table I.25. Azerbaijan' Tariff Profile[27]**

| Azerbaijan' exports to major trading partners and duties faced | | | | | | | |
|---|---|---|---|---|---|---|---|
| Major markets | Bilateral Imports | | MFN AVG of traded TL | | Pref. Margin | Duty- free imports | |
| | Year | million US $ | Simple | Weighted | Weighted | TL in % | Value in % |
| Agricultural products | | | | | | | |
| Russian Fed. | 2021 | 590 | 10.1 | 7.7 | 7.7 | 100,0 | 100,0 |
| Türkiye | 2021 | 227 | 24.0 | 0.6 | 0.0 | 29,0 | 96,6 |
| European Union | 2021 | 57 | 13.1 | 3.4 | 0.0 | 9,6 | 10,5 |
| Ukraine | 2021 | 33 | 8.9 | 10.0 | 10.0 | 100,0 | 100,0 |
| Georgia | 2021 | 31 | 8.6 | 7.9 | 7.8 | 99,2 | 99,7 |

Source: WTO official site.

[26] https://www.wto.org/english/tratop_e/agric_e/food_security_e.htm
[27] https://www.wto.org/english/thewto_e/acc_e/a1_azerbaidjan_e.htm

Note: **AVG** – Average; **Ag**- Agricultural products; **AVE**- *Ad valorem equivalent*; HS- Harmonized System (nomenclature); **Max**- Maximum duty; **MFN**- Most favored nation; **NAV**- non-Ad valorem duty; **TL**- tariff line; **UV**- unit value.

According to Table # 25 we can say that excepting EU countries, almost all exporting agricultural products from Azerbaijan to its major trade partners are on the basis of a zero (duty free) tariff.

**Table I.26. Kazakhstan' Tariff Profile[28]**

| Kazakhstan' exports to major trading partners and duties faced | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Major markets** | Bilateral Imports | | MFN AVG of traded TL | | Pref. Margin | Duty- free imports | |
| | Year | million US $ | Simple | Weighted | Weighted | TL in % | Value in % |
| **Agricultural products** | | | | | | | |
| Uzbekistan | 2021 | 1.079 | 12,4 | 2,4 | 2,4 | 100,0 | 100,0 |
| Russian Fed. | 2021 | 493 | 14,8 | 16,6 | 16,6 | 100,0 | 100,0 |
| Tajikistan | 2021 | 400 | 9,5 | 5,6 | 5,6 | 100,0 | 100,0 |
| European Union | 2021 | 300 | 13,0 | 2,1 | 0,0 | 24,3 | 94,0 |
| China | 2021 | 249 | 13,3 | 24,6 | 0,0 | 1,4 | 0,0 |

Source: WTO official site.

Note: **AVG** – Average; **Ag**- Agricultural products; **AVE**- *Ad valorem equivalent*; HS- Harmonized System (nomenclature); **Max**- Maximum duty; **MFN**- Most favored nation; **NAV**- non-Ad valorem duty; **TL**- tariff line; **UV**- unit value.

Kazakhstan' agricultural products export context within WTO rules also demonstrates rather favorable preconditions for trade growing.

**Table I.27. Kyrgyzstan' Tariff Profile[29]**

| Kyrgyzstan' exports to major trading partners and duties faced | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Major markets** | Bilateral Imports | | MFN AVG of traded TL | | Pref. Margin | Duty- free imports | |
| | Year | million US $ | Simple | Weighted | Weighted | TL in % | Value in % |
| **Agricultural products** | | | | | | | |
| Russian Fed. | 2021 | 81 | 10.6 | 14.7 | 14.7 | 100.0 | 100.0 |
| Kazakhstan | 2021 | 69 | 9.9 | 18.1 | 18.1 | 100.0 | 100.0 |
| Türkiye | 2021 | 35 | 9.6 | 1.7 | 0.0 | 51.5 | 86.4 |
| Uzbekistan | 2021 | 17 | 15.2 | 8.6 | 8.6 | 100.0 | 100.0 |
| European Union | 2021 | 14 | 11.2 | 2.2 | 2.2 | 93.3 | 99.7 |

Source: WTO official site.

[28] https://www.wto.org/english/thewto_e/countries_e/kazakhstan_e.htm
[29] https://www.wto.org/english/res_e/statis_e/daily_update_e/tariff_profiles/KG_E.pdf

**Table I.28. Türkiye' Tariff Profile[30]**

| Türkiye' exports to major trading partners and duties faced | | | | | | | |
|---|---|---|---|---|---|---|---|
| Major markets | Bilateral Imports | | MFN AVG of traded TL | | Pref. Margin | Duty- free imports | |
| | Year | million US $ | Simple | Weighted | Weighted | TL in % | Value in % |
| **Agricultural products** | | | | | | | |
| European Union | 2021 | 5,452 | 16.0 | 12.1 | 9.8 | 62.6 | 81.0 |
| Russian Fed. | 2021 | 1,631 | 11.0 | 5.1 | 1.1 | 6.0 | 14.9 |
| USA | 2021 | 1,335 | 4.5 | 2.8 | 0.0 | 21.5 | 31.1 |
| United Kingdom | 2021 | 625 | 11.5 | 7.2 | 0.0 | 19.1 | 14.8 |
| Ukraine | 2021 | 486 | 9.0 | 4.9 | 0.0 | 17.6 | 52.3 |

Source: WTO official site.

**Table I.29. Uzbekistan' Tariff Profile[31]**

| Uzbekistan' exports to major trading partners and duties faced | | | | | | | |
|---|---|---|---|---|---|---|---|
| Major markets | Bilateral Imports | | MFN AVG of traded TL | | Pref. Margin | Duty- free imports | |
| | Year | million US $ | Simple | Weighted | Weighted | TL in % | Value in % |
| **Agricultural products** | | | | | | | |
| Russian Fed. | 2021 | 408 | 9.0 | 6.6 | 6.6 | 100.0 | 100.0 |
| Kazakhstan | 2021 | 265 | 8.9 | 10.0 | 10.0 | 100.0 | 100.0 |
| China | 2021 | 157 | 14.8 | 8.5 | 0.0 | 0.0 | 0.0 |
| Türkiye | 2021 | 85 | 28.6 | 2.9 | 0.0 | 22.0 | 76.6 |
| Tajikistan | 2021 | 72 | 11.2 | 6.3 | 6.1 | 92.9 | 98.0 |

Source: WTO official site.

Main agricultural products trade partners of Uzbekistan demonstrate readyness to create a favorable conditions for exporting from Uzbekistan. But as in case with Kazakhstan, China doesn't practice duty-free rejime for products from Uzbekistan.

Because three of the five OTS member countries are also members of the WTO, they have to tell the WTO Secretariat about any regional trade agreements and make sure that all trade operations are in line with WTO rules. This means that non-member countries need help building their skills so that all trade items are understood and defined the same way, especially when it comes to agricultural products.

[30] https://www.wto.org/english/res_e/statis_e/daily_update_e/tariff_profiles/TR_E.pdf
[31] https://www.wto.org/english/res_e/statis_e/daily_update_e/tariff_profiles/UZ_E.pdf

## I.E.3. DIGITAL TOOLS USED IN REGIONAL AGRI-FOOD TRADE

It was undermined in previous chapters that for assessment of food security in countries—members of the Organization of Turkic States—we follow a two-dimensional (ranking) approach, namely ***internal production*** and ***international agri-food trade***. There is no need to argue that digitalization continues to be a key driver of economic growth in general and agri-food trade in particular.

Agriculture's share in the OTS group of economies has progressively declined from 1990 to 2022. However, agriculture's importance in the economic and social fabric of the OTS economies goes well beyond this indicator due to the food security dimension and many families being dependent on rural incomes. For example, according to the UN estimations, in 2022, 63% of Kyrgyzstan's population, 50% of Uzbekistan's population, 43% of Azerbaijan's population, and 42% of Kazakhstan's population were living in rural areas. Agriculture continues to provide significant inputs to Uzbekistan's GDP[32].

As a form of advanced technology, smart agriculture, with its segments such as precision farming, livestock farming, aquaculture, and greenhouse, sharply enhances the digitalization of internal (domestic) production.

Smart agriculture includes the adoption of advanced technologies such as the Internet of Things (IoT), ML (Machine Learning), GPS (Global Positioning System), GIS (Global Information System), and other technologies that have drastically enhanced productivity, reduced the cost of production, and preserved the health of the soil in the long run. The integration of IoT and the use of robots, drones, remote sensors, and computer imaging for crop monitoring, surveying, and mapping fields allow farmers to rationalize their farming process according to environmental needs.

In 2024, OTS announced the city of Guba in Azerbaijan as its agricultural capital.

The initiative began with the launch of the common OTS' Digital AgroData Platform. The target of the Digital AgroData Platform establishment is to promote the exchange of agricultural information among the users in member countries and to promote more simplified agri-food trade operations. We anticipate that the initiated process will foster a more favorable environment for investments in each country's agri-food sector, encompassing the adoption of eco-friendly and sustainable innovations.

It is obvious that this initiative is in full compliance with Global Strategy to improve Agricultural and Rural Statistics – GSARS[33]. The initiative to develop the Global Strategy to improve agricultural and rural statistics (GSARS) came as a response to address developing countries' lack of capacity to provide reliable statistical data on food and agriculture and to provide a blueprint for long-term sustainable agricultural statistical systems. The Global Strategy is a comprehensive framework for improving the availability and use of agricultural and rural data, necessary for evidence-based decision making[34].

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[32] Turkic Academy and OTS (2023). Report on Turkic Economies 2023: Digital Trade and Investment. Turkic Academy and the Secretariat of the Organization of Turkic States, Astana and Istanbul. https://www.turkicstates.org/assets/pdf/yayinlar/turk-ekonomileri-raporu-2023-dijital-ticaret-ve-yatirim-26-tr.pdf

[33] https://www.fao.org/policy-support/mechanisms/mechanisms-details/en/c/448087/

[34] https://www.fao.org/in-action/global-strategy-agricultural-statistics

***Picture I.1. 35 Meeting in Guba to launch the establishment of OTS' common Digital AgroData Platform***

FAO recognizes the importance of innovation and digitalization in achieving food security for all and to realize the 2030 Agenda for Sustainable Development, as outlined in the FAO Strategic Framework 2022–31[36]. Digitalization is a key element of the Regional Priorities for Europe and Central Asia[37] as an accelerator facilitating the achievement of the Sustainable Development Goals (SDGs) in the region. The digital approach in Europe and Central Asia for 2022–2030[38] emphasizes the importance of digitalization and innovation for rural areas and smallholder farmers. The approach stresses two main priorities: a) creating an enabling environment for e-agriculture through assessments, sharing good practices, and supporting strategies and digital literacy initiatives; and b) expediting the development and adoption of scalable digital agriculture solutions, services and data.[39]

The integration of digitalization in agrifood systems can further accelerate climate-resilient pathways. Earth observation, sensors, global positioning systems, the internet of things, artificial intelligence (AI) and drones can offer insights into flora, fauna, soil

[35] https://agro.gov.az/az/news/1607241

[36] FAO's Strategic Framework 2022–31 is available online at https://www.fao.org/3/cb7099en/cb7099en.pdf

[37] For more information, please see documents ERC/24/8, FAO results in the region – 2022-2023 and ERC/24/9 Priorities for FAO in the Europe and Central Asia region under the FAO Strategic Framework 2022-31."

[38] For more information, please visit https://www.fao.org/3/nn296en/nn296en.pdf.

[39] European Commission on Agriculture. 2023. Advancing the digital transformation of agriculture and rural areas through national strategies, e-Government systems, and Digital Villages - update for Europe and Central Asia. Forty-third Session, Budapest, Hungary, 2023. https://www.fao.org/events/detail/43rd-session-of-the-european-commission-on-agriculture/en

moisture, plant pests, water level and quality, and carbon content. The green[40] and digital transitions need to be viewed as a "twin transition" that highlights their interconnected nature and the importance of making simultaneous, coordinated progress on both[41]. Digitalization has a strong potential for strengthening the green transition; however, its effectiveness relies heavily on the social, technical, economic and enabling policy context it is in.

Understanding what "digital trade" refers to, and how it relates to international trade as a whole, is a crucial prerequisite of the statistical framework. Thus, building on previous measurement efforts, the

The first edition of this Handbook (OECD, WTO and IMF, 2019) combined the two key criteria of digital ordering and digital delivery to formalize for the first time a statistical definition of digital trade: "***digital trade is all international trade that is digitally ordered and/or digitally delivered***".

Digital trade transactions are a subset of existing trade transactions, as measured in international merchandise trade statistics and in international trade in services statistics.[42]

Digitalization affects international trade on many levels, by transforming the way in which goods and services are traded and by creating entirely new, internationally traded digital products. Just as importantly, digitalization also has a significant transformative impact on many existing industries: by "shrinking the space" between consumers and producers, and among producers, it provides previously unimaginable access to new markets, particularly for micro, small and medium-sized enterprises MSMEs).

International e-commerce transactions are examples of digitally ordered trade. Any e-commerce transaction involves two main parties – a buyer and a seller. Households, government bodies, or non-profit institutions serving households (NPISHs) can fill these roles in any combination. The most common and widely analyzed e-commerce flows are business-to-business (B2B) and business-to-consumer (B2C) transactions.

With the aim of facilitating trade among OTS members, it is vital to promote the implementation of e-commerce (digital) tools. In the absolute majority of cases, e-commerce refers to international trade. In practice, the functionality of any tool is determined by the standards followed. We can observe two ways of progress: a)

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[40] The term "green growth" ensures that natural resources sustainably maintain the ecosystem services on which livelihoods, diets and economic development depend. The term generally refers to the shift towards more sustainable, environmentally friendly and resource-efficient practices across various sectors, including agriculture, to address climate change and ensure long-term sustainability.

[41] European Commission, Joint Research Centre, Muench, S., Stoermer, E., Jensen, K. et al., Towards a green & digital future – Key requirements for successful twin transitions in the European Union. Publications Office of the European Union, 2022. https://data.europa.eu/doi/10.2760/97733

[42] The International Monetary Fund, the Organisation for Economic Co-operation and Development, the United Nations and the World Trade Organization. Handbook on Measuring Digital Trade. Second Edition. WTO ISBN 978-92-870-7359-4 (PDF). (2023).

developing regional e-commerce standards, including soft protocols; b) motivating all members of the organization to embrace established protocols from organizations like the Organization for Economic Cooperation and Development (OECD), United Nations Conference on Trade and Development (UNCTAD), United Nations Statistics Division (UNSD), Universal Postal Union (UPU), World Economic Forum (WEF), World Bank Group, and World Trade Organization (WTO), as well as electronic data interchange (EDI) standards. Digitalization has had a major impact on domestic and international commerce. Boosted by the COVID-19 pandemic, more people and businesses are going online to look for the goods and services they wish to purchase.[43], [44]

The shift to e-commerce brings both opportunities and challenges. It can transform economic processes, trade and consumption patterns and open up new trade and business opportunities for entrepreneurs and small businesses that would otherwise have a limited geographic footprint. E-commerce can improve export opportunities and offer better access to suppliers abroad. Consumers also stand to benefit from access to greater choice, convenience and lower prices. At the same time, various factors – including obstacles relating to ICT infrastructure and services, trade logistics, payment solutions and legal frameworks – pose critical challenges to engaging in and benefiting from e-commerce, especially in low-income countries. For countries with low levels of readiness, the growth of international e-commerce may expose local firms to increased import competition and thereby impact on employment and growth prospects.[45] The importance of innovation and digitalization to achieve food security for all and to realize the 2030 Agenda for Sustainable Development is widely recognized. It is outlined in the FAO Strategic Framework 2022–31[46] and reiterated in the FAO Science and Innovation Strategy[47]. The digital approach in Europe and Central Asia for 2022–2030 emphasizes the importance of digitalization and innovation for rural areas and smallholder farmers. The approach stresses two main priorities: a) creating an enabling environment for e-agriculture through assessments, sharing good practices, and supporting strategies and digital literacy initiatives; and b) expediting the development and adoption of scalable digital agriculture solutions, services and data.

Several digital-based solutions initiatives have already been implemented in the agriculture sector of OTS countries.

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[43] UNCTAD (2021e). Estimates of global e-commerce 2019 and preliminary assessment of Covid-19 impact on online retail 2020. Technical Notes on ICT for Development No. 18. Geneva.
[44] UNCTAD (2022c). COVID-19 boost to e-commerce sustained into 2021, new UNCTAD figures show. 25 April. Available at https://unctad.org/news/covid-19-boost-e-commerce-sustained-2021-new-unctad-figuresshow .
[45] Digital Economy Report 2024. Shaping an environmentally sustainable and inclusive digital future. United Nations publication issued by the United Nations Conference on Trade and Development UNCTAD/DER/2024.
[46] FAO's Strategic Framework 2022–31 is available online at https://www.fao.org/3/cb7099en/cb7099en.pdf.
[47] The FAO Science and Innovation Strategy is available online at https://www.fao.org/3/cc2273en/cc2273en.pdf.

Examples of these initiatives include EKTIS in Azerbaijan and AKIS in Uzbekistan, and they should be the focus of case studies for further analysis.

Another feature of today's digital reality is the proliferation of marketplaces. Such marketplaces as Wildberries, Yandex Lavka, and Ozon established their stores and branches in Kazakhstan, Azerbaijan, Uzbekistan, and Türkiye already. These marketplaces are relatively new tools in the listed countries for distributing and selling products, including foods. It is evident that these marketplaces have the potential to expand the sales channels for local producers, bringing them into a competitive environment where logistics, packaging, and payment methods play a crucial role. It is crucial to promptly assess the advantages and risks associated with marketplaces for both local producers and consumers.

Countries' expenditures for science and research are known to directly correlate with the development of innovative solutions.

Comparative analysis of OTS countries science and research expenditures is given in the table below:

**Table I.30. OTS – Science Expenditures[48]**

| Country | Researches & Development Expenditures % of GDP | | | |
|---|---|---|---|---|
| | 2019 | 2020 | 2021 | 2022 |
| Azerbaijan | 0,2 | 0,2 | 0,2 | 0,15 |
| Kazakhstan | 0,1 | 0,1 | 0,1 | 0,12 |
| Kyrgyzstan | 0,1 | 0,1 | 0,1 | 0,08 |
| Türkiye | 1,3 | 1,4 | 1,4 | - |
| Uzbekistan | 0,1 | 0,1 | 0,1 | 0,16 |
| Upper-middle income | 1,7 | 1,8 | 2,1 | - |
| World | 2,3 | 2,5 | 2,61 | - |

Sorce: WB data.

Unified approaches towards science and research expenditure could also promote further cooperation among expert communities of OTS countries.

[48]https://databank.worldbank.org/reports.aspx?source=2&series=GB.XPD.RSDV.GD.ZS&country=

## I.E.4. MILITARY CONFLICTS RELATED AGRI-FOOD SITUATION

### a) Agri-food policy measures

Currently ongoing the Russia-Ukraine conflict was a reason for disruptions in global food markets. Before delving into the measures taken by OTS members to mitigate the risks to food security, we list some actions taken by the parties involved in the war below.

Russia introduced a temporary export ban for grain (wheat and meslin, rye, barley and maize) to the EAEU countries as well as on the export of white sugar and raw cane sugar from Russia to non-EAEU countries. In April 2022, Russia suspended the grain export ban to EAEU countries, and ended the sugar ban in August 2022.

The country extended the quotas for the export of nitrogen fertilizers and complex fertilizers until 31 December 2022. The quota is around 8.3 million tons for nitrogen fertilizers and 5.95 million tons for complex fertilizers.

On 31 March 2022, Russia introduced a temporary ban on all exports of sunflower seeds and rapeseeds from 1 April to 31 August 2022. The export ban on rape seeds has been extended from 8 September 2022 until 28 February 2023. Additionally, the government introduced a 1.5 million tons quota on sunflower oil exports and a 700,000-ton limit on sunflower meal exports from 15 April until the end of August 2022. Also, the number of checkpoints for exports of soybeans and soybean meal was restricted, and export duties on sunflower meal and flaxseed were in effect from 1 May to 31 August 2022.

Ukraine has introduced “zero export quotas” for live cattle, frozen cattle meat, byproducts, rye, oats, buckwheat, millet, sugar, and edible salt from 6 March 2022.

Exports of wheat and a mixture of wheat and rye (meslin) (1001), chicken meat, and chicken eggs (0407210000) are subject to licensing by Ukraine’s Ministry of the Economy starting from 5 March 2022 (there are no export quotas for these goods).

In response to threats the OTS member-countries implemented some mitigating actions to minimize the negative impact of supply disruptions.

**Table I.31. Some mitigating steps of OTS members**

| country | Measure classification (in response to emergency) | Date of initial | Content/ info |
|---|---|---|---|
| Azerbaijan | Export regulations | 18.03.2022 | Resolution No. 103 of the Cabinet of Ministers of the Republic of Azerbaijan dated March 18, 2022 "On measures to regulate the transportation of a number of basic food products included in the minimum consumption basket and the goods used in their production from the territory of the country". https://e-qanun.az/framework/49310 |

| | | | |
|---|---|---|---|
| Azerbaijan | Purchase centralizing | 14.05.2024 | Rules on "Purchase of food products (except for food products purchased for state reserves) by purchasing organizations in a centralized manner at the expense of the state budget" #257, 14 May 2024. https://e-qanun.az/framework/56905 (Cabinet of Ministers). |
| Azerbaijan | Subsidizing of food wheat producers | 19.07.2022 | Decree of the President of the Republic of Azerbaijan on a number of measures to increase the level of self-sufficiency with food wheat. https://president.az/az/articles/view/56697 |
| Kazakhstan | Import ban | 09.04.2023 | The Republic of Kazakhstan banned for six months the import of wheat (code 100119; 100199) on the territory of the Republic of Kazakhstan' road, transport from the third countries and from the countries of the Eurasian Economic Union. https://cis-legislation.com/document.fwx |
| Kazakhstan | Export quota | 15.06.2022 | The government of Kazakhstan announced an extension of grain export quota until September 1, 2022. The export of wheat and flour will be controlled and only in the volume that will be equal to the average annual. https://kazakh-zerno.net/194729-v-kazahstane-prodljat-kvotu-na-jeksport-zerna/ |
| Kazakhstan | Unspecified production support | 25.03.2022 | The additional allocation of funds for the spring sowing, the main problems of logistics of delivery of essential commodities and supplies for agricultural production. https://primeminister.kz/ru/news/operativnym-shtabom-po-antikrizisnym-meram-rassmotreny-voprosy-agropromyshlennogo-kompleksa-2424026 |
| Kazakhstan | Tax on fuel and water | 24.03.2022 | On Amendments to the resolution of the Government of the Republic of Kazakhstan "On approval of Excise Duty Rates for gasoline, diesel fuel, gasol, benzanol, nephras, light hydrocarbon mixture and ecological fuel". https://primeminister.kz/ru/decisions/24032022-155 |
| Kazakhstan | Unspecified production support | 01.03.2022 | Provide farmers with the necessary volume of fuel and lubricants, stocks of seeds and fertilizers, purchasing agricultural products for state funds at forward prices. https://www.akorda.kz/en/state-of-the-nation-address-by-president-of-the-republic-of-kazakhstan-kassym-jomart-tokayev-17293 |

| | | | |
|---|---|---|---|
| Kyrgyzstan | Emergency step | March 2022 | The government allocated approximately $97 million to the Emergencies Ministry for the purchase of food products. |
| Kyrgyzstan | Macroeco-nomic policy | 12.03.2022 | An Anti-Crisis Committee was formed by the decision of Cabinet Ministries for prompt response to socio-economic challenges. https://www.gov.kg/ru/post/s/21041-sotsialdyk-ekonomikalyk-chakyryktarga-ykcham-chara-kr-boyuncha-antikrizistik-komitet-tzld |
| Kyrgyzstan | Export ban | 17.03.2022 | Cabinet of ministries imposed a ban on the export for 6 months by its Resolution N 140 0f 17 March 2022 for meat (fresh, chilled and frozen), feeds, barley, oats, wheat, wheat flour, vegetable oil, sunflower seeds, eggs. https://www.gov.kg/ru/npa/s/3713 |
| Kyrgyzstan | Value-added tax (VAT) | 11.03.2022 | Cabinet of Ministries exempted the Value Added Tax (VAT) on import for 6 months by its Resolution No. 137 of march 11, 2022 for sugar sand, raw cane sugar, etc. https://www.gov.kg/ru/npa/s/3719 |
| Türkiye | Export ban | 17.03.2022 | Türkiye has temporarily stopped exports of grains, oilseeds, cooking oil and other agricultural commodities due to heavily dependence on grain, oilseeds and sunflower from Ukraine and Russia. https://www.world-grain.com/articles/16636-turkey-temporarily-halts-exports-from-third-countries#:~:text=Turkey%20has%20stopped%20exports%20of,red%20lentils%20and%20dry%20beans |
| Türkiye | General Input measures | 11.03.2022 | In the scope of input support an additional 50 Turkish Lira per decare will be paid to farmers producing wheat, barley, rye, oats and triticale. https://www.resmigazete.gov.tr/eskiler/2022/03/20220311-2.pdf |
| Türkiye | Import tariff | 03.04.2022 | Turkish government removed import tariffs on vegetable oil lowering it to zero until end of June 2022. https://www.resmigazete.gov.tr/eskiler/2022/03/20220304-10.pdf |

| | | | |
|---|---|---|---|
| Türkiye | Export ban | 20.03.2022 | Depending on the expanded regulation dated 4 March, MoAF banned exports of: soybean oil, sunflower-seed oil, safflower and cotton-seed oil, rapeseed/canola (colza) oil and mustard oil, corn (maize) oil. https://www.resmigazete.gov.tr/eskiler/2022/03/20220304-5.htm |
| Türkiye | Measures that effect import. | 03.03.2022 | Mandatory official certificates and documents will not be sought during official controls in the import or transit trade of agricultural products loaded from Ukraine. https://www.resmigazete.gov.tr/eskiler/2022/03/20220303-5.pdf |
| Uzbekistan | Seed production | 22.01.2023 | Resolution of the President of the Republic of Uzbekistan on additional measures for the further development of agricultural seed production. https://agroinspeksiya.uz/oz/menu/ukazy-i-postanovlenija-prezidenta-respubliki-uzbekistan |
| Uzbekistan | Export | 12.09.2023 | The government of Uzbekistan announced a plan to expand the range of agricultural product exports to Russia. https://www.hortidaily.com/article/9557903/uzbekistan-expands-the-range-of-agricultural-product-exports-to-russia/ |
| Uzbekistan | Food security | 31.03.2022 | Uzbekistan passed a decree "On additional measures to ensure food security and price stability in the domestic market". https://lex.uz/docs/5933102?otherlang=1 |

Source: Countries' chapters.

**a) Agri-food related concerns**

Agrifood export earnings, in particular in Kazakhstan, Kyrgyzstan and Uzbekistan, where the share of Russia in total agrifood exports is roughly one third, will depend on the evolution of Russian demand and the continued functioning of supply chains. At the regional level, fruits and vegetables are by far the largest category in agrifood exports to Russia, with Uzbekistan being the largest supplier.[49]

Trade with Russia and intra-regional agrifood trade are critical for meeting the food needs of the populations of Central Asian countries.

Dependence on fertilizer imports in the region is also high: a quarter of 2021 fertilizer imports in Uzbekistan (also a major fertilizer exporter to Tajikistan), more than one third in Kyrgyzstan and close to three-quarters in Kazakhstan was imported from Russia. For example, 70 percent ($87 million) of imported fertilizers in Kazakhstan were of Russian origin in 2021. In Kyrgyzstan, the share of fertilizers from Russia was 35

[49] World Bank Group, 2022. Agrifood trade and food security in Central Asia: Possible implications of the war in Ukraine. https://documents1.worldbank.org/curated/en/099614301182328659/pdf/IDU099aa8f43031360476b0ba0e0c5517feb727f.pdf

percent ($14 million). It should be noted that Uzbekistan is a net exporter of fertilizers, with most exports destined to other Central Asian countries. An average dependency on nitrogenius fertilizers during 2018-2020 years originating from Rusian Federation (mutually with Belarus) for Azerbaijan and Türkiye were 85% and 5,7% relatively. For potassium fertilizers respectively 39,2% and 69,3%.[50]

In general, for OTS members, the risks relate to supplies from Russia and Ukraine, prices (high and volatile prices on food, fertilizers and energy), logistics (with disruptions in both inland infrastructure in Ukraine and Black Sea ports and maritime transport) and macroeconomic instability.

Kazakh logistics companies raised concerns that because most Kazakh cargo is shipped through Russian ports, the major international shipping companies have refused to accept Kazakh cargo. This includes the transhipment transit ports of Antwerp, Hamburg, Rotterdam, and Mugga that refused to accept cargo from both Kazakhstan and Russia.

Two agreements concerning the Black Sea Trade Initiative on the safe transportation of grain and foodstuffs from Ukrainian ports were signed on 22 July 2022 in Türkiye: (1) Ukraine, Türkiye and the United Nations Secretary-General, and (2) the Russian Federation, Türkiye and the United Nations Secretary-General. The Initiative aims to establish a corridor for the export of agricultural products from three Ukrainian ports. From July 2022 to July 2023, the shipments facilitated by the Black Sea Grain Initiative (BSGI), brokered by the United Nations and Türkiye, eased pressure on international supplies, and most importantly, on humanitarian food aid. Nearly 33 million tonnes of grains, maize and other agricultural commodities were exported from Ukraine through this agreement, with over half going to low and middle-income countries and humanitarian operations in Afghanistan, Ethiopia and Somalia.[51]

Most researchers and experts agree that if the war in Ukraine lasts longer, there may be a lot more people who aren't getting enough food in import-dependent countries, like OTS member countries. This is because the global food supply will be smaller and people will have a harder time getting food because prices are going up.

Here we should add that another armed conflict which caused and impacted on food insecurity on the territory of OTS members (undoubtedly, mainly in Türkiye) is the 13-year conflict in the Syrian Arab Republicç which is at the root of Syrian refugees' acute food insecurity. Conditions in their home country are not yet conducive for large-scale voluntary returns in safety and dignity. 4 000 people or 8% of Türkiye's 52 500 registered Syrian refugees living in camps faced high levels of acute food insecurity (Global Report on Food Crises, 2024).[52] No analysis was available for the more than 3 million Syrians in Türkiye living outside of camps. High inflation and currency fluctuations are straining both refugees and host communities. Official figures in September 2023 put inflation at 61.5 percent, with disproportionate impact on low-income households, especially in transport, food and housing. Some 85 percent of Syrian families reported a deterioration/ decline in their financial situation in the past year and 92 percent reported not being able to cover all their monthly basic households needs.

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[50] Joseph Glauber and David Laborde, 2022. How will Russia's invasion of Ukraine affect global food security? https://www.ifpri.org/blog/how-will-russias-invasion-ukraine-affect-global-food-security/

[51] Global Report on Food Crises, 2024. https://www.fsinplatform.org/sites/default/files/resources/files/GRFC2024-focus-ukraine.pdf .

[52] FSIN and Global Network Against Food Crises. 2024. GRFC 2024. Rome. https://www.fsinplatform.org/grfc2024

## I.E.5. OTS AGRI-FOOD PLATFORM ANALYSIS

OTS's clear understanding of prioritizing food security issues, unifying the investment approach, commitment to international trade rules, and strong position in achieving the SDGs' targets justifies the rationality of developing common policies related to food security and sustainable development goals. Before to formulate the recommendations and policy postulates it looks practical to provide so-called "**SWOT-analysis**" of current situation which is reflected in table below.

**Table I.32. Current situation analysis**

| OTS common agri-food platform | | | | | |
|---|---|---|---|---|---|
| **Indica-tor/#** | **Strength** | **Weakness** | **Opportunities** | **Threats** | **Country/crops specifics** |
| 1. | Existence of geographically close mapping and mutual natural (water) resources | Comparatively expensive logistics | Possibility to use "one belt, one road" infrastructure and to boost regional value chains; | Compa-ratively high level of poverty | Strength (1): It simplifies the traceability of transportation networks. |
| 2 | Strongly institutiona-lized political willingness | Weak infrastructure of storage units | Significant squares of agricultural lands; | Water scarcity | Strength (2): Vision 2040; Strategy 2026. |
| 3 | Regime of free trade among members | Lack of highly qualified agronomists and veterinarians in a broad sense | Geographically and naturally determined opportunities for agri-foods production specialization disseminated among members | Land degradation | Opportunities (3): cereals specialization in Kazakhstan, cotton specialization in Uzbekistan, shipping in Kyrgyzstan. |
| 4 | Similar land ownership and tenure | Low level of cooperation among farmers, | Mutual recognition of agri-food standards | "landlocked" status for rapid further export growth | Weakness (4) mainly refer to Azerbaijan and countries of CA |
| 5 | Similar cuisine traditions | Very low researches expenditures in all members as a share of Agri- GDP | Affiliation with different regional organizations such as Euroasian Union, Shanghay group, OEC, etc. | Spontaneous competition on the markets of third countries | Weakness (5): often this parameter deepens due to ineffective use of obtained resources; |

| | | | | | |
|---|---|---|---|---|---|
| 6. | Rather easy steps to be included and to be a part of Global Value Chains. | Weak development of early awareness instruments; | Explore the opportunities of Turkic Investment Fund and members bilateral investment funds | Climatic factors including reduction of mirror of Caspian surface; | Opportunity (6) examples: Azerbaijan-Kyrgyz Investment Fund with initial capital of 100 million dollars; |
| 7. | Rather big size of internal consuming market; | Low level of coordination in food safety sphere; | Due to rather squares of agricultural land and unique climatic zones spread there are niches to develop ecological and organic agriculture in all members; | Limited access to buy-sell agricultural plots in foreign countries (member states) with aim for further investments; | Strength (7): Total population of OTS countries reached up to 175 million. |
| 8. | Diversified and intensive internal destination tools (aviation, railroads, highways); | Prevalence of raw agri-foods in export | There are opportunities to organize farmers' fields schools very easily due to absence of language barrier; | High level of different crops and products' export dependence from Russian market; | Threat (8): in some case a linkage to the Russian market reaches up to 95 %. |
| 9. | Young population in member states in general and in rural areas particularly, allow to plan long investments; | All members face with insufficient level of vocational education | Taking into account the high vulnerability of national currencies the Islamic financial tools could be used as an investment; | High vulnerability of national currencies and their dollar ratios; | Threat (9): this factor mostly impacts on vulnerable groups through price growth in imported part of food consumption; |
| 10. | Kazakhstan and Uzbekistan produce most of the fuel used for agricultural needs themselves, so the governments have tools to neutralize any serious increase in prices for fuel. | High dependence of budgetary transfers from oil-gas sector. | Explore the communication channels of Turkic Network of Official Economic Policy Research Centers (ERCNET). | Rising input prices, in particular the prices of fertilizers, are expected to negatively affect the profit margins of OTS farmers. | Threat (10): Due to fuel (inputs) price growing in Russia the sowing cost rise in autumn of 2024 is expected around 15-25 %. This is very actual for OTS member who are planning to import the grains from Russia withing 2024/25 season. |

Source: Author's analysis.

Conventionally, majority of food security problems and risks are mirrored in such indicator as food inflation. According to WBG the OTS countries had a food' inflation indicators as below in table # **I.33** [53]

**Table I.33. Food inflation indicators**

| Period / Country | Jun-2023 | Jul-2023 | Aug-2023 | Sept-2023 | Oct-2023 | Nov-2023 | Dec-2023 | Jan-2024 | Feb-2024 | Mar-2024 | Apr-2024 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Azerbaijan | 11.7 | 9.9 | 7.6 | 4.7 | 3.2 | 1.6 | 0.9 | 0.8 | -0.3 | -1.2 | -1.8 |
| Kazakhstan | 14.6 | 13.5 | 12.4 | 11.4 | 10.4 | 9.2 | 8.5 | 8.2 | 7.4 | 6.9 | 6.3 |
| Kyrgyzstan | 6.6 | 6.7 | 5.5 | 5.7 | 5.5 | 3.9 | 3.2 | 1.8 | 0.3 | 0.8 | 0.9 |
| Türkiye | 54.1 | 61.0 | 73.6 | 75.7 | 72.1 | 67.3 | 72.2 | 69.6 | 71.0 | 70.5 | 68.4 |
| Uzbekistan | 10.6 | 10.9 | 10.7 | 11.2 | 11.1 | 10.3 | 9.9 | 9.3 | 8.8 | 7.9 | 7.1 |

*Source: International Monetary Fund, Haven, and Trading Economics data. Food inflation is calculated from the food and non-alcoholic beverages component of the Consumer Price Index for each country.

| Color code | Indicator |
|---|---|
| | Price increase less than 2 percent |
| | Price increase between 2 and 5 percent |
| | Price increase between 5 and 30 percent |
| | Price increase 30 percent or higher |

The food price inflation tracker shows monthly food inflation (year on year) for countries for which data are available. According to Haver Analytics, the International Monetary Fund is the primary data source for food inflation. A traffic light approach was adopted to show the severity of food inflation, and the color coding was determined based on historical food price inflation targets and expert consultation with the World Bank Agriculture and Food Unit.

The data tabled above clearly shows that Türkiye experienced the highest food inflation during the 2023–2024 years period. Kazakhstan and Uzbekistan demonstrated more or less the identical level of food inflation. Azerbaijan and Kyrgyzstan demonstrated lower levels of food inflation, though both countries increased the volume of food imports.

[53] Food-Security-Update-CVII-June-27-2024. https://thedocs.worldbank.org/en/doc/40ebbf38f5a6b68bfc11e5273e1405d4-0090012022/related/Food-Security-Update-CVII-June-27-2024.pdf?_gl=1*1t69zf4*_gcl_au*ODExNjg2MTM3LjE3MjE1NzIzODg.

# I.F. SDGS

## I.F.1. SDG targets

**Food production and food security contribute to fulfilling the SDG targets**

The 2030 Agenda for Sustainable Development, including the 17 Sustainable Development Goals (SDGs), are new global objectives that succeeded the Millennium Development Goals on 1 January 2016. The SDGs will shape national development plans over the next 15 years. From ending poverty and hunger to responding to climate change and sustaining our natural resources, food and agriculture lie at the heart of the 2030 Agenda.

**Bridging and aligning national and regional priorities and global commitments in the context of UNFCCC COP29**

Agriculture is an important contributor to global greenhouse gas (GHG) emissions. According to the Intergovernmental Panel on Climate Change (IPCC), more than 20 percent of all global GHGs are emitted in the agriculture sector (IPCC, 2019)[54]. Agriculture is thus the second largest sector to contribute to global warming after the energy sector. Moreover, agriculture contributes to several other key environmental challenges, including the biodiversity loss.

Much of the anthropogenic GHG emissions are not from the well-known $CO_2$, but from methane ($CH_4$) and the, often overlooked, nitrous oxide (N2O). Nitrous oxide comprises approximately 6 percent of GHG emissions, and about three-quarters of those N2O emissions originate from agriculture, especially because of the heavy use of synthetic nitrogen fertilizer. Methane, in turn, is responsible for around 30 percent of the rise in global temperatures. Agriculture is the most important anthropogenic source, generating around one-quarter of methane emissions. This study also evaluates several other environmental outcome indicators, such as protected environmental areas, where the long-term conservation of nature limits the exploitation of natural resources like firewood, non-timber forest products, and water.

The United Nations Climate Change Conferences serve as key platforms to drive global transformation towards a low-emission and climate-resilient world. The United Arab Emirates hosted the 2023 United Nations Climate Change Conference (COP28) in

[54] IPCC (Intergovernmental Panel on Climate Change). 2019. Climate change and land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems. Shukla, P. R., Skea, J., Calvo Buendia, E., Masson Delmotte, V., Pörtner, H. O., Roberts, D. C. and Malley, J. (Eds) Geneva, IPCC. https://www.ipcc.ch/site/assets/uploads/2019/11/SRCCL-Full-Report-Compiled-191128.pdf

Dubai in December 2023, achieving significant milestones such as concluding the first global stock-take and operationalizing the loss and damage fund. Agrifood systems took center stage, with several important achievements, such as the COP28 UAE Declaration on Sustainable Agriculture, Resilient Food Systems, and Climate Action, endorsed by 159 countries. UNFCCC COP28 also saw the inception and launch of several key initiatives. The Food and Agriculture for Sustainable Transformation (FAST) Partnership, facilitated by a task force hosted by FAO and funded by the Federal Ministry of Food and Agriculture of Germany, aims to improve the quantity and quality of climate finance to accelerate the transformation of agrifood systems. Additionally, the Agrifood Sharm-el-Sheikh Support Program, introduced by the COP28 United Arab Emirates Presidency, FAO, CGIAR, and the World Bank, facilitates dialogue and the sharing of knowledge among global and regional policymakers.

The 2024 United Nations Climate Change Conference (COP29) in Baku, Azerbaijan, to be held from 11 to 22 November 2024, will offer an opportunity to highlight national and regional priorities in climate action and focus on the transformative potential of agriculture in the context of climate change, while ensuring global food security. With the negotiations aimed at establishing a new collective quantified goal on climate finance at UNFCCC COP29, one of the key priorities highlighted by Azerbaijan is addressing the climate finance gap. This will be important for the transition to a low-emissions economy, while supporting adaptation and loss and damage needs, including with a focus on agrifood systems[55].

The FAO assessed GHG emissions in OTS countries as shown in Table # 34 below.

**Table I.34. Greenhouse Gas Emissions from Agrifood Systems, 2021 (Million Tons $CO_2$ EQ)[56]**

| Country | COMPONENT | | | GREENHOUSE GAS | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|
| | FARM GATE | PRE-&-POST-PRODUCTION | LAND-USE CHANGE | $CO_2$ | $CH_4$ | $N_2O$ | F-GASES | ∑= |
| World | 7 792.2 | 5 334.1 | 3 101.2 | 8 174.8 | 5 264.5 | 2 303.5 | 484.8 | 16 227.5 |
| Azerbaijan | 10.1 | 7.4 | 0.5 | 6.6 | 6.5 | 3.8 | 1.1 | 18.0 |
| Kazakhstan | 33.1 | 25.4 | 0.0 | 24.5 | 23.2 | 10.2 | 0.7 | 58.5 |
| Kyrgyzstan | 6.0 | 1.8 | 0.0 | 0.9 | 5.1 | 1.7 | 0.1 | 7.8 |
| Türkiye | 73.6 | 78.6 | 0.0 | 55.3 | 59.2 | 31.5 | 6.3 | 152.3 |
| Uzbekistan | 45.1 | 21.1 | 0.0 | 21.0 | 28.9 | 16.1 | 0.1 | 66.1 |
| OTS | 167.8 | 134.3 | 0.5 | 108.1 | 122.9 | 63.3 | 8.3 | 302.6 |

[55] 34th Session of the Regional Conference for Europe (ERC 34). 14-17 May 2024. Concept Note. Rome. https://openknowledge.fao.org/server/api/core/bitstreams/49df74f8-387b-4744-9e08-9aa38d845ee2/content

[56] FAO. 2023. World Food and Agriculture – Statistical Yearbook 2023. Rome. https://doi.org/10.4060/cc8166en

So, the summarized volume of emitted GHGs by OTS's five members' agri-food sector is equal to 302.6 million tons of $CO_2$ equivalent.

It is widely recognized that soil serves as an ideal environment for capturing and storing greenhouse gases. Approved and recognized volumes of captured GHGs may include other products from the agri-food sector, in line with the global trend of the SDGs.

According to documents of FAO Regional Conference for Europe (2024) with covering OTS countries:[57]

- Climate change poses a significant threat to agrifood systems in Europe and Central Asia, with the region experiencing rising temperatures, changes in precipitation patterns and increased climate uncertainties, including extreme events. Central Asia, in particular, is highly vulnerable, facing potential temperature increases of up to 6.5 °C by the century's end.[58],[59],[60],[61]
- The 2023 United Nations Climate Change Conference (COP28) emphasized the transformative potential of agriculture and food systems in addressing climate change and promoting shared prosperity. The COP 28 UAE Declaration on Sustainable Agriculture, Resilient Food Systems, and Climate Action[62] highlighted the need for urgent commitments, including scaling up adaptation efforts, strengthening the integrated management of water in agriculture and food systems, providing financial and technical support, and fostering innovative solutions for sustainable food security.

[57] 34th Session of the Regional Conference for Europe (ERC 34). 14-17 May 2024. Rome. The role of innovation and digitalization in the sustainable use of natural resources to accelerate the implementation of climate-resilient and low-emission pathways in agrifood systems. https://openknowledge.fao.org/server/api/core/bitstreams/019ae381-8546-4cce-b224-b04a761bd57e/content

[58] Intergovernmental Panel on Climate Change (IPCC). Climate Change 2022 – Impacts, Adaptation and Vulnerability: Working Group II Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge>Cambridge University Press, 2023. https://doi.org/10.1017/9781009325844

[59] Reyer, C.P., Otto, I.M., Adams,] et. al. Climate change impacts in Central Asia and their implications for development. Reg Environ Change 17,1639–1650 (2017). https://doi.org/10.1007/s10113-015-0893-z

[60] Shaw, R., Luo, T.S., Cheong, S., Abdul Halim, S., Chaturvedi, S., Hashizume, M., Insarov, G.E. et al. 2023. Asia. In: Climate Change 2022 – Impacts, Adaptation and Vulnerability: Working Group II Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. First edition, p. Cambridge University Press.

[61] World Meteorological Organization. 2023. State of the Climate in Europe 2022. Geneva, WMO. https://library.wmo.int/records/item/66206-state-of-the-climate-in-europe-2022.

[62] COP28 UAE. 2023. COP28 UAE Declaration on Sustainable Agriculture, Resilient Food Systems, and Climate Action. In: COP28 UAE. [Cited 9 January 2024]. https://www.cop28.com/en/food-and-agriculture

- In areas that are water scarce and rely on irrigation, careful water management is important to ensure resources are used optimally.[63]
- In Europe and Central Asia, reductions in precipitation, inefficient irrigation methods and a lack of integrated management have led to significant water scarcity.
- More than half of the land under agricultural use in Central Asia is salinized due to unsustainable agricultural practices such as overgrazing, excessive use of chemical fertilizers and pesticides, improper water management and irrigation techniques, and monoculture farming. In western and northern Europe, land degradation is a consequence of land-use change through increased urbanization and the development of new infrastructure, while in the Mediterranean region, soil degradation is primarily caused by soil loss through erosion.[64]

Digital technologies and innovations at many levels, including technological, institutional, social, policy, and financial, can be key parts of integrated approaches to managing natural resources in a way that fights climate change, lowers emissions, and keeps food security. Below, we provide selected examples of regional and global innovations and digital solutions.

1. Azerbaijan, Kyrgyzstan, Türkiye and Uzbekistan – are actively implementing the FAO's flagship **1000 Digital Village Initiative**. For example, in the Fergana Valley of Uzbekistan, smallholder farmers from pilot villages are embracing smart sensors based on the internet of things and open-source technologies to optimize resource efficiency in greenhouse farming.

2. **The Land Degradation Neutrality (LDN)** decision support system for Europe and Central Asia is a tool that brings together information to help find places where landscape changes should be made in order to reach neutrality. The system is based on a Google Earth Engine application. Türkiye has proactively developed a sustainable land management action plan for LDN, strategically outlining measures to prevent, mitigate, or reverse land degradation.

3. The **Central Asia Water and Land Nexus** program, coordinated by FAO and funded by the Global Environment Facility (GEF) with USD 26 007 810, aims to address complex water and land management challenges in Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. The program plans to restore 5 350 ha of land, implement improved practices on 1 329 000 ha, mitigate 11 118 670 tons of greenhouse gas emissions, and directly benefit 487 000 people, contributing to increased climate resilience and improved livelihoods in the region.

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[63] European Commission on Agriculture. 2023. Importance of water governance for enhancing water security in Europe and Central Asia. Forty-third Session, Budapest, Hungary, 2023. https://www.fao.org/events/detail/43rd-session-of-the-european-commission-on-agriculture/en

[64] European Commission on Agriculture. 2023. Sustainable use of land and water resources in Europe and Central Asia. Forty-third Session, Budapest, Hungary, 2023. https://www.fao.org/events/detail/43rd-session-of-the-european-commission-on-agriculture/en

4. **The Integrated Natural Resources Management in Drought-prone and Salt-affected Agricultural Production Landscapes in Central Asia and Turkey (CACILM-2)** project in Kyrgyzstan installed remote sensors and associated software to enable real-time, continuous monitoring of water levels.

5. Across Europe and Central Asia, several digital solutions are transforming forest management practices. Azerbaijan, Kyrgyzstan, and Türkiye utilize global positioning systems and similar tools to streamline forest data collection, sharing, and reporting processes. The integration of computer technology and mass media equipment facilitates effective communication and outreach activities across the forestry sector.

6. **The EX-Ante Carbon-balance Tool (EX-ACT)** assists users in estimating and tracking the outcomes of agricultural interventions on emissions and covers the entire agricultural sector, which includes agriculture, forestry, land use, inland and coastal wetlands, fisheries and aquaculture, as well as agricultural inputs and infrastructure.

7. The Regional Technical Platform on Green Agriculture, the regional AgriTech Observatory, and the World Overview of Conservation Approaches and Technologies (WOCAT) are among the instruments expected to be widely implemented in the countries of CA, Azerbaijan, and Türkiye.

The World Program for the Census of Agriculture (2016-2025, FAO) provides support and guidance to countries to carry out national agricultural censuses. Data collected provides a snapshot of the state of a country's agricultural sector - from size of holdings, land tenure, land use, area harvested, irrigation, livestock, labor and other agricultural inputs. This information is vital in agricultural planning and policy-making, research and development and monitoring the impact of agriculture on the environment[65]. New data collection technologies have been included into new set of guidelines to drastically reduce the time lag between data collection and data analysis. Additional data domains have been included/proposed, such as fisheries and GHG emissions to aid monitoring the achievement of Sustainable Development Goals (SDGs). Among the new methodologies proposed, there is also a renewed approach for assessing food security by reviewing the severity of food insecurity as experienced by individuals in the population.

In order to limit the impacts of climate change, the Intergovernmental Panel on Climate Change (IPCC) has recommended a 1.5°C threshold for warming, which is based on scientific evidence. This has formed an important part of the Paris Agreement, in which over 190 countries committed to a legally binding international treaty on climate change, and it involves them submitting their plans for climate action known as nationally determined contributions (NDCs).

As part of these NDCs, the food system has a huge role to play in helping us stay below the 1.5°C threshold[66].

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[65] https://www.fao.org/world-census-agriculture/en/

[66] https://www.eitfood.eu/blog/5-ways-the-food-system-can-mitigate-the-impacts-of-climate-change

The IPCC's Sixth Assessment Report found that the Agriculture, Forestry, and Other Land Uses (AFOLU) sector, on average, accounted for up to 21% of global total anthropogenic greenhouse gas (GHG) emissions between 2010-2019 (3). This impact highlights the urgent need for system change within the agrifood sector but also presents the huge opportunity that a sustainable food system has to have a positive impact on our environment.

Here are 5 ways the food system can mitigate the impacts of climate change:

Increase sustainable and regenerative agriculture

Reduce loss of natural landscapes and increase biodiversity

Support local food production

Promote a dietary shift and increase protein diversification

Implement sustainable food packaging solutions.

For effective resilience systems' establishment, the periodicity of censuses is of crucial importance. On the eve of 2030 as an overall reporting date, it looks rather rationale to carry simultaneous census data collection. Using a methodical approach would be the best way to further develop a common agri-food policy within the organization's strategy. The recommended year for the census is 2026. Covering years are 2020-2025. We recommend training around 300 service personnel as a preparatory step, proportionate to the number of households in member countries, under the methodological patronage of FAO.

It is known that all OTS member countries simultaneously enter into UNECE group which totally unites 56 countries. One of the last publications of UNECE (2024)[67] in relation to SDGs indicates that:

- The region is not on track to reduce **poverty** by half by 2030 (goal 1);
- On **food security and diversity** (goal 2) no target is on track. The region has witnessed a continuous decrease in the orientation of government expenditures towards agriculture (indicator 2.a.1);
- Water use across the region is becoming more efficient (indicator 6.4.1) and stress on freshwater resources is decreasing (indicator 6.4.2);
- In most countries, subsidies related to fossil fuel consumption and production (target 12.c) have recently begun to increase.

In 2024 as a first among OTS countries, the Republic of Azerbaijan will host COP29. Baku Global Climate Transparency Platform (BTP) has been launched. The COP29 Presidency is committed to advancing climate transparency and supporting capacity-building efforts in developing countries, with the BTP representing COP29's contribution to these collective efforts. The BTP is designed to build mutual trust and confidence among Parties, support developing countries in preparing and finalizing their BTRs,

[67] UNECE, 2024. GENEVA, Switzerland. Sustainable development in the UNECE Region: Facing a Headwind in 2024. http://www.unece.org , http://creativecommons.org/licenses/by/3.0/igo/ .

encourage universal participation in the Enhanced Transparency Framework, and advance the transparency agenda beyond COP29. Through the BTP, COP29 will cooperate with existing transparency platforms to ensure coherence, enhance the effectiveness of collective efforts, and provide a space for collaboration and coordination among stakeholders from all parts of society.

Being based on multidimensional approach It is recognized that the concept of the ***hidden costs*** and benefits of agrifood systems promote to better prepare decision-makers for actions to steer agrifood systems towards environmental, social and economic sustainability. The interactions of agrifood systems with the environment, the economy, nutrition, health and society are ultimately connected to the SDGs. Of particular relevance is the impact agrifood systems transformation can have on SDG 1 (No Poverty), SDG 2 (Zero Hunger) and SDG 3 (Good Health and Well-being) as a result of the relevance of agrifood systems to agricultural productivity, rural livelihoods, health, food security and nutrition. The true cost accounting (TCA) approach creates an unprecedented opportunity for such comprehensive assessments – it is defined as a holistic and systemic approach to measure and value the environmental, social, health and economic costs and benefits generated by agrifood systems to facilitate improved decisions by policymakers, businesses, farmers, investors and consumers.

The true cost accounting (TCA) approach creates an unprecedented opportunity for such comprehensive assessments – it is defined as a holistic and systemic approach to measure and value the environmental, social, health, and economic costs and benefits generated by agrifood systems to facilitate improved decisions by policymakers, businesses, farmers, investors, and consumers. The global **quantified hidden costs of agrifood systems were approximately 12.7 trillion 2020 PPP dollars** in 2020. This includes environmental hidden costs from GHG and nitrogen emissions, water use, and land-use change; health hidden costs from losses in productivity due to unhealthy dietary patterns; and social hidden costs from poverty and productivity losses associated with undernourishment. When compared to the value of the world's economy, these are equivalent to almost 10 percent of global GDP PPP in 2020. These costs per day are equivalent to 35 billion 2020 PPP dollars. Globally, the quantified hidden costs are equivalent, on average, to almost 10 percent of 2020 GDP in PPP terms. However, this share is far higher in low-income countries, at an average of 27 percent. The ratio of hidden costs to GDP is 12 percent and 11 percent in lower- and upper-middle-income countries, respectively. In upper-middle-income countries, the majority of hidden costs come from unhealthy dietary patterns. The same is true in high-income countries, where the ratio of all quantified hidden costs is only 8 percent.

**Table I.35. Environmental, social and health hidden costs (in millions $), 2020** [68]

| COUNTRY/ TERRITORY | TOTAL HIDDEN COSTS | ENVIRONMENTAL | | | | SOCIAL | | HEALTH |
|---|---|---|---|---|---|---|---|---|
| | | Climate | Blue water withd-rawal | Land | Nitro-gen | Agrifood worker poverty | Burden of disease (undernou-rishment) | Burden of disease (dietary patterns) |
| WORLD | 12 748 916 | 854 817 | 105 126 | 392 295 | 1 515 549 | 519 904 | 51 036 | 9 310 188 |
| Azerbaijan | 27 835 | 891 | 401 | 283 | 1 683 | 129 | | 24 450 |
| Kazakhstan | 42 384 | 3 387 | 243 | (1) | 1 795 | 6 | - | 36 953 |
| Kyrgyzstan | 5 551 | 495 | 513 | 31 | 388 | 137 | 17 | 3 970 |
| Türkiye | 189 781 | 8 146 | 7 257 | 18 545 | 54 042 | 207 | | 101 585 |
| Uzbekistan | 45 399 | 3 816 | 2 948 | 2 575 | 1 617 | 338 | | 34 104 |
| OTS | 310 950 | | | | | | | |

For the first time since the launch of the SOFA publication in 1947, FAO is dedicating two consecutive issues to the theme of uncovering the true impacts, both positive and negative, of agrifood systems for informed decision-making. Therefore, the 2024 edition will continue the theme of SOFA 2023, "Revealing the true cost of food to transform agrifood systems." The report presents True Cost Accounting (TCA) – an evolving holistic and systemic approach to measure and value the environmental, social, health, and economic costs and benefits associated with economic systems – as an approach to making the hidden costs and benefits of agrifood systems explicit to improve business, consumer, investor, and/or policy decisions. This is critical to transforming agrifood systems towards sustainability.

Results of main food security-related SDG monitoring are compilated and given in tables # 36 and relay on countries chapter authors.

[68] FAO. 2023. The State of Food and Agriculture 2023 – Revealing the true cost of food to transform agrifood systems. Rome. https://doi.org/10.4060/cc7724en

## I.F.2. SDG'S INDICATORS MONITORING

Countries linked the indicators' monitoring results are tabulated in table I.36 below:

**Table I.36: SDGs' indicators current monitoring results.**

| **Country** | **SDG** Indicator | **Definition/** Custodian International Agency | **International Monitoring Results** (measured indicator) | **National Implementation Institution Assessment** |
|---|---|---|---|---|
| **SDG 1** | | **NO POVERTY/** FAO | End poverty in all its forms everywhere. | |
| Azerbaijan | Indicator 1.4.2 | Proportion of total adult population with secure tenure rights to land. | Data collection is planned. | The State Statistical Committee of the Republic of Azerbaijan. |
| Kazakhstan | | | According to the UN Sustainable Development Solutions Network's (SDSN) SUSTAINABLE DEVELOPMENT REPORT 2024, Kazakhstan in the past years made a significant achievement in implementing SDG 1, which made it possible to mark SDG1 for Kazakhstan as SDG ACHIEVED (already maintaining SDG) | According to the latest data of Bureau of National Statistics, in 2021, 4.36% of adult population have secure land rights (Male- 7.43%, female- 1.55%). The Committee of Land Administration of the Ministry of Agriculture of the Republic of Kazakhstan is a national implementation institution. |
| Kyrgyzstan | | | No data available | Currently not developed |
| Türkiye | | | No data available | The source is being investigated |
| Uzbekistan | | | Approximately 40% of adults in Uzbekistan have secure land rights. | The Republic of Uzbekistan State Committee on Land Resources and Geodesy Cartography oversees land tenure issues. |

| | | | | |
|---|---|---|---|---|
| Azerbaijan | Indicator 1.5.2 | Direct economic loss attributed to disasters in relation to global gross domestic product (GDP). | The source is being investigated | The State Statistical Committee of the Republic of Azerbaijan. |
| Kazakhstan | | | According to the UN Sustainable Development Solutions Network's (SDSN) SUSTAINABLE DEVELOPMENT REPORT 2024, Kazakhstan in the past years made a significant achievement in implementing SDG 1, which made it possible to mark SDG1 for Kazakhstan as SDG ACHIEVED (already maintaining SDG) | According to the latest data of Bureau of National Statistics, in 2022, direct economic losses due to disasters amounted to 16.5 billion tenge or 7.3% of GDP in 2022. The Ministry for Emergency Situations of the Republic of Kazakhstan is a national implementation institution. |
| Kyrgyzstan | | | No data available | In 2022 direct economic losses assessed – 4599.53 mil. KGS (Kyrgyz Som) |
| Türkiye | | | No data available | The source is being investigated |
| Uzbekistan | | | Direct economic losses due to disasters amount to 0.5% of GDP. | The Ministry of Emergency Situations monitors and assesses economic losses resulting from disasters. |

| SDG 2 | | ZERO HUNGER/ FAO | End hunger, achieve food security and improved nutrition and promote sustainable agriculture. | |
|---|---|---|---|---|
| Azerbaijan | Indicator 2.1.1 | Prevalence of undernourish-ment | Prevalence of undernourishment was 2,5% in 2022 | The State Statistical Committee of the Republic of Azerbaijan. |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, Kazakhstan neither progressed, nor regressed, in implementing SDG 2, which marked the level of implementation as STAGNATING. | According to the latest data of Bureau of National Statistics, in 2022, on average 8.4% of the population was undernourished (10.4%- in urban area, 5.1% - rural). The Ministry of Healthcare and the Ministry of Agriculture of the Republic of Kazakhstan are both national implementation institutions. |
| Kyrgyzstan | | | In 2021 – 5,5% (UN Statistics) | Prevalence of undernourishment (percentage of the population consuming less than 2100 kcal per day): In 2022 – 6,1%. |
| Türkiye | | | The proportion of population suffering from hunger was reduced to 2.5% in 2022. | It was 3.9% in 2001 |
| Uzbekistan | | | Around 7.1% of the population of Uzbekistan is undernourished. | The Ministry of Health in the Republic of Uzbekistan implements nutrition and food security programs. |

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|---|---|---|---|---|
| | Indicator 2.1.2 | Prevalence of moderate and severe insecurity | Food Insecurity Experience Scale (FIES) | |
| Azerbaijan | | | Data collection is planned. | The State Statistical Committee of the Republic of Azerbaijan. Custodial Agency-FAO. |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, Kazakhstan neither progressed, nor regressed, in implementing SDG 2, which marked the level of implementation as STAGNATING. | According to the latest data of Bureau of National Statistics, in 2022, 1.8% of the population experienced moderate or severe food insecurity, and 0.7% - severe food insecurity. The Ministry of Agriculture of the Republic of Kazakhstan is a national implementation institution. |
| Kyrgyzstan | | | The total population suffering from moderate or severe food insecurity increased from 383.2 thousand people in 2017 to 465.7 thousand people in 2022. Current status – close to target (FAO, 2022). | In 2021 – 450.1 thousand people. Deterioration/movement away from the target. |
| Türkiye | | | Data not available (FAO, 2024) | Data collection is planned. |
| Uzbekistan | | | Approximately 13.2% of the population of Uzbekistan experiences moderate or severe food insecurity. | The Ministry of Agriculture and the Ministry of Health in Uzbekistan are working together to address food insecurity. |

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|---|---|---|---|---|
| | 2.2.1 | Prevalence of stunting among children under 5 y. of age/ UNICEF, WHO, WB. | Numbers affected (millions/%) | |
| Azerbaijan | | | Data collection is planned. | Medical institutions of the Republic/ Ministry of Healthcare. |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, Kazakhstan neither progressed, nor regressed, in implementing SDG 2, which marked the level of implementation as STAGNATING. | According to the latest data of Bureau of National Statistics, in 2015, the prevalence of stunting among children under 5 was at 8% (Male- 7.7%, female- 8.3%). The Ministry of Healthcare of Kazakhstan is a national implementation institution. |
| Kyrgyzstan | | | The proportion of children under 5 years of age with stunted growth reduced 10.3% in 2022. | The proportion of children under 5 years of age with stunted growth was 11.8% in 2018. |
| Türkiye | | | The proportion of children under 5 years of age with stunted growth reduced to 5.5% in 2022. | It was 7,5% in 2015. |
| Uzbekistan | | | Around 8.9% of children under five are affected by stunting. | The Ministry of Health in Uzbekistan oversees and carries out programs to monitor and improve child nutrition. |

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|---|---|---|---|---|
| | 2.2.2 | Prevalence of malnutrition among children under 5 years of age. | Numbers affected (millions/%) | |
| Azerbaijan | | | Data collection is planned. | The State Statistical Committee of the Republic of Azerbaijan. |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, Kazakhstan neither progressed, nor regressed, in implementing SDG 2, which marked the level of implementation as STAGNATING | According to the latest data of Bureau of National Statistics, in 2015, the level of prevalence of malnutrition among children under 5 was at 3.1% (Male- 2.9%, female- 3.3%). The Ministry of Healthcare of Kazakhstan is a national implementation institution. |
| Kyrgyzstan | | | Data collection is planned. | In 2015 – 13,6%. Significant challenges remain |
| Türkiye | | | %1,7 - In 2018 | Ministry of Health |
| Uzbekistan | | | Around 5.2% of children under the age of 5 are malnourished. | The Ministry of Health in Uzbekistan is responsible for addressing child malnutrition. |

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|---|---|---|---|---|
| Azerbaijan | 2.2.3 | prevalence of anemia in women UNICEF, WHO and the World Bank. | The source is being investigated. | The State Statistical Committee of the Republic of Azerbaijan. |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, Kazakhstan neither progressed, nor regressed, in implementing SDG 2, which marked the level of implementation as STAGNATING | According to the latest data of Bureau of National Statistics, in 2021, the level of prevalence of anemia in women aged 15 to 49 years, by pregnancy status was at 28.6%. The Ministry of Healthcare of Kazakhstan is a national implementation institution. |
| Kyrgyzstan | | | About 50 per cent of pregnant women suffer from anemia, which increases the risk of maternal and neonatal death (UNICEF). | Ministry of Health |
| Türkiye | | | No data available | Ministry of Health |
| Uzbekistan | | | No data | The Ministry of Agriculture is working on gathering this data. |

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| Azerbaijan | 2.3.1 | Volume of production per labor unit by classes of farming/ pastoral/forestry enterprise size | The source is being investigated. | The State Statistical Committee of the Republic of Azerbaijan. Custodial Agency -FAO. |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, Kazakhstan neither progressed, nor regressed, in implementing SDG 2, which marked the level of implementation as STAGNATING. | According to the latest data of Bureau of National Statistics, in 2022, the volume of production per labor unit by classes of farming/ pastoral/forestry enterprise amounted to 4.6 mln. tenge (or 9,800 US dollars at the time). The Ministry of Agriculture of Kazakhstan is a national implementation institution. |
| Kyrgyzstan | | | No data available | Currently not developed |
| Türkiye | | | Data not available | The source is being investigated. |
| Uzbekistan | | | No data | The source is being investigated. |

| | | | | |
|---|---|---|---|---|
| Azerbaijan | 2.3.2 | Average income of small-scale food producers, by sex and indigenous status | The source is being investigated. | The State Statistical Committee of the Republic of Azerbaijan. Custodial Agency -FAO. |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, Kazakhstan neither progressed, nor regressed, in implementing SDG 2, which marked the level of implementation as STAGNATING. | No data. The Ministry of Labor and Social Protection of Population of the Republic of Kazakhstan is a national implementation institution. |
| Kyrgyzstan | | | Data not available | Currently not developed |
| Türkiye | | | Data not available | Ministry of Agriculture and Forestry |
| Uzbekistan | | | The average income of small-scale food producers is $1,200 per year for males and $800 per year for females. | The Ministry of Agriculture and the State Statistics Committee monitor income levels. |

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| Azerbaijan | 2.5.1 | Number of (a) plant and (b) animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities | According to UN-Statistics-SDGs-Indicators Database[69] in 2022, number of plant breeds for which sufficient genetic resources are stored was 13,430 breeds. | Institute of Genetic Resources of National Academy of Sciences. |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, Kazakhstan neither progressed, nor regressed, in implementing SDG 2, which marked the level of implementation as STAGNATING. | According to the latest data of Bureau of National Statistics, in 2022, the number of (a) plant and (b) animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities was 63,493. The Ministry of Agriculture of Kazakhstan is a national implementation institution. |
| Kyrgyzstan | | | In 2022, number of plant breeds for which sufficient genetic resources are stored was 2,638 breeds. | The State Agency for Environment Protection and Forestry of the Government of the Kyrgyz Republic, The State Commission for Variety Testing (SCVT) operating under the MAWRFP. |
| Türkiye | | | a) Current status- close to target/Above median performance. Trend- improvement since baseline year. 38961 In 2022. | Ministry of Agriculture and Forestry, Central Research Institute for Field Crops, Aegean Agricultural Research Institute. |
| Uzbekistan | | | Uzbekistan has secured the genetic resources of 350 plant and 50 animal species in medium- or long-term conservation facilities. This ensures the preservation and protection of these species for future research, breeding programs, and biodiversity conservation efforts. | The Institute of Genetics and Experimental Plant Biology oversees conservation facilities in Uzbekistan. |

[69] https://unstats.un.org/sdgs/dataportal/countryprofiles/AZE

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|---|---|---|---|---|
| Azerbaijan | 2.5.2 | Proportion of local breeds classified as being at risk of extinction | According to UN-Statistics-SDGs-Indicators Database in 2024, the share of local breeds classified as being at risk (among those with known level of extinction risk) was 0.0%. | Institute of Genetic Resources of National Academy of Sciences. |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, Kazakhstan neither progressed, nor regressed, in implementing SDG 2, which marked the level of implementation as STAGNATING. | According to the latest data of Bureau of National Statistics, in 2022, there was an increase in the number of rare and endangered species of ungulates by 10.1% on average. (only this type of data is available). The Forestry and Wildlife Committee Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan is a national implementation institution. |
| Kyrgyzstan | | | Currently not developed | Currently not developed |
| Türkiye | | | The share local breeds classified as being at risk (among those with known level of extinction risk) decreased from 33.0% in 2000 to 25.0% in 2024. | In 2024, number of local breeds for which sufficient genetic resources are stored for reconstitution was 5 breeds. |
| Uzbekistan | | | In Uzbekistan, 20% of local livestock breeds are currently at risk of extinction. This means these breeds face a significant threat of disappearing entirely due to habitat loss, climate change, disease, and the lack of sufficient breeding programs. The loss of these breeds could have profound implications for biodiversity, agriculture, and cultural heritage. | The Ministry of Agriculture in Uzbekistan and the State Veterinary Committee monitor breeding risks. |

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| Azerbaijan | 2.A.1 | The agriculture orientation index for government expenditures. | According to UN-Statistics-SDGs-Indicators Database in 2024 the agriculture orientation index for government expenditures decreased from 0.5 in 2008 to 0.2 in 2021. | According to the Ministry of Agriculture of the Republic of Azerbaijan index was 0,63 in 2022. (sdg.stat.gov.az) |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, Kazakhstan neither progressed, nor regressed, in implementing SDG 2, which marked the level of implementation as STAGNATING. | According to the latest data of Bureau of National Statistics, in 2022, the agriculture orientation index for government expenditures stood at 0.6%. The Ministry of Agriculture and the Ministry of Finance of Kazakhstan are both national implementation institutions. |
| Kyrgyzstan | | | In 2022, the agriculture orientation index for government expenditures was 0.1. | In 2021 - 0.07 |
| Türkiye | | | The agriculture orientation index for government expenditures decreased to 0.4 in 2022. | It was 0,45 in 2015. |
| Uzbekistan | | | The Agriculture Orientation Index (AOI) for government expenditure in Uzbekistan is 0.35. This index measures the ratio of government spending on agriculture to the sector's contribution to the national GDP. | The Ministry of Economy and Finance and the Ministry of Agriculture ensure budget allocation. |

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|---|---|---|---|---|
| Azerbaijan | 2.B.1 | Agriculture al export subsidies | The source is being investigated. | Custodial Agency – WTO with the mandate of the Doha Development Round. |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, Kazakhstan neither progressed, nor regressed, in implementing SDG 2, which marked the level of implementation as STAGNATING. | Kazakhstan has not applied agricultural export subsidies so far. The Ministry of Trade and Integration, the Ministry of Agriculture of Kazakhstan are national implementation institutions. |
| Kyrgyzstan | | | Currently not developed | Currently not developed |
| Türkiye | | | Türk Eximbank is an official export credit agency in Türkiye. | The main Turkish administrative departments of foreign trade include the Turkish Ministry of Foreign Trade, the General administration of Customs, The Ministry of Trade and Industry, the Undersecretariat of State Planning Organization. |
| Uzbekistan | | | No Agricultural export subsidies were reported. | The Ministry of Investments Uzbekistan and Foreign Trade adheres to international trade rules. |

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|---|---|---|---|---|
| Azerbaijan | 2.C.1 | Indicator of food price anomalies. | According to UN-Statistics-SDGs-Indicators Database in 2024 the Consumer Food Price Index increased from 0.1 in 2010 to 1.6 in 2022. | Indicator of Food Price Anomalies (IFPA), by Consumer Food Price Index. In 2015 it was assessed as 0,0 . |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, Kazakhstan neither progressed, nor regressed, in implementing SDG 2, which marked the level of implementation as STAGNATING. | According to the latest data of Bureau of National Statistics, in 2021-2022, there were no food price anomalies reported. The Ministry of Trade and Integration, Ministry of National Economy, Ministry of Agriculture of Kazakhstan are national implementation institutions. |
| Kyrgyzstan | | | The Consumer Food Price Index increased from -0.2 in 2010 to 0.3 in 2022. | Indicator of Food Price Anomalies (IFPA), by Consumer Food Price Index |
| Türkiye | | | The Consumer Food Price Index increased from 0.1 in 2010 to 1.5 in 2022. | 0,61 in 2015 |
| Uzbekistan | | | No significant food price anomalies were reported. | The Republic of Uzbekistan State Committee on Statistics monitors food prices. |

| SDG 5. | | GENDER EQUALITY/FAO | Achieve gender equality and empower all women and girls. | |
|---|---|---|---|---|
| Azerbaijan | 5.A.1 | Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex | Proportion of total agricultural population with ownership or secure rights over agricultural land in 2021 – 39,5%; women – 28,4. | Information about the right of ownership to agricultural land or those protected by these lands is provided by the State Committee for Property Issues. |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, Kazakhstan neither progressed, nor regressed, in implementing SDG 5, which marked the level of implementation as STAGNATING. | According to the latest data of Bureau of National Statistics, in 2021, the share of women who were given land for agricultural purposes was at 1.55%.<br>The Committee or Land Administration of the Ministry of Agriculture of the Republic of Kazakhstan is a national implementation institution. |
| Kyrgyzstan | | | The source is being investigated. | Currently not developed |
| Türkiye | | | Data not available | The source is being investigated. |
| Uzbekistan | | | 30% male and 15% female proportion of the total agricultural population with ownership or secure rights over agricultural land. | The Republic of Uzbekistan State Committee for Women and Family Affairs promotes gender equality in land ownership. |

| | | | | |
|---|---|---|---|---|
| Azerbaijan | 5.A.2 | Proportion of countries where the legal framework (including customary law) guarantees women's equal rights to land ownership and/or control. | The rights of landowners are governed by the Civil Code of the Republic of Azerbaijan, the Land Code of the Republic of Azerbaijan and other regulatory legal acts. | Preliminary information is provided by the State Committee on Family, Women and Children's Problems of the Republic of Azerbaijan. |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, Kazakhstan neither progressed, nor regressed, in implementing SDG 5, which marked the level of implementation as STAGNATING. | (Excerpt (comment) from the data Bureau of National Statistics of the Agency for Strategic Planning and Reforms of Kazakhstan): According to paragraph 2 of Article 20 of the Code, Kazakhstan is the subject of state ownership of land on the territory of the Republic, citizens and non-state legal entities are recognized as subjects of private ownership of land on the grounds, conditions and within the limits established by this Code. Thus, the current land legislation does not separate subjects on the basis of gender when granting a land plot, and does not limit the rights of women. The Ministry of Agriculture of Kazakhstan is a national implementation institution. |
| Kyrgyzstan | | | In 2022, the degree to which legal frameworks promote, enforce and monitor gender equality with respect to employment and economic benefits stood at 40.0 points on a 0-100 scale. | The source is being investigated linked to equal right to land ownership |
| Türkiye | | | In 2022, the degree to which legal frameworks promote, enforce and monitor gender equality with respect to employment and economic benefits stood at 90.0 points on a 0-100 scale. | The source is being investigated linked to equal right to land ownership. |
| Uzbekistan | | | The legal framework is in place, but implementation varies. | Ministry of Justice Uzbekistan ensures that the legal framework supports women's land rights. |

| SDG 6. | | WATER AND SANITATION FOR ALL/ FAO | Ensure availability and sustainable management of water and sanitation for all. | |
|---|---|---|---|---|
| Azerbaijan | 6.4.1 | Change in water-use efficiency over time. | According to UN-Statistics-SDGs-Indicators Database in 2024, water Use Efficiency stood at 3.7 US dollars per cubic meter in 2021. | The indicator is calculated on the basis of 2-TG (water management) report data provided by Amelioration and Water Management OJSC. 6,57 $ per cubic meter in 2022 |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, Kazakhstan neither progressed, nor regressed, in implementing SDG 6, which marked the level of implementation as STAGNATING. | According to the latest data of Bureau of National Statistics, the water-use efficiency in 2015-2020 fluctuated at 6.1-8%. The Ministry of Agriculture and Ministry of Ecology and Natural Resources of Kazakhstan are both national implementation institutions. |
| Kyrgyzstan | | | In 2021, water Use Efficiency stood at 0.9 US dollars per cubic meter. | Ministry of Agriculture of the Republic of Kyrgyzstan |
| Türkiye | | | In 2021, water Use Efficiency was at 16.4 US dollars per cubic meter. | In 2015, water Use Efficiency was at 12,83 US dollars per cubic meter. |
| Uzbekistan | | | The water-use efficiency has increased by 5% over the past decade. | The Ministry of Water Resources manages water efficiency projects. |

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| Azerbaijan | 6.4.2 | Level of water stress: freshwater withdrawal as a proportion of available freshwater resources. | In 2021, freshwater withdrawal as a proportion of available freshwater resources (level of water stress) stood at 57.3%. | Indicator is calculated on the basis of data submitted to the State Statistical Committee by the Ministry of Ecology and Natural Resources. In 2022 – 57,5%. |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, Kazakhstan neither progressed, nor regressed, in implementing SDG 6, which marked the level of implementation as STAGNATING. | According to the latest data of Bureau of National Statistics, in 2022, 34.6% of freshwater was withdrawn from all available freshwater resources. The Ministry of Ecology and Natural Resources of Kazakhstan is a national implementation institution. |
| Kyrgyzstan | | | In 2020, freshwater withdrawal as a proportion of available freshwater resources stood at 50,04 %. | The level of 50,04% of water stress stays from 2006 year. |
| Türkiye | | | In 2021, freshwater withdrawal as a proportion of available freshwater resources was at 43,4%. | In 2015, freshwater withdrawal as a proportion of available freshwater resources was at 39,9 %. |
| Uzbekistan | | | The water stress level is about 45%. | The Ministry of Water Resources Uzbekistan monitors and regulates water usage. |

| SDG 10 | | REDUCE INEQUALITY/FAO | Reduce inequality within and among countries. | |
|---|---|---|---|---|
| Azerbaijan | 10.A.1 | Proportion of tariff lines applied to imports from least developed countries and developing countries with zero-tariff. | The proportion of tariff lines applied to imports with zero-tariff reduced from 79.9% in 2005 to 67.0% in 2022. | Custodial Agencies- ITC, UNCTAD, WTO. |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, Kazakhstan's progress in implementing SDG 10 is shown as CHALLENGES REMAIN. | According to the latest data of the Ministry of Trade and Integration and the Bureau of National Statistics, Kazakhstan applies zero tariff in the context of tariff preferences to imports from least developed and developing countries to 20.4% of tariff lines.<br>The Ministry of Trade and Integration of Kazakhstan is a national implementation institution. |
| Kyrgyzstan | | | The proportion of tariff lines applied to imports with zero-tariff increased from 71.8% in 2005 to 88.5% in 2022. | In 2021 – 88.2% |
| Türkiye | | | The proportion of tariff lines applied to imports with zero-tariff increased to 46,8 % in 2022. | The proportion of tariff lines applied to imports with zero-tariff was 41,4% in 2015. |
| Uzbekistan | | | Around 98% of tariff lines for LDCs have zero tariffs. | The Ministry of Investments and Foreign Trade applies tariff policies. |

| SDG 12 | | SUSTAINABLE CONSUMPTION AND PRODUCTION | Ensure sustainable consumption and production patterns | |
|---|---|---|---|---|
| Azerbaijan | Indic. 12.3.1.A | Food loss index | The source is being investigated. By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses | Custodial Agencies- FAO, UNEP. |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, Kazakhstan neither progressed, nor regressed, in implementing SDG 12, which marked the level of implementation as STAGNATING. | No data available. The Ministry of Agriculture of Kazakhstan is a national implementation institution. |
| Kyrgyzstan | | | The source is being investigated. | The source is being investigated. |
| Türkiye | | | Data not available | TurkStat |
| Uzbekistan | | | The food loss index is about 12%. | The Ministry of Agriculture works on reducing food loss. |

| SDG 14 | | LIFE BELOW WATER | Conserve and sustainably use the oceans, seas and marine resources for sustainable development. | |
|---|---|---|---|---|
| Azerbaijan | 14.4.1 | Proportion of fish stocks within biologically sustainable levels. | Proportion of fish stocks within biologically sustainable levels was 30,3% in 2022 | The data are sent by the Ministry of Ecology and Natural Resources to the State Statistics Committee |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, no data available for SDG 14 | No data available. The Ministry of Ecology and Natural Resources of Kazakhstan is a national implementation institution. |
| Kyrgyzstan | | | Data not available | Not applicable |
| Türkiye | | | Fish caught from overexploited or collapsed stocks (% of total catch) was 57.5% in 2018. | The General Directorate of Fisheries and Aquaculture in the Ministry of Agriculture and Forestry |
| Uzbekistan | | | Around 70% of fish stocks are within sustainable levels. | The Ministry of Agriculture and the State Committee on Ecology monitor fish stocks. |

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| Azerbaijan | 14.6.1 | Degree of implementation of international instruments aiming to combat illegal, unreported and unregulated fishing. | The source is being investigated. | By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing. Custodial Agency- FAO. |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, no data available for SDG 14. | Kazakhstan fully supported the adoption of the WTO Agreement on Fisheries Subsidies at the 12th Ministerial Conference (MC12) on 17 June 2022, which marked a major step forward for ocean sustainability by prohibiting harmful fisheries subsidies, which are a key factor in the widespread depletion of the world's fish stocks. The Agreement represents a historic achievement for the membership as the first Sustainable Development Goal (SDG) target to be fully met, the first SDG target met through a multilateral agreement.<br>The Ministry of Trade and Integration of Kazakhstan is a national implementation institution. |
| Kyrgyzstan | | | Data not available | Not applicable |
| Türkiye | | | Monitoring and registration are provided through applications such as E-Navigation and E-Transfer, which enable fishing data to be recorded and monitored digitally. Current status – close to target/Above median performers | The General Directorate of Fisheries and Aquaculture in the Ministry of Agriculture and Forestry |
| Uzbekistan | | | Moderate implementation level | The Ministry of Agriculture and the State Committee on Ecology enforce fishing regulations. |

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| Azerbaijan | 14.7.1 | Sustainable fisheries as a proportion of GDP in small island developing States, least developed countries and all countries. | The source is being investigated. | Custodial Agency- FAO, UNEP. |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, no data available for SDG 14. | According to the latest data of Bureau of National Statistics, in 2013-2022, the share of fisheries in total GDP was at the same level- 0.2%. The Ministry of Ecology and Natural Resources of Kazakhstan is a national implementation institution. |
| Kyrgyzstan | | | Data not available | Not applicable |
| Türkiye | | | Data not available | Not applicable |
| Uzbekistan | | | Fishery contributes 1.5% to GDP. | The Ministry of Agriculture of Uzbekistan promotes sustainable fishing practices. |

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| Azerbaijan | 14.B.1 | Degree of application of a legal/ regulatory/ policy/ institutional framework which recognizes and protects access rights for small-scale fisheries. | The Law of the Republic of Azerbaijan "On Fisheries" defines the legal basis for the organization, management, increase, use and protection of fish and other aquatic bioresources in the Republic of Azerbaijan, including aquaculture. | The Ministry of Ecology and Natural Resources. The data is collected by the Ministry of Ecology and Natural Resources. |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, no data available for SDG 14. | According to the latest data of Bureau of National Statistics, as of 2021, Kazakhstan scored 7.5 points in application of a legal/ regulatory/ policy/institutional framework recognizing and protecting access rights for small-scale fisheries. In contrast, in 2019 this indicator was 0 (at the time there were measures protecting small-scale fisheries). The Ministry of Ecology and Natural Resources of Kazakhstan is a national implementation institution. |
| Kyrgyzstan | | | Data not available | Not applicable |
| Türkiye | | | The regulations determine the characteristics of the fishing gear, catch limits, species, quotas, and spatial and temporal restrictions, among other limitations. Current status- target met. | The General Directorate of Fisheries and Aquaculture in the Ministry of Agriculture and Forestry |
| Uzbekistan | | | Framework partialy in place. | The Ministry of Agriculture of Uzbekistan supports small-scale fisheries. |

| SDG 15 | | | Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss. | |
|---|---|---|---|---|
| Azerbaijan | Indicator 15.1.1 | Forest area as a proportion of total land area. | The proportion of land area covered by forest increased from 11.9% in 2000 to 12.0% in 2020. | Ministry of Ecology and Natural Resources of the Republic of Azerbaijan |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, Kazakhstan neither progressed, nor regressed, in implementing SDG 15, which marked the level of implementation as STAGNATING. | According to the latest data of Bureau of National Statistics, in 2013-2022, there was an increase of the proportion of forest area in total land area from 4.6 to 5%. The Ministry of Agriculture and Ministry of Ecology and Natural Resources of Kazakhstan are both national implementation institutions. |
| Kyrgyzstan | | | The proportion of land area covered by forest increased from 6.2% in 2000 to 6.9% in 2020. | Forest Service under the Ministry of Agriculture of the Kyrgyz Republic |
| Türkiye | | | The proportion of land area covered by forest increased to 28.9% in 2020. | The proportion of land area covered by forest was 28,1 % in 2015. |
| Uzbekistan | | | Around 7.8% of the total land area is forest. | The State Committee on Forestry and the Ministry of Agriculture manage forest conservation. |

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| Azerbaijan | 15.2.1 | Progress towards sustainable forest management. | The source is being investigated. | In 2023, forest area under an independently verified forest management certification scheme was 0.0 thousand of hectares. |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, Kazakhstan neither progressed, nor regressed, in implementing SDG 15, which marked the level of implementation as STAGNATING. | According to the latest data of Bureau of National Statistics, in 2013-2022, there was a constant increase in the area of land covered by forests, from 12,6 to 13,7 mln. hectares of land. The Ministry of Ecology and Natural Resources of Kazakhstan is a national implementation institution. |
| Kyrgyzstan | | | In 2023, forest area under an independently verified forest management certification scheme was 0.0 thousand of hectares. | In 2021 – 9.8 ha |
| Türkiye | | | Forest area under an independently verified forest management certification scheme increased from 0.0 thousand hectares in 2000 to 7974,7 thousand hectares in 2023. | In 2015, forest area under an independently verified forest management certification scheme was 2359,8 thousand hectares. |
| Uzbekistan | | | Moderate progress in forest management. | The State Committee on Forestry oversees sustainable forest management. |

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| Azerbaijan | 15.3.1 | Proportion of land that is degraded over total land area. | The proportion of land that is degraded over total land area increased from 11.6% in 2015 to 12.9% in 2022. | It was calculated based on data on provided by the Ministry of Economy and the Ministry of Ecology and Natural Resources. |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, Kazakhstan neither progressed, nor regressed, in implementing SDG 15, which marked the level of implementation as STAGNATING. | According to the latest data of Bureau of National Statistics, as of 2022, there were 29,3 mln hectares of degraded agricultural land, which is 25% of total agricultural land (116 mln hectares). The Ministry of Agriculture of Kazakhstan is a national implementation institution. |
| Kyrgyzstan | | | The proportion of land that is degraded over total land area reduced to 9.6% in 2019. | Proportion of land that is degraded over total land area (%) was 14.3% in 2015. |
| Türkiye | | | The proportion of land that is degraded over total land area was 13.4% in 2019 | The Ministry of Agriculture and Forestry |
| Uzbekistan | | | Around 12% of the land is degraded. | The Ministry of Agriculture and the State Committee on Land Resources . |

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|---|---|---|---|---|
| Azerbaijan | 15.4.2 | (a) Mountain Green Cover Index and (b) proportion of degraded mountain land; | In 2023, the average proportion of Mountain Key Biodiversity Areas (KBAs) covered by protected areas was 55.5%. | Space Agency of the Republic of Azerbaijan. The index provides information on changes in vegetation cover, providing information on the conservation status of mountain environments. |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, Kazakhstan neither progressed, nor regressed, in implementing SDG 15, which marked the level of implementation as STAGNATING. | According to the latest data of Bureau of National Statistics, as of 2022, Kazakhstan had 5.7 mln hectares of mountain forests. In general, this indicator fluctuated insignificantly in 2010-2022 at 5.6-5.7 mln hectares, so there is no degraded mountain land. The Forestry and Wildlife Committee Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan and local executive bodies (Akimats) are national implementation institutions. |
| Kyrgyzstan | | | In 2023, the average proportion of Mountain Key Biodiversity Areas (KBAs) covered by protected areas was 31.5%. | Forest Service under the Ministry of Agriculture of the Kyrgyz Republic. State Committee for Ecology and Climate of the Kyrgyz Republic |
| Türkiye | | | In 2023, the average proportion of Mountain Key Biodiversity Areas (KBAs) covered by protected areas was 0.8%. b) 0.8% in 2022 | The Ministry of Agriculture and Forestry |
| Uzbekistan | | | a) Mountain Green Cover Index: 0.65; b) 10% of mountain land is degraded. | The Republic of Uzbekistan State Committee on Ecology and the Ministry of Agriculture monitor mountain ecosystems. |

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|---|---|---|---|---|
| Azerbaijan | 15.6.1 | Number of countries that have adopted legislative, administrative and policy frameworks to ensure fair and equitable sharing of benefits. | Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed. Convention on Biological Diversity. | Ministry of Ecology and Natural Resources of the Republic of Azerbaijan. Custodial Agency-CBD Secretariat. |
| Kazakhstan | | | According to the UN SDSN SD REPORT 2024, Kazakhstan neither progressed, nor regressed, in implementing SDG 15, which marked the level of implementation as STAGNATING. | According to the latest data of Bureau of National Statistics, as of 2022, Kazakhstan had 375 (pcs) plant genetic resources for biodiversity conservation, including genetic resources for agriculture and food production. The Forestry and Wildlife Committee Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan is a national implementation institution. |
| Kyrgyzstan | | | The source is being investigated. | Currently not developed |
| Türkiye | | | Data not available | The source is being investigated. |
| Uzbekistan | | | Uzbekistan has adopted relevant frameworks. | Ministry of Justice Uzbekistan ensures compliance with benefit-sharing frameworks. |

Source: UN SDG Secretariat; SDR, 2024; Countries' chapters authors.

The 2030 Agenda for Sustainable Development, including the 17 Sustainable Development Goals (SDGs), are new global objectives that succeeded the Millennium Development Goals on 1 January 2016. The SDGs will shape national development plans over the next 15 years. From ending poverty and hunger to responding to climate change and sustaining our natural resources, food and agriculture lie at the heart of the 2030 Agenda.

Summary of analysis on SDGs in five countries of OTS can be visualized through the table of ranking provided by the UN Sustainable Development Report (SDR, 2024):

**Table I.37. The overall performance of OTS members[70]**

| Country | Rank | Score |
|---|---|---|
|  KYRGYZ REPUBLIC | 48 | 74,19 |
|  AZERBAIJAN | 63 | 72,20 |
|  KAZAKHSTAN | 66 | 71,11 |
|  TÜRKİYE | 72 | 70,47 |
|  UZBEKISTAN | 81 | 69,24 |

Countries are ranked by their overall score. The overall score measures the total progress towards achieving all 17 SDGs. The score can be interpreted as a percentage of SDG achievement. A score of 100 indicates that all SDGs have been achieved.

[70] https://dashboards.sdgindex.org/rankings

## I.G. STRATEGY AND CONCLUSION

### I.G.1. Regional overview on strategy perspectives

Analysis of Global Food Security Index (elaborated by the "Economist Group") demonstrates that within period of 2019-2022 years, which were mostly affected by COVID-19 and Russia-Ukraine conflict, only Kazakhstan among OTS' member countries could preserve its food security indicators and so improve ranking pillars. As one of the biggest agri-food trade partners of OTS members, the Russian Federation slightly worsened its indicators, but China significantly strengthened its food security potential.

It was justified that introducing ERPs into RTAs (Regional Trade Agreements) significantly associated with GHG emissions. Growing trends with ERPs in agrifood trade agreements highly correlated with GHG pollution decreases. So, it is highly recommended the member countries to elaborate **unique approaches and standards** in agri-trade agreements design regarding the introduction of different ERPs into different RTAs to be signed.

Food safety matters are inseparable parts of food security. Different countries have various institutional structures to manage food safety matters, including on-border control measures. Unification of standards in food quality, packaging requirements, and demands in transportation actualize the mechanisms to ensure permanent data exchange and information source mutual access.

The INFOOD data network (coordinated by FAO) operates with a rather wide range of nutrition-related data. It is recommended to authorize the Kazakh Institute of Nutrition, which is currently operating as a regional focal point of the INFOOD network, to process nutrition data of OTS members in line with OTS' strategy targets. This processing action should include biannual reporting and integration of data of Türkiye.

Climate change has regional impacts, and many climate issues need to be addressed on a regional basis for maximum effect. As climate change affects weather and climate conditions beyond borders, it requires strengthening data collection and analysis; creating regional centers of weather and climate observations and prediction; and implementing coordinated risk management, planning, and action. Investment projects and policies related to energy, transport, water, agriculture, urban infrastructure, disaster risk management, and financing have important regional spillovers and, hence, must be climate-informed and climate-coordinated in planning and implementation. Moreover, a regional approach to technology transfer and knowledge sharing, research and data, analytic risk modeling, and capacity building in these areas, as well as in education, health and social protection, results in a regional public good through the creation and diffusion of relevant technology, knowledge, and best practices. Regional climate action requires a readiness by countries to cooperate, a coordinated strategy that complements national strategies, and institutional capacities to implement such strategies.[71]

[71] Regional action on climate change. April 2024. A Vision for the Central Asia Regional Economic Cooperation Program. Endorsed at the 22nd CAREC Ministerial Conference 30 November 2023 Tbilisi, Georgia. https://www.adb.org/sites/default/files/publication/963241/regional-action-climate-change-vision-carec.pdf

**Agriculture**

CAREC member countries shall further explore opportunities to support the development of a climate-smart agriculture system in the region. Agriculture is an important sector in the CAREC region with a critical role in economic growth, employment, poverty reduction, food security, and climate mitigation and adaptation. Under CAREC's Cooperation Framework for Agricultural Development and Food Security, agricultural policies and practices need to adapt to the impending negative impact of climate change on agricultural productivity and food security and contribute Central Asia Regional Economic Cooperation's Focus on Climate Change in Strategies and Programs to mitigation efforts.[72] Based on its strong engagement in the agriculture and water cluster, CAREC will assist with adaptation and mitigation in the agricultural sector by

- (i) improving the productivity of agriculture through climate-smart agricultural policies, technologies, and methods, based on, wherever possible, the transfer of green technologies and best policies and practices;
- (ii) changing farming and livestock practices to reduce GHG emissions and husbandry;
- (iii) encouraging innovation and digitalization technologies, development of food value chains, diversification of crops, and the introduction of drought-resistant crops;
- (iv) improving regional management of water resources, including more efficient irrigation systems and the Aral Sea restoration program;
- (v) strengthening forestry management and sustainable development, including afforestation and reforestation; and
- (vi) Supporting the development of an efficient trading system for agricultural inputs and outputs throughout the region.

As previously mentioned, all OTS members participate in the CAREC Program And they participate in the program's activities with its financial resources and ADB's invested finances. Therefore, the synergized actions between the OTS and CAREC Program will serve as highly proven and rational steps towards strengthening regional food security and achieving countries' SDG targets.

It would be actual to add here that according to decision of ADB President 3 (three) million US dollars was granted for TA "Resilient and Inclusive Agricultural Development and Food Security in the Central Asia Regional Economic Cooperation Program Member Countries" (Project Number: 57033-001 December 2023)[73] . The TA is anchored in ADB's Strategy 2030 operational priority 3 on building climate-smart agriculture to promote food security in developing member countries.[74] The TA will contribute to ADB's climate financing ambition, which aims for cumulative climate finance of $100 billion by 2030. It will also contribute to ADB's food security investment of $14 billion by 2025.

On May 19, 2022 the Global Alliance for Food Security (GAFS) was launched. The World Bank Group (WBG) is one of initiating institutions of this platform. It is known that

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[72] CAREC. 2022. Cooperation Framework for Agriculture and Food Security in the CAREC Region. https://www.carecprogram.org/uploads/CAREC_MC_2022_2a_Agriculture-Food-Security-Framework-EN.pdf.

[73] https://www.adb.org/sites/default/files/project-documents/57033/57033-001-tar-en.pdf

[74] ADB. 2018. Strategy 2030: Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific. Manila. Operational priority 3: Tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability.

all five members of OTS are WBG members. WBG is supporting countries as they develop and operationalize Food Security Crisis Preparedness Plans (FSCPPs). Though the OTS members are not classified as countries of high risk of food crisis, nevertheless to be equipped with such kind national operational plans looks rather rationale. The FSCPP brings together these preparedness elements into a cohesive operational framework to support the systematic recognition of an emerging crisis and prompt timely joined-up action across government, humanitarian, and development partners to prevent and mitigate the impacts of future food and nutrition security crises.[75] At the same time, according to WBG supported researches (WBG, 2022) "addressing the long-term risks to food security and agri-food systems productivity by mitigating climate risks, promoting adaptation and a broader set of investments, and policy reforms to shift the food system to a more climate-resilient and climate-smart trajectory are all needed. They are a critical pathway to address current vulnerabilities while also managing future risks and keeping sight of longer-term priorities".

Generally, against the background of strong economic integration between the OTS' countries and Russia – with OTS's high dependency on Russian markets for both food imports and exports – the leading experts made the following short- and long-term policy recommendations.

a) Short-term policy recommendation :

- boosting and improving the sustainability and governance systems of public stocks to promote food security;
- through prioritizing the donestic suplies to avoid formal ban for food export, particularly grains;
- through the dialog with local associations to ensure access to real-time indicators of supply and demand balances, which would enable market participants to make informed decisions;
- strategic reserves can play an important role in stabilizing the market in the short run against extreme shocks;
- provision of a limited-duration cash transfer to vulnerable households that is proportionate to the increased cost of the basic food basket.

b) Long-term Policy Recommendations :

- shift the food system to a more climate-resilient and climate-smart trajectory;
- improving storage capacity, both in privately owned food processing industries and government-owned facilities, which could potentially constitute a viable opportunity for improving food security through targeted investments;
- reducing trade costs by making customs procedures more transparents et efficients ;
- adopting digital trade tools (for example, electronic phytosanitary certificates), and ensuring that sanitary and phytosanitary measures applied to food imports are implemented using risk-based approaches;

On May 2024 the process of "Made in Turan" brand forwarding was launched. The initiative aims to facilitate trade turnover among OTS countries by providing incentives and simplifying trade (export and import) procedures. Competition under one umbrella on third markets is among the long-term targets of this initiative.

So, it is obvious that rationale approach and cooperation with regional and global institutions can facilitate OTS efforts to reach its "Vision 2040" targets where the Food Security matters are among the priorities.

[75] https://www.worldbank.org/en/topic/food-security/brief/countries-catalyze-new-preparedness-plans-to-more-effectively-respond-to-emerging-major-food-and-nutrition-crises

## I.G.2. RECOMMENDED ACTIONS TO BE TAKEN

**Table I.38. Recommended actions**

| # | Content of recommendations | Inter/Regional Institutions recommended to cooperate | Proposed period for implementation |
|---|---|---|---|
| | **1. PRODUCTION ORIENTED** | | |
| 1.1 | Almost in all newly independent OTS members' state building accompanied with land reforms. Taking into account the growing demand for food<br>***It is recommended***:<br>To finalize the ongoing land reform processes to ensure that all arable land is privately owned and managed efficiently. | Coordination Committee of Turkic Cooperation Organizations | 2025-2030 |
| 1.2 | Water scarcity is crucial for all OTS members.<br>***It is recommended***:<br>To recognize on the level of governments the priority of the rehabilitation and maintenance of irrigation systems, which are critical for agricultural productivity and prioritize the irrigational investment projects. Improved irrigation will help farmers manage water resources more effectively and increase crop yields. | Coordination Committee of Turkic Cooperation Organizations (CCTCO) | 2026-2028 |
| 1.3 | Livestock production in almost all OTS members significantly based on nature solutions. Pasture management becomes a crucial importance.<br>***It is recommended***:<br>To encourage the sustainable agricultural practices to mitigate environmental impacts, particularly in livestock production, which can lead to overgrazing and pasture degradation. Kyrgyzstan's experience with pasture users' unions deserves attention and can be piloted in other countries. | Coordination Committee of Turkic Cooperation Organizations/ Working Group on Agriculture | 2026-2030 |
| 1.4 | Due to different reasons all countries face the land degradation processes. Preliminary planning is one of preconditions for successful management.<br>***It is recommended***:<br>To unite capacity and efforts (satellite tools, global sources, etc.) for total digital mapping of agricultural and other designated lands on the territory of OTS members with further unique land cadaster. | Coordination Committee of Turkic Cooperation Organizations (CCTCO) | 2026-2030 |

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|---|---|---|---|
| 1.5 | To stabilize soils and slow water run-off, to absorb and filter flood waters, to reduce evaporation- all those mean to protect and restore forests, wetlands and use agro-forestry in general.<br>***It is recommended***:<br>To make Forestry and Agro-Forestry in particular, the item and the subject of OTS communities' special conference, where strategic plans and urgent steps would be discussed and approved. | OTS Secretariat/ International Turkic Academy | 2025-2026 |
| 1.6 | Organic farming practices promises some niche as in internal market of OTS countries as in external markets. Taking into account the sensitiveness of this niche<br>***It is recommended***:<br>To unify farms and organic agr-food products certification among OTS countries with mutual recognition of certified laboratories conclusions. Simultaneously perspectives of legislative, standards and norms (SPS regulations) unification if relevant should be assessed including the unification of Food Safety Institutionalization. | OTS/ FAO Codex Alimentarius | 2026-2028 |
| 1.7 | Rural development is necessary background for competitive production and food security.<br>***It is recommended***:<br>To all OTS members widely support and be involved into rural development programs with sustainable practices realized by<br>Food and Agriculture Organization (FAO), the International Fund for Agricultural Development (IFAD), and the United Nations Development Program (UNDP). | OTS/ IFAD/ UNDP | 2025-2030 |
| 1.8 | Beyond Türkiye the rest OTS members have a poor experience in cooperatives running and cooperatives involvement into agri-food products chains. GAP based interaction (including advisory support) with cooperatives unions could bring valuable knowledge and experience into OTS food security ensuring.<br>***It is recommended***:<br>To apply successful cooperatives functioning schemes in the rest OTS members, including in clustering projects. Successful cooperatives establishment (including registration, subsidizing, promotion, marketing, tendering and etc.) could contribute to land consolidation matters, particularly, in countries where land fragmentation declines the competitiveness of producers. | OTS International Cooperation/ COPA/COPEGA | 2025-2030 |

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|---|---|---|---|
| **2. TRADE ORIENTED** | | | |
| 2.1 | With aim to minimize the risks for countries' food security and vulnerability from external factors<br>***it is recommended***:<br>each country to keep the share of OTS countries in imported agri-food products not less than 10% of total imported agri-food products volume.<br>P.S. For example, the share of OTS countries in Türkiye's agri-food import fluctuates around 1-2%, and it is in ten times less than from Russia. | Ministries of Economy of OTS members. | 2025-2030 |
| 2.2 | Some of OTS' countries are not WTO members.<br>***It is recommended***:<br>to support capacity strengthening efforts in WTO non-member countries for equal understanding and definition of trade articles, particularly in parts of agricultural products trade. | OTS Chamber of Commerce | 2025-2030 |
| 2.3 | CAREC Advanced Transit System/Information Common Exchange (CATS/ICE) is a harmonized electronic system for the control of movement of goods in transit through CAREC member states. It is a risk-based system that uses a single and digital transit document, and offers e guarantees. CATS is expected to reduce cost and time for transit operators and expedite transport of goods to and from the European market. As OTS members are the participants of CAREC<br>***it is recommended***:<br>To facilitate transit among CAREC countries by removing barriers and aligning national transit processes with international standards, to provide a regional Customs-to-Customs transit information exchange platform, to develop an electronic, comprehensive and regional customs guarantee mechanism. | OTS/ ADB/ CAREC | 2026-2027 |
| 2.4 | Such marketplaces as Wildberries, Yandex Lavka, Ozon established their stores and branches in Kazakhstan, Azerbaijan, Uzbekistan and Türkiye. These are rather new instrument in listed countries to distribute and sale products including foods.<br>***It is recommended***:<br>To monitor the trends, prepare regional overview and support local producers in promotion their products through similar instruments. | OTS Turkic Chamber of Commerce and Industry. | 2025-2027 |

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| 2.5 | Halal products market is growing.<br>***It is recommended***:<br>To unify halal products certification procedures for mutual recognition and joint entrance into markets of third countries. | OTS/ Countries Food Safety Authorities | 2025-2030 |
| **3. SDGs, RESEARCHES & POLICY LINKED** | | | |
| 3.1 | With aim to:<br>- strengthen national agricultural research systems (NARS);<br>- strengthen an agricultural extension and advisory services (AEAS);<br>- promote to integrate Agricultural Innovation Systems (AIS);<br>- disseminate knowledge on innovations and digital technologies;<br>- to monitor the dynamics of food insecurity indicators;<br>- to run the food security awareness mechanisms;<br>***it is recommended***:<br>to establish permanent Food Security Advisory Board. | Working Group on Agriculture Cooperation / International Turkic Academy | 2025-2026 |
| 3.2 | OTS member countries simultaneously are member of such organization as FAO, WBG, ADB, EAEU, WTO, CIS, Shanghay Group, OECD, ECO and etc.<br>With aim to avoid the duplication in investment and TA projects it is obvious that the establishment of coordination body within OTS becomes the necessity.<br>***It is recommended***:<br>To establish the Food Security and SDGs Coordination Executive Body under OTS which will closely cooperate with proposed Food Security Advisory Board. | OTS/FAO/ ADB/ ECO/ WBG | 2025-2026 |
| 3.3 | With aim to work out the common policy and approach to ensure the regional food security and investment policy<br>***it is recommended***:<br>to synchronize in OTS countries the timing of next Agricultural Census for the same year and the same methodologies. Under the current schedule within WCA Türkiye carried it in 2023, Kyrgyzstan and Uzbekistan in 2024, Azerbaijan and Kazakhstan are going in 2025 | FAO/World Program for Census in Agriculture (WCA). | 2031 |
| 3.4 | With aim to ensure reliable data collection within census processes<br>***it is recommended***:<br>to train around 300 service persons proportionally to numbers of households in member countries under the methodological patronage of FAO. | OTS Chamber of Commerce/ WCA | 2025-2026 |

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| 3.5 | UN Statistical Commission set up a set of Climate Change indicators.<br>***It is recommended***:<br>To work out the unified list of proposed indicators with aim to elaborate relevant protocols for progress monitoring among countries- members of OTS. | UNDS / OTS | 2025-2026 |
| 3.6 | CAREC is establishing the CAREC Climate Change Steering Committee. Cross-Sectoral Working Group on Climate Change and a Climate Expert Group are among the potential advisory bodies of newly establishing Committee.<br>***It is recommended***:<br>to cooperate with mentioned bodies to synchronize the agendas and synergize the actions. | Coordination Committee of Turkic Cooperation Organizations / ADB/CAREC | 2025-2030 |
| 3.7 | Agrifood sectors of OTS countries emit GHG. Quantified volumes (quotas) of GHG could be traded on specialized burses. Obtained financial resources might be directed for re-investment into new climate-smart agri-food technologies.<br>***It is recommended***:<br>To work out common unified methodology for quantifying of emitted GHG volumes and monetizing it through burses. | OTS Coordination Committee of Turkic Cooperation Organizations / IPCC | 2026-2030 |
| 3.8 | Different forms of agricultural lands tenure and ownership are existing in OTS member countries. Depending on different forms and land plots size they demonstrate different trends in efficiency in different countries (cooperatives, farms, dehkans, shirkats, etc). This predetermines the necessity to carry experiences sharing permanently.<br>***It is recommended***:<br>To organize OTS Land tenure and ownership Conferences on biannual timeframe periodicity. In general, it can be a part of OTS Soil Coalition. | Working Group on Agriculture Cooperation / International Turkic Academy | 2026 |
| 3.9 | Wide-scale agri-food prices fluctuation and disruptions in supply chains create high risks for significant vulnerable groups in OTS members. In this situation<br>***it is recommended***:<br>relevant institutions/subsidiaries of OTS could advocate for boosting and establishment of intergovernmental public stocks to promote food security. | OTS CCTCO/ Turkic Chamber of Commerce and Industry (TCCI) | 2025-2028 |

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| 3.10 | Feeding from existing global agri-food related institutions' monitoring resources (FAO, WBG. ADB, EU, UN, ITC, WTO)<br>***it is recommended***:<br>to establish users friendly and mapping based food security portal which will cover OTS countries and deliver real-time based food security and agri-food systems linked data to executive institutions of OTS members. | OTS Academy of Sciences | 2026-2027 |
| 3.11 | İnternational Agri-food Exhibitions is an effective instrument for agricultural commodities promotion and investments attraction. Mutual standing on such famous exhibitions as MACFRUITE (Italy), FRUITLOGISTIK (Germany) and etc. promises a sound exposing and simultaneously expenditure minimizing.<br>***It is foreseen*** that:<br>Launched "Made in Turan" brand can be a common umbrella for OTS member countries. | OTS Chamber of Commerce and Industry (TCCI) | 2026-2028 |
| 3.12 | As all OTS members entering into UNECE regional group of the UN, it is<br>***highly recommended***:<br>To cooperate with this institution, establish permanent information exchange channel and use its reports in policy researches and progresses monitoring in compliance with OTS' "Vision 2040". | OTS/ UNECE | 2026-2027 |
| 3.13 | Digitalization remains one of sector' growth drivers. As so<br>***It is recommended***:<br>To simplify the processes of agri-softs licensing within OTS borders, promoting public-private partnerships for digital services, training farmers in digital tools. | OTS Coordination Committee of Turkic Cooperation Organizations | 2026-2028 |
| 3.14 | Regional agro-industrial clusters, which would enable the creation of stronger linkages between all actors and institutions in the agrifood chains and lead to improved production and cross-border trade in priority sectors. Resilient Agri-food Clusters Development Project in the Kyrgyz Republic is planning. This will be supplemented by a $5 million grant from the Global Agriculture and Food Security Program (GAFSP),<br>***It is recommended***:<br>To carry out an in-depth analysis to identify the strategic and perspective sub-sectors, including those which are maximum job-generating projects taking into account the huge wave of job migrants returning to Central Asia rural areas from Russia and necessity to promote gender-sensitive agricultural programs to empower women in rural areas. | OTS International Turkic Academy in coordination with national ASs/ Turkic Business Council. | 2025-2026 |

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| 3.15 | It is predicted that synergy based' approaches will economize financial resources, enrich information background of OTS structures and strengthen the capacity building of involved countries' specialists.<br>***It is recommended***:<br>To work out OTS Food Security and related SDGs Strategy, which will be complementary to existing and implementing food related regional strategies and projects (FAO, ADB, EU, IDB), where national budgeting framework will be harmonized with its SDGs. | OTS/International donors' regional representatives. | 2025-2026 |
| 3.16 | A CAREC Working Group (WG) on Agricultural Development and Food Security is set up to oversee the implementation of the CAREC' Framework.<br>***It is recommended***:<br>To facilitate the communication channels between a CAREC Working Group on Agricultural Development and Food Security and relevant OTS body, including a proposed to be established the Food Security Advisory Board. | CAREC WG/OTS Academy of Sciences | 2025-2027 |
| 3.17 | With the aim to modernizing sanitary and phytosanitary measures in CAREC, to harmonize them and align with international standards<br>***it is recommended***:<br>To carry out a comprehensive assessment of the laws and procedures governing the oversight and application of sanitary and phytosanitary measures, laboratory infrastructure, and border services management in CAREC region. Proposed e-Phyto Certificate initiative can be a subject of assessment. | OTS/ FAO | 2025-2026 |

### I.G.3. Tools and instruments to be applied

**Table I.39. Food promotion instruments**

| Instrument/ Tool | Issuer - Institutional owner | Outcomes expected | OTS members applied/ processing & results gained already |
|---|---|---|---|
| Food and Agriculture Policy Decision Analysis (FAPDA) program | FAO UN | a) Consumer-oriented policies;<br>b) Producer-oriented policies;<br>c)Trade-oriented and macroeconomic policies; | https://openknowledge.fao.org/ server/api/core/bitstreams/6188208f-3cc2-4cbf-9c37-224388c3bc1/content |
| International network of Food data systems (INFOOD). | Coordinated by FAO. | a) support national database programs;<br>b) serve as repository for special databases;<br>c) prepare and maintain inventories of foods to be analyzed - priorities based on dietary pattern, nutrition/ health profile;<br>d) organize regional activities on food composition; | Run as a Task Force of International Union of Nutritional Sciences. https://www.fao.org/infoods/infoods/structure-and-tasks-of-infoods/en/<br>OTS member countries data center located in Kazakhstan and coordinated through Institute of Nutrition ((Almaty, 480008, Klochkov str. 66; Tel. 7-327-242-9203; Co-ordinator-Dr. Musa Aidjanov; aidjanov@mussa.samal.kz ). Though Türkiye matters linked to European coordinating division within INFOOD. |
| The Agricultural Market Information System (AMIS) https://www.amis-outlook.org/amis-about/en/ | G20 & Spain | a) Policy options to reduce price volatility;<br>b) Futures markets signal change: Interpreting price behavior;<br>c) Econometric analysis of market integration and price transmission; | Turkey and Kazakhstan are invited countries. Price volatility and its effects on food security is a complex issue with many dimensions, agricultural and non-agricultural, short- & long-term, stemming from both supply and demand developments, with highly differentiated impacts on consumers and producers in developed and developing countries. |

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| Global Information and Early Warning System (GIEWS) | FAO | Precise forecasting of regional production & trade expectations. | https://www.fao.org/giews/en/ |
| Food Security Crisis Preparedness Plans (FSCPP). | WBG/GAFS | 1. Opportunities for technical collaborations;<br>2. Operational arrangements;<br>3. Elaborated protocols & guidelines | OTS' countries can address as WBG members.<br>https://www.worldbank.org/en/topic/food-security/brief/countries-catalyze-new-preparedness-plans-to-more-effectively-respond-to-emerging-major-food-and-nutrition-crises |
| European Institute of Innovation and Technology (EIT) FOOD | EIT of EU | - Access to International Food Data Alliance;<br>- Enable the transition to a net zero food system;<br>- Establishing resilient food supply chain;<br>-To get supporting through Regional Innovation Scheme (RIS) of EITFOOD. | EIT Food is supported by the European Institute of Innovation and Technology (EIT), a body of the European Union.<br>-Some private institutions in Türkiye cooperate with EITFOOD already.<br>https://www.eitfood.eu/ |
| TA "Resilient and Inclusive Agricultural Development & Food Security in the Central Asia Regional Economic Cooperation Program Member Countries" Project | ADB/Project Number: 57033-001 December 2023 | a) regional cooperation among the CAREC (OTS) member countries in agricultural development and food security increased. | OTS members as CAREC Program beneficiaries (Total grant for TA is equal to Three million US dollars.<br>https://www.adb.org/sites/default/files/project-documents/57033/57033-001-tar-en.pdf |
| GHG Trade tools | OTS/IPCC | Through tradeable GHG quotas to obtain investment resources | To be applied |
| States foods purchasing (tenders) | OTS Council | In each OTS members the governments' food purchasing/tenders should follow to principle that OTS share should be not less than 10% of total announced volume to be imported. | To be followed based on local origin production. Tenders/purchasing should be announced and localized among OTS enterprises (beyond re-export) through e-trade instruments. |

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| Precision Agriculture Techniques | Ministries of Agriculture | e-agro;<br>E-APK; | Azerbaijan;<br>Kazakhstan. |
| İnstrument in SDGs planning processes.<br>UN & EU. | Budgetary bodies of national governments | Integrated National Financing Framework (INFF) & Rapid Integrated Assessment (RIA). The INFF is now instrumental in enhancing SDG planning processes. | https://inff.org/<br>Kazakhstan is processing. |
| QR code technology based a traceability system. | National Food Safety agencies. | Halal product traceability system integrated with QR code technology | Under piloting by different producers. |
| Pasture conditions assess instrument. | National Ministries of Agriculture | The "Pasture Monitoring" mobile app is a valuable tool for pasture committees and forestry agencies. This program allows staff to observe and assess changes in land conditions in the spring before grazing and in the fall after livestock grazing. | Pasture users' unions in Kyrgyzstan. |
| Turkic Agro Business Forum | OTS/Turkic Chamber of Commerce & Ind. (TTCI) | a) establishment of networks;<br>b) knowledge sharing;<br>c) products promotion; | Two Business Forums were hold already. Last one in Baku, September 2023 |

## I.G.4. CONCLUSION

Analysis of all five OTS' member countries data shows that consolidated agri-food linked potential means 2,927,222 sq. km of arable lands, 94,461 million US dollars of contribution to national economies (2022), and the generation of a significant share of employment in each member country. Of course, each country has its own specific structure, institutional configuration, competitive components, and challenges faced. But to ensure food security for their population remains a matrix function of the agri-food sector in each country, including agriculture. The main legislative understandings are based on FAO definitions.

In-depth analyses are provided in country chapters by national experts. Domestic production issues are described relying on data from national statistics, governing institutions, and international organizations reports. Domestic production and international agri-food trade are recognized as cornerstones of food security.

Regional overview was hold mainly within "Vision-2040" framework. All countries except Turkey had negative agri-food trade balances. Though "virtual" OTS' trade agri-food balance was positive due to Türkiye's data, the growing import dependence from Russia is assessed as a risk factor. A rather low level of agri-food trade among OTS members necessitates a strategic analysis of countries' trade priorities. Here, of course, we should take into account that within period 2019-2022 the population of Azerbaijan increased for 154 thousand, Kazakhstan for 807 thousand, Kyrgyzstan for 357 thousand, Türkiye for 2.125 thousand and Uzbekistan for 4.551 thousand.

Though all OTS countries increased domestic production both in quantitative terms and in value, but the reality is that in all OTS countries the value of imported agri-food products per capita per year had grown within 2019-2022 period.

**Table 40. Value of imported agri-food products average per capita/ per year in OTS countries (US dollars) ***

| Country/Year | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| Azerbaijan | 192,2 | 189,1 | 233,3 | 265,0 |
| Kazakhstan | 206,0 | 212,1 | 253,0 | 305,8 |
| Kyrgyzstan | 102,0 | 91,1 | 130,4 | 173,6 |
| Türkiye | 176,6 | 181,9 | 210,1 | 272,0 |
| Uzbekistan | 66,3 | 70,7 | 94,7 | 114,2 |
| OTS | 155,1 | 158,5 | 188,8 | 235,7 |

*Author' calculations.

This trend is a main challenge for all OTS countries. And it begets inflation which consumers face every day and everywhere. And add here the reality that given above the value of imported products reflect the cost of FOB (border) which grows for consumers usually in three times on way to the supermarket' shelfs.

The majority of SDG targets are on a positive track in all member countries. Recommended actions and instruments are provided. Analysis of agrarian profiles of each OTS members demonstrate that every country can significantly strengthen its food sovereignty. The process of transformation of agri-food system in OTS countries cross through more deep cooperation and coordinated policy in land use, water distribution, export-import orientation, coordinated participation in regional logistic routes. And it will be absolute truth if we say that this paper as an annual "Turkic Agriculture and Food Security Outlook" being a first step to creation of a single data driven "digital agro-data platform" of the Turkic States has happened.

# I.H. ANNEXES

## I.H.1. Annex 1- Definitions of terms used

**Adaptation -** In human systems, adaptation refers to the process of adjustment to actual or expected climate and its effects to moderate harm or exploit beneficial opportunities. In natural systems, adaptation refers to the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate and its effects[76].

**Carbon pricing** Refers to an approach that internalizes the external cost of damage caused by climate change by putting a price on greenhouse gas emissions.

**Cereal import dependency ratio** provides a measure of the dependence of a country or region on cereal imports. The higher the value of the indicator, the more dependent it is. Specifically, the cereal import dependency ratio tells how much of the available domestic food supply of cereals has been imported and how much comes from the country's own production. It is computed as (cereal imports - cereal exports)/ (cereal production + cereal imports - cereal exports) x 100. Given this formula, the indicator assumes only values less than or equal to 100. Negative values indicate that the country is a net exporter of cereals. The indicator is calculated in three-year averages to reduce the impact of possible errors in estimated production and trade due to the difficulties in properly accounting for stock variations in major foods (FAO Statistical Year Book, 2023).

**Climate** change: long-term shifts in temperatures and weather patterns due to natural processes and human activities.

**Cost of a Healthy** Diet: The cost of a healthy diet is defined as the cost of purchasing the least expensive, locally available foods that may compose a diet that meets requirements for energy and food-based dietary guidelines (FBDGs) for a reference person within an energy balance set at 2 330 kcal per day.

**Dehkan (personal subsidiary) farm**: a small-scale family farm that produces and sells agricultural products based on the personal labor of family members on a personal land plot provided to the head of the family for life-long inherited possession. Activity in dehkan (personal subsidiary) farms refers to entrepreneurial activity and can be carried out at the request of members of the dehkan (personal subsidiary) farm, both with and without forming a legal entity.

**Diet quality (or healthy diets)** comprising four key aspects: diversity (within and across food groups), adequacy (sufficiency of all essential nutrients compared to requirements), moderation (foods and nutrients that are related to poor health outcomes) and balance (energy and macronutrient intake). Foods consumed should be safe.

[76] https://www.adb.org/sites/default/files/publication/963241/regional-action-climate-change-vision-carec.pdf

**Dietary pattern** - The combination of foods that form diets in context and time. Dietary patterns are contextual, driven by factors of food access and affordability but also by culture, traditions, values, preferences and other considerations.[77]

**Disaster:** A serious disruption of the functioning of a community or a society triggered by geophysical or extreme weather hazard events leading to human, material, economic, or environmental losses and impacts. Disasters occur when hazard events and extreme weather hazard events interact, exposing vulnerable people and assets to those events.

**Export values** are reported as FOB (free on board: the value of the goods plus the value of the services performed to deliver the goods to the border of the exporting country).

**GDP (Gross Domestic Product) -** is the sum of output within the economy's territory minus the sum of intermediate consumption (increased by taxes net of subsidies on products). It is measured in nominal terms and with market exchange rates[78].

**GDP per capita** is estimated as an economy's gross domestic product divided by the population. It is calculated on the basis of data for the three latest years available.

**The Green Box:** The Agreement on Agriculture (WTO) sets out a number of general and measure-specific criteria that, when met, allow measures to be placed in the Green Box. The general criteria are that the measures must have no or at most minimal trade-distorting effects or effects on production. They must be provided through a publicly-funded government program (including government revenue foregone) not involving transfers from consumers, and must not have the effect of providing price support to producers.

**Import values** are reported as CIF (cost insurance and freight: the value of the goods, plus the value of the services performed to deliver goods to the border of the exporting country, plus the value of the services performed to deliver the goods from the border of the exporting country to the border of the importing country).

**Minimum dietary energy requirement (MDER)***:* Human energy requirements for an individual in a given sex/age class are determined on the basis of normative requirements for basic metabolic rate per kilogram of body mass, multiplied by the ideal weights that a healthy person of that sex/age class may have, given their height, and then multiplied by a coefficient of physical activity level (PAL) to take into account physical activity.

**National adaptation plans:** The objectives of national adaptation plans are to (i) reduce vulnerability to the impacts of climate change by building adaptive capacity and resilience; and (ii) integrate adaptation into new and existing national, sectoral, and

[77] FAO. 2023. The State of Food and Agriculture 2023 – Revealing the true cost of food to transform agrifood systems. Rome. https://doi.org/10.4060/cc7724en .

[78] World Trade Organization – Trade Profiles 2023. https://www.wto.org/english/res_e/statis_e/daily_update_e/trade_profiles/CountryProfileTechnicalNotes_e.pdf

subnational policies and programs, especially development strategies, plans, and budgets.

**Nature-based** solutions: actions to protect, sustainably manage, or restore natural ecosystems that address societal challenges such as climate change, human health, food and water security, and disaster risk reduction effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.

**Paris** Agreement: A legally binding international treaty on climate change. It was adopted by 196 parties at the UN Climate Change Conference (COP21) in 2015. Its overarching goal is to hold "the increase in the global average temperature to well below 2°C above pre-industrial levels" and pursue efforts "to limit the temperature increase to 1.5°C above pre-industrial levels".

**Prevalence of Undernourishment**: expresses the probability that a randomly selected individual from the population consumes an insufficient quantity of calories to cover their energy requirement for an active and healthy life. The indicator is computed by comparing a probability distribution of habitual daily dietary energy consumption with a threshold level called the minimum dietary energy requirement. Both are based on the notion of an average individual in the reference population.

**Resilience**: The capacity of interconnected social, economic, and ecological systems to cope with a hazardous event, trend, or disturbance, responding or reorganizing in ways that maintain their essential function, identity, and structure while maintaining a capacity for adaptation, learning, and/or transformation.

**True cost accounting (TCA)** - A holistic and systemic approach to measuring and valuing the environmental, social, health and economic costs and benefits generated by agrifood systems to facilitate improved decisions by policymakers, businesses, farmers, investors and consumers.[79]

**Unaffordability of a Healthy Diet:** The unaffordability of a healthy diet is defined as the inability of a household or of an individual ***to pay the amount of money*** needed to acquire the least-cost combination of locally available foods that meet the requirement for a healthy diet, after having accounted for the portion of their income they have to reserve for acquiring all basic needs other than food.

**Undernourishment**: Undernourishment is defined as the condition of an individual whose habitual food consumption is insufficient to provide, on average, the amount of dietary energy required to maintain a normal, active, and healthy life. The indicator (denominated "***prevalence of undernourishment***" [PoU]) is an estimate of the percentage of individuals in the population that are in a condition of undernourishment.

[79] - UNEP, TEEB, Capitals Coalition & GAFF (Global Alliance for the Future of Food). 2021. True Cost Accounting For Food Systems: Redefining Value To Transform Decision-Making. Technical Briefing Note. https://teebweb.org/wp-content/uploads/2021/09/TechnicalBriefingNote.pdf .

## I.H.2 ANNEX 2
## SUITE OF FOOD SECURITY INDICATORS[80]

Indicators are classified along the four dimensions of food security: **availability, access, utilization, and stability.**

| # | FOOD SECURITY INDICATORS | Unit of measure | Statistical concepts and definitions |
|---|---|---|---|
| **AVAILABILITY** | | | |
| 1. | Average dietary energy supply adequacy | % | The indicator expresses the Dietary Energy Supply (DES) as a percentage of the Average Dietary Energy Requirement (ADER). Each country's or region's average supply of calories for food consumption is normalized by the average dietary energy requirement estimated for its population to provide an index of adequacy of the food supply in terms of calories. |
| 2. | Average value of food production | $ per caput | The indicator expresses the food net production value (in constant 2014-16 international dollars), as estimated by FAO and published by FAOSTAT, in per capita terms. |
| 3. | Share of dietary energy supply derived from cereals, roots and tubers. | % | The indicator expresses the energy supply (in kcal/caput/day) provided by cereals, roots and tubers as a percentage of the total Dietary Energy Supply (DES) (in kcal/caput/day) calculated from the corresponding countries in the FAOSTAT food balance sheets. |
| 4. | Average protein supply. | gr/caput/day | National average protein supply (expressed in grams per caput per day). |
| 5. | Average supply of protein of animal origin | gr/caput/day | National average protein supply (expressed in grams per caput per day). It includes the following groups: meat; offal; animal fats and products; milk and products; eggs, fish, seafood and products; and acquatic products, other. |
| **ACCESS** | | | |
| 6. | Rail lines density (per 100 square km of land area) | in km per 100 square km of land area | Rail lines density corresponds to the ratio between the length of railway route available for train service, irrespective of the number of parallel tracks (rail lines, total route in km) with the area of the country. |

[80] https://www.fao.org/faostat/en/#data/FS

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| 7. | Gross domestic product per capita (in purchasing power equivalent) | constant 2017 inter-national $ | GDP per capita based on purchasing power parity (PPP). PPP GDP is gross domestic product converted to international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GDP as the U.S. dollar has in the United States. GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant 2017 international dollars. |
| 8. | Prevalence of undernourishment, 3-year averages | % | The prevalence of undernourishment expresses the probability that a randomly selected individual from the population consumes amounts of calories that is insufficient to cover her/his energy requirement for an active and healthy life. The indicator is computed by comparing a probability distribution of habitual daily dietary energy consumption with a threshold level called the minimum dietary energy Requirement. Both are based on the notion of an average individual in the reference population. |
| 9. | Prevalence of undernourishment, yearly estimates | % | The prevalence of undernourishment expresses the probability that a randomly selected individual from the population consumes amounts of calories that is insufficient to cover her/his energy requirement for an active and healthy life. The indicator is computed by comparing a probability distribution of habitual daily dietary energy consumption with a threshold level called the minimum dietary energy Requirement. Both are based on the notion of an average individual in the reference population. |
| 10. | Prevalence of severe food insecurity in the total population, 3-year averages | % | The prevalence of severe food insecurity is an estimate of the percentage of people in the population who live in households classified as severely food insecure.<br>The assessment is conducted using data collected with the Food Insecurity Experience Scale or a compatible experience-based food security measurement questionnaire (such as the HFSSM). In simpler terms, a household is classified as severely food insecure when at least one adult in the household has reported to have been exposed, at times during the year, to several of the most severe experiences described in the FIES questions, such as to have been forced to reduce the quantity of the food, to have skipped meals, having gone hungry, |

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| | | | or having to go for a whole day without eating because of a lack of money or other resources.<br>It is an indicator of lack of food access. Confidence intervals at 90% level are also available. They are computed considering both sampling and measurement variability. |
| 11. | Prevalence of severe food insecurity in the total population, yearly estimates | % | The prevalence of severe food insecurity is an estimate of the percentage of people in the population who live in households classified as severely food insecure.<br>The assessment is conducted using data collected with the Food Insecurity Experience Scale or a compatible experience-based food security measurement questionnaire (such as the HFSSM).<br>In simpler terms, a household is classified as severely food insecure when at least one adult in the household has reported to have been exposed, at times during the year, to several of the most severe experiences described in the FIES questions, such as to have been forced to reduce the quantity of the food, to have skipped meals, having gone hungry, or having to go for a whole day without eating because of a lack of money or other resources.<br>It is an indicator of lack of food access.<br>Confidence intervals at 90% level are also available. They are computed considering both sampling and measurement variability. |
| 12. | Prevalence of moderate or severe food insecurity in the total population, 3-year averages. | % | The prevalence of moderate or severe food insecurity is an estimate of the percentage of people in the population who live in households classified as moderately or severely food insecure.<br>The assessment is conducted using data collected with the Food Insecurity Experience Scale or a compatible experience-based food security measurement questionnaire (such as the HFSSM).<br>In simpler terms, a household is classified as moderately or severely food insecure when at least one adult in the household has reported to have been exposed, at times during the year, to low quality diets and might have been forced to also reduce the quantity of food they would normally eat because of a lack of money or other resources.<br>It is an indicator of lack of food access.<br>Confidence intervals at 90% level are also available. They are computed considering both sampling and measurement variability. |

| | | | |
|---|---|---|---|
| 13. | Prevalence of moderate or severe food insecurity in the total population, yearly estimates | % | The prevalence of moderate or severe food insecurity is an estimate of the percentage of people in the population who live in households classified as moderately or severely food insecure.<br>The assessment is conducted using data collected with the Food Insecurity Experience Scale or a compatible experience-based food security measurement questionnaire (such as the HFSSM).<br>In simpler terms, a household is classified as moderately or severely food insecure when at least one adult in the household has reported to have been exposed, at times during the year, to low quality diets and might have been forced to also reduce the quantity of food they would normally eat because of a lack of money or other resources.<br>It is an indicator of lack of food access.<br>Confidence intervals at 90% level are also available. They are computed considering both sampling and measurement variability. |
| | **STABILITY** | | |
| 14. | Cereals imports dependency ratio. | % | The cereals imports dependency ratio tells how much of the available domestic food supply of cereals has been imported and how much comes from the country's own production. It is computed as (cereals imports - cereals exports)/(cereals production + cereals imports - cereals exports) * 100 .<br>Given this formula the indicator assumes only values <= 100. Negative values indicate that the country is a net exporter of cereals. |
| 15. | Percent of arable land equipped for irrigation. | % | Ratio between arable land equipped for irrigation and total arable land.<br>Arable land is defined as the land under temporary agricultural crops (multiple-cropped areas are counted only once), temporary meadows for mowing or pasture, land under market and kitchen gardens and land temporarily fallow (less than five years). |
| | | | The abandoned land resulting from shifting cultivation is not included in this category. Data for arable land are not meant to indicate the amount of land that is potentially cultivable.<br>Total arable land equipped for irrigation is defined as the area equipped to provide water (via irrigation) to the crops. It includes areas equipped for full and partial control irrigation, equipped lowland areas, pastures, and areas equipped for spate irrigation. |

| | | | |
|---|---|---|---|
| 16. | Value of food imports over total merchandise exports | % | Value of food (excl. fish) imports over total merchandise exports. |
| 17. | Political stability and absence of violence/ terrorism. | Index | Political stability and absence of violence measures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism. |
| 18. | Per capita food production variability. | Constant 2014-2016 thousand Int. $ per capita | Per capita food production variability corresponds to the variability of the "food net per capita production value in constant 2014-2016 international $" as disseminated in FAOSTAT. |
| 19. | Per capita food supply variability. | kcal/ caput/day | Per capita food supply variability corresponds to the variability of the "food supply in kcal/caput/day" as disseminated in FAOSTAT. |
| | **UTILIZATION** | | |
| 20. | People using at least basic drinking water services. | % | This indicator encompasses both people using basic water services as well as those using safely managed water services. Basic drinking water services is defined as drinking water from an improved source, provided collection time is not more than 30 minutes for a round trip. Improved water sources include piped water, boreholes or tubewells, protected dug wells, protected springs, and packaged or delivered water. |
| 21. | People using safely managed drinking water services. | % | The percentage of the population using drinking water from an improved water source which is located on premises, available when needed and free from feces and priority chemical contamination. |
| 22. | People using at least basic sanitation services. | % | The percentage of people using at least basic sanitation services, that is, improved sanitation facilities that are not shared with other households. This indicator encompasses both people using basic sanitation services as well as those using safely managed sanitation services.<br>Improved sanitation facilities include flush/pour flush to piped sewer systems, septic tanks or pit latrines; ventilated improved pit latrines, compositing toilets or pit latrines with slabs. |
| 23. | People using safely managed sanitation services. | % | The percentage of the population using improved sanitation facilities which are not shared with other households and where excreta are safely disposed in situ or transported and treated off-site. |

| | | | |
|---|---|---|---|
| 24. | Percentage of children under 5 years of age affected by wasting. | % | Wasting prevalence is the proportion of children under five whose weight for height is more than two standard deviations below the median for the international reference population ages 0-59 months. |
| 25. | Percentage of children under 5 years of age who are stunted. | % | Percentage of stunting (height-for-age less than -2 standard deviations of the WHO Child Growth Standards median) among children aged 0-59 months. |
| 26. | Percentage of children under 5 years of age who are overweight. | % | Percentage of overweight (weight-for-height more than 2 standard deviations of the WHO Child Growth Standards median) among children aged 0-5 months. |
| 27. | Prevalence of obesity in the adult population (18 years and older). | % | Prevalence of obesity in the adult population is the percentage of adults ages 18 and over whose Body Mass Index (BMI) is more than 30 kg/m2. Body Mass Index (BMI) is a simple index of weight-for-height, or the weight in kilograms divided by the square of the height in meters. |
| 28. | Prevalence of anemia among women of reproductive age (15-49 years). | % | Prevalence of anemia among women of reproductive age refers to the combined prevalence of both non-pregnant with hemoglobin levels below 12 g/dL and pregnant women with hemoglobin levels below 11 g/dL. |
| 29. | Prevalence of exclusive breastfeeding among infants 0-5 months of age. | % | Exclusive breastfeeding refers to the percentage of children less than six months old who are fed breast milk alone (no other liquids) in the past 24 hours. |
| 30. | Prevalence of low birthweight. | % of newborns | Low birthweight is defined as a weight at birth of less than 2 500 grams (less than 5.51 lbs), regardless of gestational age. |

## I.H.3. ANNEX 3 - GLOBAL SET OF CLIMATE CHANGE INDICATORS[81]

### Drivers

### Total greenhouse gas emissions

1. Total greenhouse gas emissions per year
2. Total emissions of indirect greenhouse gases
3. Greenhouse gas emissions from land use, land use change and forestry
4. Total greenhouse gas emissions from the national economy
5. Greenhouse gas emissions per capita
6. Greenhouse gas emissions in gross fixed capital formation of direct investment
7. Greenhouse gas emissions in value added of foreign-controlled multinational enterprises
8. Carbon footprint

### Atmospheric concentration of greenhouse gases

9. Global concentration of greenhouse gases

Energy production, supply and consumption

10. Total primary energy production from fossil fuels
11. Total energy supply from fossil fuels
12. Share of fossil fuels in total energy supply
13. Final energy consumption per capita
14. Energy intensity measured in terms of primary energy and gross domestic product

Fossil fuels

15. Fossil fuel dependency
16. Amounts of fossil-fuel subsidies (production and consumption) per unit of gross domestic product

### Population

17. Population growth
18. Urban population as a proportion of total population

### Transport

19. Number of (fossil-driven) vehicles per capita
20. Vehicle miles travelled per capita Land and agriculture
21. Intensity of use of forest resources
22. Deforested area as a proportion of total forest area
23. Ratio of area of organic soils drained for agriculture to total area of organic soils
24. Livestock units per agricultural area
25. Use of nitrogen fertilizers per hectare of total agricultural area (cropland and pastures)
26. Growth in built-up area

[81] Statistical Commission. Fifty-third session 1–4 March 2022. Climate change statistics Report of the Secretary-General. https://unstats.un.org/unsd/statcom/53rd-session/documents/2022-17-ClimateChangeStats-E.pdf .

## Impacts

### Agricultural production affected by climate change

27. Direct agricultural loss attributed to disasters
28. Crop loss due to climate extremes
29. Impact of climate change on livestock productivity
30. Growing degree days

### Areas affected by climate change

31. Forest area as a proportion of total land area
32. Change in snow cover and snow depth
33. Reduction of surface water bodies
34.Change in coasts affected by erosion
35. Reduction of the extent and mass of glaciers

### Freshwater resources

36. Renewable freshwater resources per capita
37. Freshwater abstracted as a proportion of renewable freshwater resources
38. Water quality

### Hazardous events and disasters

39. Frequency of hazardous events and disasters
40. Direct economic loss to all other damaged or destroyed productive assets attributed to disasters
41. Direct economic loss in the housing sector attributed to disasters
42. Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population
43. Number of climate refugees, climate migrants and persons displaced by climate change

### Climate change and human health

44. Incidence of cases of climate-related diseases
45. Incidence of heat- and cold-related illnesses or excess mortality
46. Climate-induced air pollution

### Climate change evidence

47. Sea level rise
48. Reduction of sea ice cover
49. Average marine acidity (pH) measured at agreed suite of representative sampling stations

50. Reduction of lake and river ice cover
51. Global mean surface temperature anomaly
52. Mean surface temperature anomaly
53. Temperature records
54. Temperature-humidity index
55. Mean sea surface temperature anomaly
56. Ocean heat content
57. Temperature of freshwater bodies
58. Total rainfall anomaly
59. Precipitation record
60. Standardized precipitation index

**Soil condition**

61. Change of land area affected by soil erosion

**Distribution and status of species**

62. Proportion of populations maintained within species
63. Red List index
64. Species habitat index
65. Rate of invasive alien species spread

**Distribution and status of ecosystems**

66. Reduction in the extent of natural and semi-natural ecosystems
67. Proportion of forest area affected by forest fires
68. Phytosanitary status of forest
69. Ecosystem integrity index
70. Ecosystem connectivity
71. Proportion of land that is degraded over total land area
72. Proportion of fish stocks within biologically sustainable levels
73. Increase in area affected by coral bleaching

**Production and consumption of materials**

74. Impact on production of wood and non-wood products

**Climate change impacts on transport and critical infrastructure**

75. Damage to critical infrastructure attributed to disasters
76. Direct economic loss resulting from damaged or destroyed critical infrastructure attributed to disasters
77. Impacts of climate change on transport

### Climate change impacts on tourism

78. Reduction in tourist arrivals following climate-related hazardous events
79. Damage to natural heritage and sites of tourist interest
80. Direct economic loss to cultural heritage damaged or destroyed attributed to disasters

### Vulnerability

### Water security, food security and agriculture

81. Prevalence of undernourishment
82. Balance of food trade
83. Customer price of drinking water
84. Water production cost
85. Area of biofuels (and other non-food crops) as a proportion of total agricultural area
86. Population relying on subsistence and pastoral farming

### Vulnerable species, ecosystems and their services

87. Vulnerable species
88. Vulnerable or fragile ecosystems
89. Vulnerable ecosystem services
90. Ecosystem carbon stocks

### Buildings and infrastructure vulnerable to climate change

91. Infrastructure vulnerable to climate change
92. Buildings (settlements) vulnerable to climate change

### Vulnerable population

93. Coverage of essential health services
94. Net energy imports as a proportion of total energy supply
95. Proportion of population with access to electricity
96. Proportion of population served by municipal waste collection
97. Proportion of population using (a) safely managed sanitation services and (b) a hand - washing facility with soap and water
98. Proportion of population using safely managed drinking water services
99. Proportion of population with access to heating/cooling
100. Proportion of population living in coastal areas

101. Proportion of the population living below the international poverty line by sex, age, employment status and geographic location (urban/rural)
102. Proportion of population living in non-coastal hazard-prone areas
103. Proportion of urban population living in slums, informal settlements or inadequate housing
104. Indigenous population living in isolated areas
105. Proportion of population with disability

### Area of country vulnerable to climate change

106. Coastal area vulnerable to climate change
107. Islands vulnerable to climate change
108. Water bodies vulnerable to climate change impacts

### Mitigation

### Renewable energy

109. Production of renewable energy as a proportion of total energy production
110. Renewable energy share in the total final energy consumption
111. Non-fossil fuel energy consumption as a proportion of final energy consumption
112. Proportion of population with primary reliance on clean fuels and technology
113. Rate of decrease of energy intensity

### Climate change mitigation policies, strategies and plans

114. Low-carbon development strategies and plans
115. Reforming or phasing out of government support for fossil fuels, by fuel type and type of support
116. Share of climate change mitigation expenditure in relation to gross domestic product
117. Share of energy- and transport-related taxes as a percentage of total taxes and social contributions
118. Amounts provided and mobilized in United States dollars per year in relation to the continued existing collective mobilization goal of the $100 billion commitment through to 2025
119. Average trading carbon price

### Climate change mitigation technology and practice

120.Climate change mitigation technology
121. Trade in low-carbon technology products
122. Greenhouse gas intensity of the economy (including transport)

123. Rate of decrease of greenhouse gas emissions per unit of gross domestic product
124. Greenhouse gas removals (carbon sequestration)
125. Increase in forest area
126. Progress towards achieving the nationally determined contribution

### Adaptation

#### Climate change adaptation policies, strategies and plans

127. Proportion of sectors planning, budgeting and implementing climate change adaptation actions
128. Proportion of women in managerial positions
129. Share of government adaptation expenditure in relation to gross domestic product
130. Number of units dedicated to climate change in government structures
131. National integrated coastal zone management
132. Fisheries management measures in place and multilateral/bilateral fisheries management arrangements

#### Risk management, disaster forecasting and early warning systems

133. Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies
134. Coverage of disaster shelters per capita
135. Climate change funds received
136. Coverage of early warning systems
137. Average increase of insurance premiums incurred due to climate change

#### Public awareness of and education on climate change

138. Proportion of population with access to climate information
139. Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment
140. Number of companies publishing sustainability reports
141. Number of reports on climate change statistics and indicators

#### Area-based adaptation to climate change

142. Adaptation at coastal zones or river basins
143. Nature-based adaptation

144. Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type
145. Share of green urban areas in the total area of cities
146. Proportion of degraded area of ecosystems that has been restored
147. Buildings adapted to climate change
148. Proportion of agricultural area under productive and sustainable agriculture
149. Progress towards sustainable forest management

### Climate change monitoring

150. Biodiversity information monitoring index
151. Meteorological monitoring network
152. Air quality monitoring systems
153. Water monitoring systems
154. Ocean monitoring

Water management

155. Water use per capita

Waste management

156. Municipal waste collected per capita
157. Proportion of municipal waste treated
158. Proportion of domestic and industrial wastewater flows safely treated.

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## PART II. MEMBER COUNTRIES AGRI-FOOD PROFILES

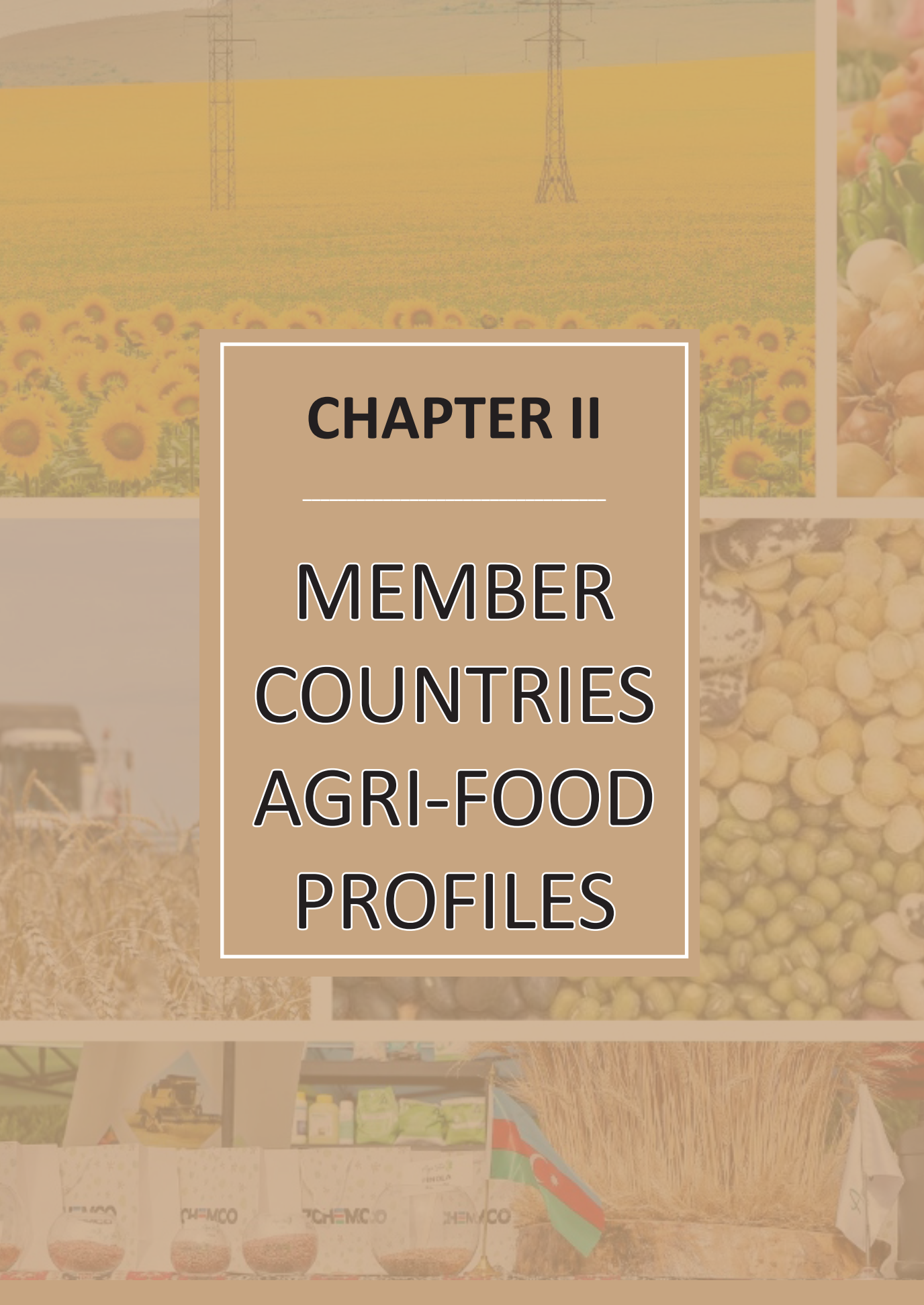
II.A. **Azerbaijan country chapter**

II.B. **Kazakhstan country chapter**

II.C. **Kyrgyzstan country chapter**

II.D. **Türkiye country chapter**

II.E. **Uzbekistan country chapter**



# CHAPTER II

# MEMBER COUNTRIES AGRI-FOOD PROFILES


# Azerbaijan country chapter

## PART II. MEMBER COUNTRIES AGRI-FOOD PROFILES

# SECTION II.A.1. AZERBAIJAN DOMESTIC AGRI-FOOD PROFILE

## II.A.1.1. Background and purpose of the report

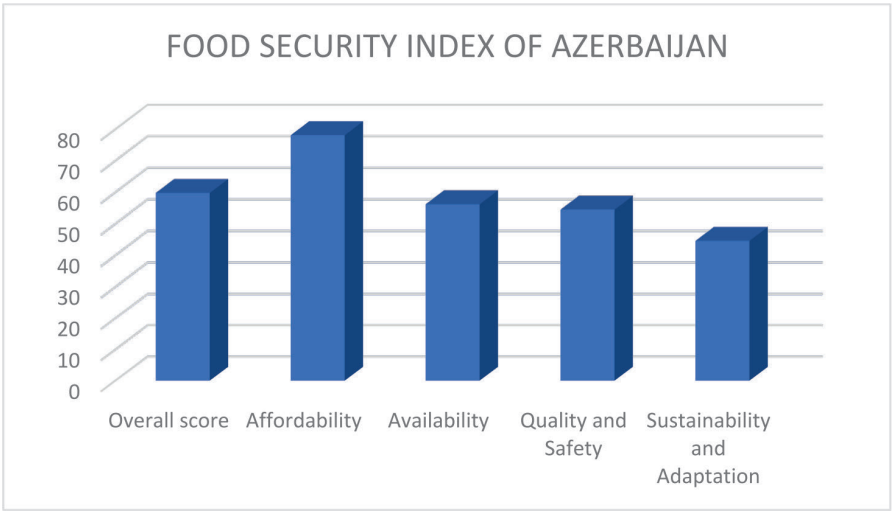
### II.A.1.1.1. Background

On a per capita basis, Azerbaijan has limited arable land, and on a per unit of cultivated land basis, it has very limited water resources. In the conditions of natural population growth and the trend of increasing tourist flow., the competitiveness of manufactured products and the efficiency of the trading process acquire critical importance.

The second critical point that determines the country's competitive advantages is fixing the quality of goods at the level of requirements and generally accepted international forms, or, in other words, certification of agri-food products. Over the past years, Azerbaijan has made a number of significant steps in this direction. The first is, of course, the establishment of the Food Safety Agency. The second is to vest this Agency with regulatory powers along the entire length of supply chains. Currently, the "State Program for Ensuring Food Safety in the Republic of Azerbaijan for the period 2019-2025" is under implementation (Decree of the President of the Republic of Azerbaijan No. 1143 dated April 29, 2019).

### II.A.1.1.2. Purpose of the report

Geographically, politically and economically Azerbaijan remains a liaison of Turkic World. Further development based on the SDGs and commitment to food security are the cornerstones of the country's strategy. The analysis of the challenges of domestic food production, agri-food trade and their connection with current SDG actions form the core of this report.




Source:https://impact.economist.com/sustainability/project/food-security-index/

### II.A.1.2. Methodology

In the process of preparing this report, both qualitative and quantitative research methods were used. Available analyses, reports of international organizations, widely cited data sets, government publications related to food security and sustainable development in the Turkic states were reviewed. The following formulas were applied (where applicable)[1]:

Import dependency ratio İDR – (**):

$$\Omega_{İDR} = İ / (P + İ – E) \times 100$$

Self-sufficiency ratio SSR:

$$\Psi_{SSR} = P / (P + İ – E) \times 100$$

Where:

** $\Omega_{İDR}$ - Import dependency ratio;

$\Psi_{SSR}$ - Self-sufficiency ratio;

P – Volume of Production; İ – Volume of Import; E – Volume of Export.

#### II.A.1.2.1. Data sources

Sources tabled below were used in research

| # | Title of source |
|---|---|
| 1 | State Statistical Committee of the Republic of Azerbaijan (RA) |
| 2 | State Customs Committee of the Republic of Azerbaijan (RA) |
| 3 | Ministry of Agriculture of the RA |
| 4 | Ministry of Ecology and Natural Resources of the RA |
| 5 | Ministry of Economy of the RA |
| 6 | Food and Agriculture Organization of the United Nations (FAO) |
| 7 | World Trade Organization (WTO) |
| 8 | International Trade Centre (ITC) |
| 9 | Organization for Economic Cooperation and Development (OECD) |
| 10 | UN Sustainable Development |

### II.A.1.3. Analysis of the current state of food security in Azerbaijan

Food security remains a central focus of state policy in Azerbaijan. The government is allocating all available resources to ensure the sustainability of agricultural production and strengthen food security throughout the country. This policy framework aims to secure food supply through robust support mechanisms for local food production, supplemented by imports and the establishment of reserves of essential food products, particularly wheat, within the country.

[1] Food balance sheets. A handbook. FAO UN. Rome, 2001. http://www.fao.org/docrep/003/X9892E/X9892E00.HTM

According to the Global Food Security Index, developed by Economist Impact and supported by Corteva Agriscience, Azerbaijan is ranked 66th out of 113 countries worldwide, with an overall score of 59.8 points. This position, while acceptable, indicates that there is significant potential for improvement, especially in the areas of micronutrient availability, protein quality and sustainability of the food systems. The ranking highlights the continued need for improvement in these specific areas to achieve better food security outcomes. Figure II.A. 1: Food Security Index of Azerbaijan, 2022

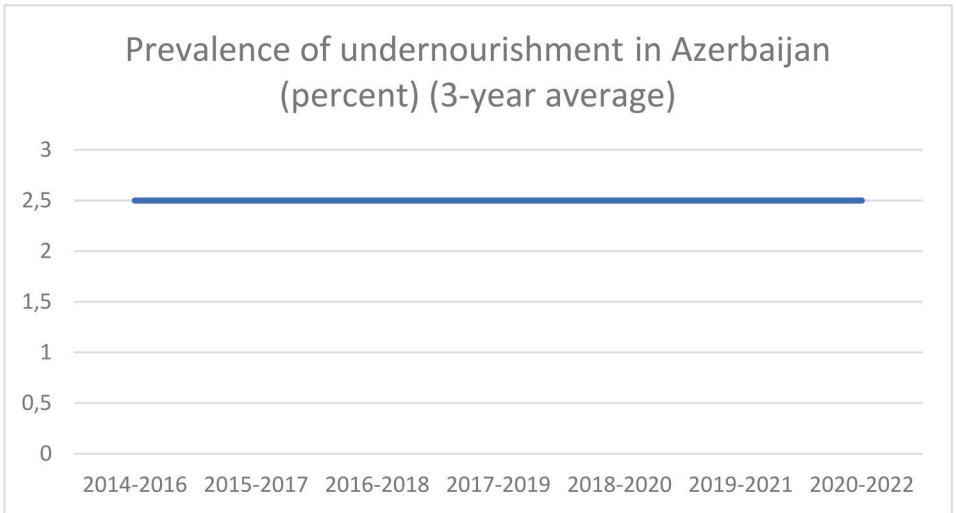
### II.A.1.3.1 Access to food in the country

Access to food is a multifaceted issue, encompassing factors such as food consumption, food quality, demographic considerations, health and sanitation, and government policies and interventions.

#### II.A.1.3.1.1. Food consumption (Level of undernourished groups, share of imported calories)

Access to food is a fundamental indicator of a nation's food security, and understanding patterns of food consumption is crucial in assessing the state of food security in Azerbaijan. Analyzing recent data from reputable sources such as the FAO and the State Statistical Committee of the Republic of Azerbaijan provides valuable insights into the dynamics of food consumption within the country. Azerbaijan has made notable progress in reducing the prevalence of undernutrition.

Table II.A.1. Prevalence of undernourishment (3-year average)




Source: UN FAO.

According to FAO, IFAD, UNICEF, WFP and WHO[2] Azerbaijan is categorized as an upper-middle-income country. This classification reflects its economic status and development level.

The report highlights that the average prevalence of undernourishment among the total population in upper-middle-income countries is below 2.5% for the period from 2020 to 2022. Azerbaijan aligns with this average, also recording a prevalence rate of undernourishment below 2.5%.

To obtain a comprehensive picture of the dynamics of food consumption in Azerbaijan, various indicators such as the prevalence of childhood stunting, the prevalence of childhood overweight, adult obesity rates, etc. were considered. Among these indicators, the prevalence of childhood stunting is slightly higher than the prevalence of childhood overweight, highlighting the special problem associated with child nutrition and growth. For a more detailed breakdown and comprehensive data on these indicators, please refer to Table 1 below, which provides an in-depth analysis and comparison of these key metrics. This table offers further insights into the nutritional challenges faced by different demographics within the country, guiding targeted interventions and policy decisions to improve overall food security and health outcomes.

Table II.A.1a. Prevalence of Undernourishment, Moderate or Severe Food Insecurity, Selected Forms of Malnutrition, Exclusive Breastfeeding and Low Birthweight

| REGIONS/ SUBREGIONS/ COUNTRIES/ TERRITORIES | PREVALENCE OF UNDERNOURISHMENT IN THE TOTAL POPULATION[1] | | PREVALENCE OF WASTING IN CHILDREN (<5 YEARS) | PREVALENCE OF STUNTING IN CHILDREN (<5 YEARS) | | PREVALENCE OF OVERWEIGHT IN CHILDREN (<5 YEARS) | | PREVALENCE OF ANAEMIA IN WOMEN (15–49 YEARS) | | PREVALENCE OF EXCLUSIVE BREASTFEEDING AMONG INFANTS (0–5 MONTHS) | | PREVALENCE OF LOW BIRTHWEIGHT | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2004–06 (%) | 2020–22[4] (%) | 2022[5] (%) | 2012 (%) | 2022 (%) | 2012 (%) | 2022 (%) | 2012 (%) | 2019 (%) | 2012[6] (%) | 2021[7] (%) | 2012 (%) | 2020 (%) |
| **WORLD** | **12.0** | **9.2** | **6.8** | **26.3** | **22.3** | **5.5** | **5.6** | **28.5** | **29.9** | **37.0** | **47.7** | **15.0** | **14.7** |
| **Lower-middle-income countries** | **18.2** | **13.5** | **9.7** | **35.5** | **28.1** | **4.3** | **4.5** | **41.7** | **42.1** | **39.9** | **51.8** | **20.0** | **18.5** |
| **Upper-middle-income countries** | **6.9** | **<2.5** | **1.7** | **10.1** | **8.3** | **8.0** | **8.8** | **17.6** | **18.1** | **28.8** | **35.8** | **7.6** | **8.1** |
| **Western Asia** | **7.8** | **10.5** | **3.5** | **19.1** | **14.0** | **9.1** | **7.2** | **31.7** | **32.5** | **31.9** | **31.7** | **12.2** | **12.2** |
| Azerbaijan | 4.7 | <2.5 | n.a. | 17.4 | 13.3 | 12.2 | 10.1 | 34.7 | 35.1 | 10.8 | n.a. | 11.0 | 11.0 |

Source: https://doi.org/10.4060/cc3017en

Azerbaijan also performs well on the cost of a healthy diet indicator. In upper-middle-income countries, 14.1% of people typically cannot afford a healthy diet. However, in Azerbaijan, this value is 0%, indicating that there are no cases of people unable to afford a healthy diet. For more detailed data, please refer to Table 2 below.

[2] FAO, IFAD, UNICEF, WFP and WHO. 2023. The State of Food Security and Nutrition in the World 2023. Urbanization, agrifood systems transformation and healthy diets across the rural–urban continuum. Rome, FAO. https://doi.org/10.4060/cc3017en

Table II.A.2. The Cost and Affordability of a Healthy Diet - by Country Income Group and by Western Asia countries including Azerbaijan, 2017–2021

| Regions/ subregions/ countries/ territories | Cost of a healthy diet | | | | | People unable to afford a healthy diet | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2017 | 2018 | 2019 | 2020 | 2021 | 2017 | 2018 | 2019 | 2020 | 2021 | 2017 | 2018 | 2019 | 2020 | 2021 |
| | (PPP dollars per person per day) | | | | | (%) | | | | | (millions) | | | | |
| WORLD | 3.295 | 3.355 | 3.431 | 3.511 | 3.662 | 43.8 | 41.8 | 41.2 | 43.3 | 42.2 | 3 124.9 | 3 019.1 | 3 005.5 | 3 191.9 | 3 139.5 |
| Lower-middle-income countries | 3.397 | 3.478 | 3.549 | 3.652 | 3.879 | 72.3 | 69.3 | 68.3 | 71.0 | 70.2 | 2 246.4 | 2 184.3 | 2 180.7 | 2 296.8 | 2 299.6 |
| Upper-middle-income countries | 3.498 | 3.555 | 3.648 | 3.721 | 3.912 | 17.3 | 15.2 | 14.4 | 16.6 | 14.1 | 416.1 | 368.2 | 350.5 | 406.4 | 345.5 |
| Western Asia | 2.989 | 3.064 | 3.148 | 3.218 | 3.363 | 8.5 | 8.6 | 9.7 | 9.7 | 9.0 | 14.3 | 14.6 | 16.7 | 17.0 | 15.9 |
| Azerbaijan | 2.348 | 2.399 | 2.459 | 2.533 | 2.690 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Source: https://doi.org/10.4060/cc3017en

This accomplishment highlights the success of numerous governmental and non-governmental efforts to enhance food access and nutritional outcomes. Nevertheless, it is important to acknowledge that certain vulnerable groups, especially marginalized communities like those in rural areas, still face challenges.

Analyzing the proportion of imported calories sheds further light on Azerbaijan's food consumption trends. Despite Azerbaijan's strong agricultural heritage and self-sufficiency in fruits and vegetables, the country still depends on imports for staple crops like wheat. This dependence is driven by natural factors such as unsuitable climate, limited land and water resources, and economic factors including the competitive disadvantages of wheat production, market dynamics, and international trade agreements. Understanding the composition of imported calories is critical for policymakers and stakeholders to develop strategies that enhance food security resilience and address risks associated with external dependencies.

| COUNTRY | FOOD EXCLUDING FISH | | | FISH | | | ALL FOOD | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2000 | 2010 | 2021 | 2000 | 2010 | 2021 | 2000 | 2010 | 2021 |
| World | - | - | - | - | - | - | - | - | - |
| Asia | -46276 | -106378 | -267536 | -2995 | 8670 | 9617 | -49271 | -97708 | -25919 |
| Azerbaijan | -174 | -475 | -1162 | 1 | -10 | -39 | -174 | -486 | -1201 |

Figure II.A.2. Food Net Trade (USD Million, 2000-2010-2021)

Source: FAO Statistical Yearbook, World Food and Agriculture, 2023, pg. 221.

Azerbaijan has a negative food net trade balance, signifying that it imports more food than it exports. This status as a net importer of food products is a crucial indicator

for evaluating the nation's food trade balance. It highlights Azerbaijan's reliance on imported food, providing a measure of its dependency on external sources to meet its domestic food requirements.

Understanding the food net trade is critical for a variety of reasons. It allows for a comprehensive assessment of a country's food security, indicating how vulnerable it might be to global supply chain disruptions. For Azerbaijan, this reliance on imports can influence its agricultural policies, pushing the government to possibly focus on enhancing domestic production capabilities or negotiating favorable trade agreements to ensure a stable food supply.

Moreover, analyzing food net trade offers insights into Azerbaijan's position and role in global food markets. It reveals the dynamics of its trade relations and economic interactions with other countries, particularly those from which it imports essential food products. This understanding can guide policymakers and stakeholders in formulating strategies to improve food security resilience, reduce dependency on imports, and strengthen the country's agricultural sector.

| COUNTRY | IMPORTS | | | | EXPORTS | | | |
|---|---|---|---|---|---|---|---|---|
| | WHEAT | MAIZE | RICE | OTHER | WHEAT | MAIZE | RICE | OTHER |
| World | 201010.2 | 199321.1 | 50919.1 | 63.185.9 | 198139.3 | 196075 | 50654.8 | 63495.6 |
| Asia | 96385.2 | 101256.1 | 22565.9 | 40666.1 | 10463.4 | 6576.1 | 41448.3 | 2012.2 |
| Azerbaijan | 1148.1 | 30.9 | 46.7 | 24.8 | 0.0 | 11.7 | 0.0 | 36.4 |

Figure II.A.3. Cereals Imports and Exports by Main Commodities, 2021 (Thousand Ton)

Source: FAO Statistical Yearbook, World Food and Agriculture, 2023, pg 236.

As previously mentioned, Azerbaijan has a negative net trade balance in cereals, particularly relying on imported wheat. On average, the country imports 1 million tons of wheat annually, mainly from the Russian Federation. This dependence has significant implications for food security. Relying heavily on wheat imports makes Azerbaijan vulnerable to risks such as price volatility in international markets, supply disruptions, and trade barriers imposed by exporting nations.

This reliance on a single source for imported cereals exposes the country to external shocks that could disrupt global food supply chains. Factors such as adverse weather conditions in major cereal-producing regions, geopolitical tensions, or trade disputes can lead to shortages or spikes in wheat prices. These events affect food availability and affordability for the population, potentially causing food prices to surge and contributing to inflation, raising concerns about food security.

To address this imbalance, strategic measures are needed to boost domestic cereal production, promote sustainable agricultural practices, diversify food sources, and enhance resilience to external shocks in global food markets. This approach will help ensure a more stable and secure food supply for Azerbaijan.

Despite obvious economic development, food security in Azerbaijan remains a critical issue. High food price inflation in recent years has highlighted the importance of taking a closer look at the food security in the country. Nonetheless, the average dietary energy supply remains competitive. (Figure 4)

| COUNTRY | 2010 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|
| World | 2834 | 2898 | 2896 | 2904 | 2927 | 2937 | 2949 | 2959 | 2978 |
| Asia | 2702 | 2808 | 2812 | 2829 | 2862 | 2873 | 2885 | 2899 | 2931 |
| Azerbaijan | 2944 | 2986 | 3004 | 3026 | 3087 | 3153 | 3269 | 3344 | 3384 |

Figure II.A.4. Average Dietary Energy Supply (KCAL per Capita per Day)

Source: FAO Statistical Yearbook, World Food and Agriculture, 2023, pg 277.

### II.A.1.3.1.2. Income, employment and poverty

Household Income Distribution:

According to the Key Findings of the Household Survey by the Azerbaijan State Statistical Committee[3], in 2023 the highest income quintile accounted for 33.8% of Azerbaijan's total income, while the lowest quintile received 11.3%. These figures highlight a significant concentration of income among the wealthiest individuals or households. Additionally, 60% of the population (comprising the 3rd, 4th, and 5th quintiles) received 74.2% of the total income, with per capita incomes in these households at or above 324.8 manats per month. The remaining 20% of the population shared the leftover income. (https://www.stat.gov.az/source/budget_households/?lang=az)

In 2022, the monthly per capita household income was 327.6 manats, marking an 8.9% increase from the previous year. Employment income constituted the largest portion of total household income at 37.9%, an increase of 1.8 percentage points from the previous year. This was followed by income from self-employment at 32.9%, which saw a decrease of 0.7 percentage points, and current transfers at 19.2%, a decrease of 0.9 percentage points from 2021. Income from agriculture made up 32.5% of self-employment income, while pensions, benefits, and social contributions accounted for 99.2% of current transfers received.

Unemployment Rate:

According to the Labor Force Statistics from the Azerbaijan State Statistics Committee, Azerbaijan's total labor force in 2022 was 5.2 million people, with women making up 48.3% and men 51.7%. This represents a 3.1% increase compared to 2019.

[3] Retrieved from: https://www.stat.gov.az/source/budget_households/?lang=az

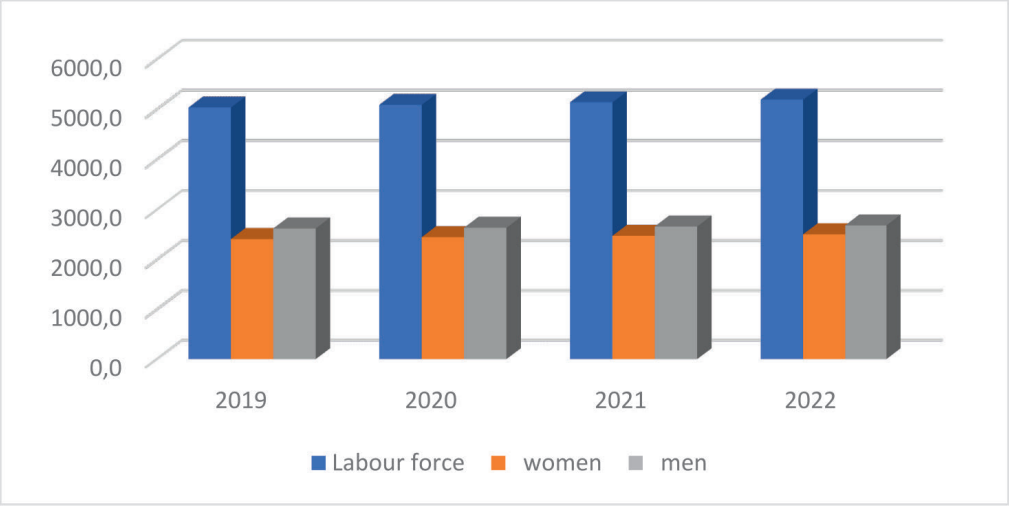



Figure II.A.5. Labor force of Azerbaijan, thousand persons

Source: https://www.stat.gov.az/source/labour/?lang=en

In 2022, employment accounted for 94.4% of the total labor force. For women this indicator was 93.5% for men 95.2%.

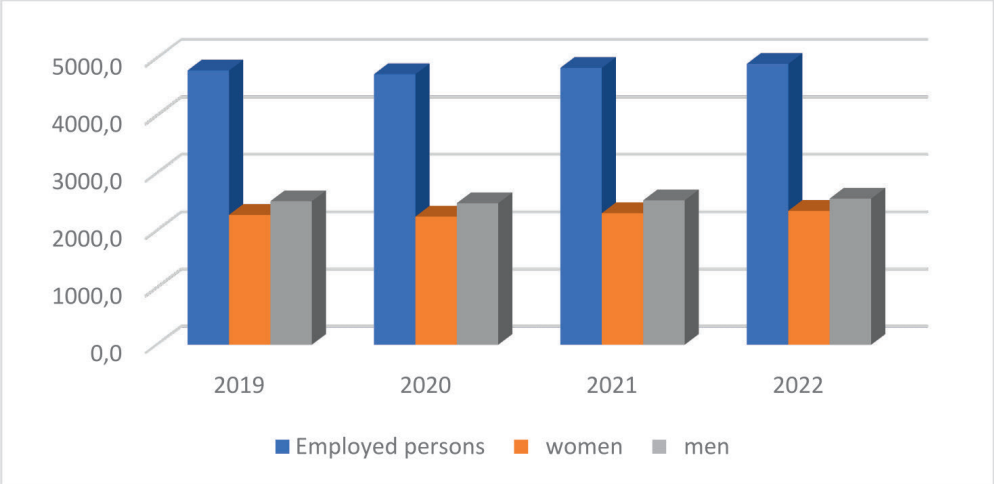



Figure II.A.6. Employed persons of labor force, thousand persons

Source: https://www.stat.gov.az/source/labour/?lang=en

Although 100% of the labor force was not employed entirely, the number of persons who received official unemployment status is available only for the time period of 2019 and before. During recent years, no persons were registered with the State Employment Agency. In 2019, the unemployment rate for women was 1.27%, while for men this indicator was 1.93%.

Poverty:

According to poverty statistics, the poverty line in 2022 was set at 229.6 manats. As previously mentioned, the monthly per capita household income in 2022 was 327.6 manats, indicating that household incomes were generally above the poverty line. However, poverty persisted in the country, with the poverty rate reaching 5.5% in 2022. This rate is 0.7 percentage points higher than in 2019, suggesting that living standards are rising faster than the incomes for some segments of the population.

When examining the poverty data by living area, a clear disparity emerges: the poverty rate in urban areas was 2.9%, while in rural areas, it was significantly higher at 8.6%. This difference highlights the economic challenges faced by rural populations compared to those in urban settings. The higher poverty rates in rural areas could be attributed to limited access to economic opportunities, lower wages, and possibly less access to social services and infrastructure. This urban-rural divide underscores the need for targeted economic and social policies to address the unique challenges faced by rural communities to reduce poverty and improve living standards across the country.

### II.A.1.3.1.3. Price, markets and logistics infrastructure

Azerbaijan is grappling with significant challenges in consumer food product inflation, which threatens to push more people towards poverty. While inflation fluctuated between 2% and 4% during 2018-2020, it has begun to rise in recent years.

| COUNTRY | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| World | 2.7 | 3.3 | 3.7 | 10.6 |
| Asia | 3.7 | 6.7 | 3.0 | 6.1 |
| Azerbaijan | 3.3 | 4.6 | 8.1 | 20.1 |

Figure II.A.7. Inflation in Food Consumer Prices (%)

Source: FAO Statistical Yearbook, World Food and Agriculture, 2023, pg 252.

Azerbaijan has experienced significant food price inflation in recent years, with rates increasing from 4.6% in 2020 to 8.1% in 2021 and reaching 20.1% in 2022.

Official statistics indicate a rising trend in producer price indices for agricultural products. From 2018 to 2021, the annual increase was less than 6%. However, in 2022, there was a significant spike of 15.9% compared to the previous year.

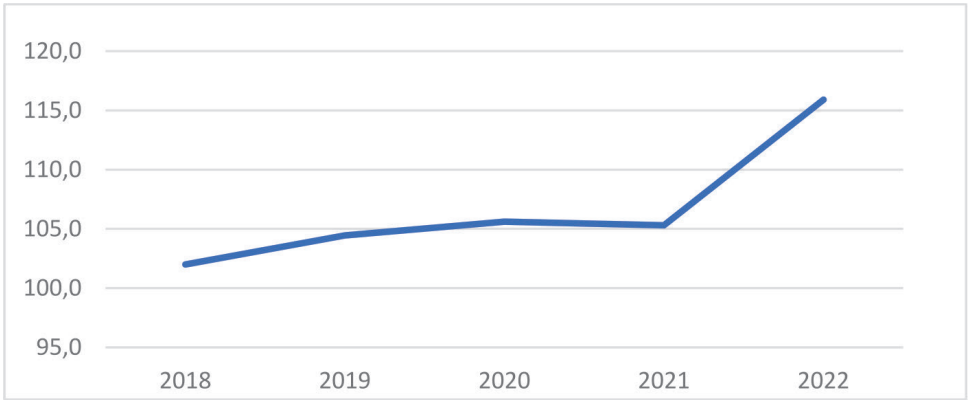



Figure II.A.8. Producer price indices of agricultural products (compared to the previous year, in %)

Source: https://www.stat.gov.az/source/price_tarif/?lang=en

An increasing trend was observed in both annual plants and livestock products which brought a total increase in producer price indices of agricultural products.

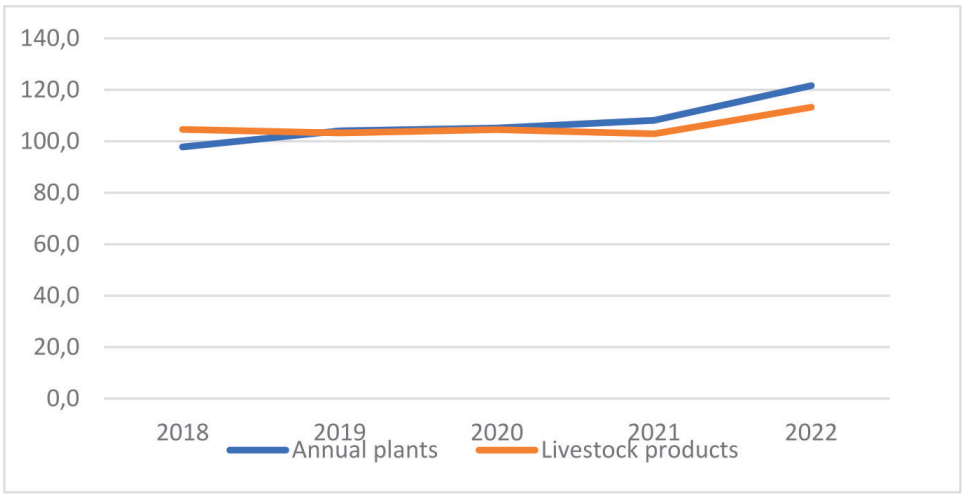



Figure II.A.9. Producer price indices of annual plants and livestock products (compared to the previous year, in %)

Source: https://www.stat.gov.az/source/price_tarif/?lang= en

The rise in producer prices was driven by a significant hike in agricultural input costs, especially in specific areas such as expenses for services like ploughing, spraying, and harvesting. This could create challenges for farmers and agricultural businesses.

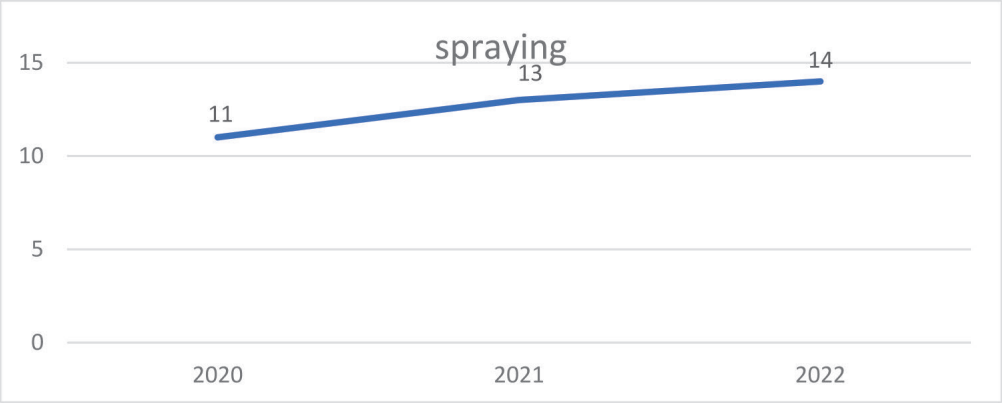



Figure II.A.10. Prices of spraying of agricultural plants, manats per hectare

Source:https://www.stat.gov.az/source/agriculture/?lang=en,https://www.cbar.az/currency/rates?language=en

1 January - 31 December 2020 – 1 US Dollar = 1.7 AZN
1 January - 31 December 2021 – 1 US Dollar = 1.7 AZN
1 January - 31 December 2022 – 1 US Dollar = 1.7 AZN

For instance, official statistics show that spraying costs rose by 18.2% in 2021 compared to 2020 and by 7.7% in 2022 compared to 2021.

The overall prices of other agricultural services increased even more significantly.

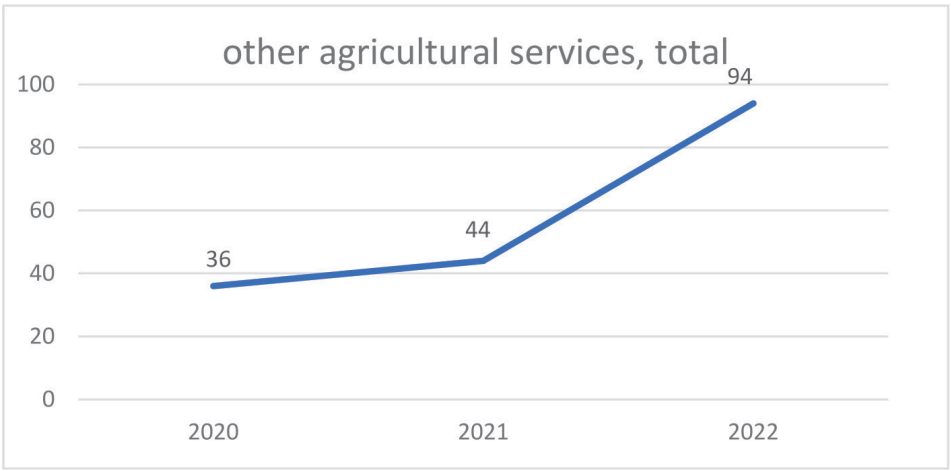



Figure II.A.11. Prices of other agricultural services, manats per hectare

Source: https://www.stat.gov.az/source/agriculture/?lang=en,

https://www.cbar.az/currency/rates?language=en

1 January - 31 December 2020 – 1 US Dollar = 1.7 AZN

1 January - 31 December 2021 – 1 US Dollar = 1.7 AZN
1 January - 31 December 2022 – 1 US Dollar = 1.7 AZN
For example, while the prices of other agricultural services rose by 22.2% in 2021 compared to 2020, they more than doubled in 2022.

### II.A.1.3.2. Food quality (safety)

Food quality and safety are critical components of state policy in Azerbaijan. The primary body responsible for food safety in Azerbaijan is the Food Safety Agency[4]. The Food Safety Agency of the Republic of Azerbaijan regulates the normative regulation on the safety of food products, veterinary and phytosanitary control, registration of subjects operating in the field of food safety, issuance of food safety, phytosanitary and veterinary certificates, primary production, supply, production, processing, packaging, storage, transportation of food products. The Agency exercises state control over the safety of food products at all stages of the food chain, including circulation (including import-export operations), as well as the protection of the rights of consumers of food products, goods under state veterinary and phytosanitary control, as well as state policy and regulation in the aforementioned areas. (https://afsa.gov.az/az/agentlik/esasname)

### II.A.1.3.3. Demographic considerations

Population Growth

The population of Azerbaijan is growing steadily. Over the past decade, the population has increased by more than 8%, reaching 10.1 million in 2023. Of the total population, 54.6% live in urban areas, and 45.4% live in rural areas. Despite overall population growth in both rural and urban areas, the proportion of people living in urban areas has declined slightly from 2020 to 2023, while the proportion of people living in rural areas has shown a slight upward trend.Looking at the gender distribution of the population, we find an almost equal split between men and women. Over the past decade, the gender ratio has fluctuated between 49.8% men and 50.2% women.Regarding age distribution, nearly 22% of the population is under 15 years old, and 13.5% falls between 15 and 24 years old. The largest segment, those aged 25 to 64, represents the most active group in terms of employment. Only 8.5% of the population is 65 years of age or older.

### II.A.1.3.4. Government Policies and Interventions. Country Road Maps on agricultural development (if any)

Agricultural Policy Framework

The Ministry is the central executive body that implements the state policy in the agrarian sector, including the production and processing of agricultural products, the provision of essential services to producers, veterinary care, plant protection and

[4] Retrieved from: https://afsa.gov.az/az/agentlik/esasname

quarantine, and the efficient use of land. Agriculture is mainly regulated through state programs, road maps and other strategic documents.

### II.A.1.3.4.1. National Agricultural Strategies

The Strategic Roadmap for the production and processing of agricultural products in Azerbaijan for 2016-2020 was approved by Presidential Decree No. 1138[5]. Nine strategic goals have been identified, aimed at forming a competitive agricultural production and processing sector based on sustainable development principles.These goals include: (I) building institutional capacity to ensure food security sustainability, (II) increasing the productive capacity of agricultural products along the entire value chain,, (III) improving access to finance, (IV) developing agricultural production, marketing and service delivery tools,, (V) advancing agricultural science, education, and extension services, (VI) creating market infrastructure for agricultural products and improving producers' access to markets, (VII) protecting the environment, ensuring sustainable use of natural resources and strengthening disaster management, (VIII) enhancing the legal framework in the agrarian sector and improving the business environment, and (IX) increasing rural employment and improving the well-being of the population[6]. Specific actions were implemented within the framework of each objective.In accordance with the strategic road map, the state approved sectoral state programs aimed at stimulating the development of various branches of agriculture. In this regard, the following state programs can be distinguished:

State Program on Reliable Food Supply of Population in the Republic of Azerbaijan for 2008-2015

State Program on the development of viticulture in the Republic of Azerbaijan for 2012-2020

State Program for the development of tobacco production in the Republic of Azerbaijan for 2017-2021

State Program for the development of cotton cultivation in the Republic of Azerbaijan for 2017-2022

State Program for the development of agricultural cooperation in the Republic of Azerbaijan for 2017-2022

State Program for the development of rice farming in the Republic of Azerbaijan for 2018-2025

State Program for the development of cocooning and sericulture in the Republic of Azerbaijan for 2018-2025

State Program for the development of citrus fruit growing in the Republic of Azerbaijan for 2018-2025

State Program for the development of tea cultivation in the Republic of Azerbaijan for 2018-2027

[5] Retrieved from: https://e-qanun.az/framework/34254
[6] Retrieved from: https://e-qanun.az/framework/57124

State Program for the development of winemaking in the Republic of Azerbaijan for 2018-2025

Each of the state programs has its own main goal, targets, priorities and action plan.

### II.A.1.3.4.2. Specific Government Policies and Interventions

Here we can split the interventions into 4 groups[7]:

Tax and customs concessions
Subsidy Programs
Discount sale of breeding animals
Discount sale of agricultural machinery

Concessions on taxes and customs

- Agricultural producers are exempt from paying all types of taxes except for land tax[8].)
- Import duty and value-added tax do not apply to most machines and technical means used in the production and processing of agricultural products under a leasing contract[9].

Subsidy Programs

- Planting subsidy - part of the costs spent on purchasing agricultural production tools for cultivating agricultural crops in accordance with the intended purpose of these lands. Planting subsidy involves, conducting agrochemical analysis of the soil, the purchasing and constructing modern irrigation systems and poles for perennial plantings. In addition to that,perennial plantings subsidy for each hectare of the cultivated area are available as compensation. A planting subsidy is one that is allocated to a farmer per hectare. The amount of the planting subsidy is calculated by the declared crop type (except for cotton, tobacco, and sugar beet). The planting subsidy allocated to the farmer can be used for all plantings carried out in the same year. A 10% additional planting subsidy is paid to agricultural cooperatives for planting on more than 50 hectares of land. In this case, the cooperative's documents must be entered into the electronic information system[10].
- Product subsidy: Each ton of agricultural products delivered to suppliers receives a subsidy. The names of the subsidized crops are: cotton, tobacco, and sugar beet[11].
- Seed subsidy – subsidy given for the sale of certified 1st and 2nd reproduction seeds and seedlings produced in the country. The seed subsidy is determined by applying coefficients to the base amount for each kilogram of certified 1st and 2nd reproduction

[7] Retrieved from: https://www.agro.gov.az/az/doevlet-desteyi
[8] Retrieved from: https://www.agro.gov.az/az/doevlet-desteyi/vergi-ve-goemruek-guezestleri-2/vergi-guezestleri
[9] Retrieved from: https://www.agro.gov.az/az/doevlet-desteyi/vergi-ve-goemruek-guezestleri-2/goemruek-guezestleri
[10] Retrieved from: http://akia.gov.az/en/content/20-80.html
[11] Retrieved from: http://akia.gov.az/en/content/21-104.html

seeds produced and sold in the country, and for each number of seedlings. The amount of seeds and seedlings sold to the farmer in the calculation of the seed subsidy is determined according to the need for sowing or planting, which is calculated according to the land area used. By June 1, we enter forecasts on the areas and quantities of seed and seedling production into SIS, and by December 10, AKIA approves the information and documents related to the sale of seeds and seedlings.[12]

- Animal subsidy – a subsidy for each healthy calf obtained through artificial insemination or embryo transfer in order to improve the breed composition of local animals, and increase the number of animals with high productive genetic potential. The animal subsidy is set at AZN 100 for each healthy calf obtained through artificial insemination or embryo transfer. Animal semen produced in artificial insemination centers and imported into the country by EKTIS-registered persons should be used. Artificial insemination should be performed by specialists who have successfully completed advanced training or retraining of personnel, received a special certificate and diploma, and are registered in the SIS[13].

- Cocoon subsidy – subsidy given for each kilogram of fresh cocoons produced in the country and delivered to suppliers. The cocoon subsidy is given to farmers producing cocoons in the amount of 6 AZN for each kilogram of wet cocoons produced and delivered to the supplier (except for spun and shelled cocoons) (must be entered in SIS by June 30 of each year)[14].

Credit and Finance

- Financing the purchase of agricultural machinery and equipment
- Financing the purchase of breeding animals
- Preferential and privileged loans[15]

Research and Development

There are 7 Research Institutes (RI of vegetable-growing, Veterinary RI, RI of Plant Protection and Technical Plants, RI of Crop Husbandry, Livestock RI, Viticulture and Enology RI, Fruit and Tea RI), Azerbaijan State Agricultural University, Agrarian Research Center and Agrarian Innovation Center under the Ministry of Agriculture[16].

### II.A.1.3.4.3. Agricultural Trade Policies

Export Incentives

- Support was provided for the export of high-value crops and processed agricultural products. However, this support was later discontinued due to its ineffectiveness.

- Bilateral Trade Agreements with different countries to open new markets for Azerbaijanian agricultural products.

[12] Retrieved from: http://akia.gov.az/en/content/22-112.html
[13] Retrieved from: http://akia.gov.az/en/content/25-118.html
[14] Retrieved from: http://akia.gov.az/en/content/27-130.html
[15] Retrieved from: http://akia.gov.az/en/content/55.html ; http://akia.gov.az/en/content/56.html
[16] Retrieved from: https://www.agro.gov.az/az

- The Export and Investment Promotion Agency of the Republic of Azerbaijan – AZPROMO was established in 2003 by the Ministry of Economy of Azerbaijan to facilitate non-oil exports and attract foreign investments to the non-oil sector by providing services to interested investors based on a 'single window' principle. The Decree of the President of the Republic of Azerbaijan, dated July 23, 2021, approved the charter of the Export and Investment Promotion Agency of the Republic of Azerbaijan (AZPROMO). AZPROMO organizes various international events to achieve numerous goals set by the head of the state to develop the non-oil sector in Azerbaijan, promote products in the foreign markets, raise awareness on Azerbaijani products among foreign consumers, facilitate networking with local companies, support foreign companies that are keen to gather comprehensive information about the investment climate in Azerbaijan, and provide services to interested investors based on a 'single window' principle[17].

- «One Stop Shop» Export Support Centre was established in 2017 by the Decree of the President of the Republic of Azerbaijan. Businesses involved in export are enabled to obtain all the required certificates from the «One Stop Shop» Export Support Centre faster, more efficiently, without spending additional resources and time, which in turn, simplifies the export procedures for businesses. The center provides the following supports to local businesses: consultancies, development of business plans for persons with business ideas, export subsidies, and real-time completion of customs declarations.

7 government agencies provide their services in the «One Stop Shop» Export Support Centre[18]:

• Certificate of origin confirming the country of origin of the exported product, by the Ministry of Economy;

• Food safety certificate for exported food products in accordance with the requirements of importing countries, including the European Union; phytosanitary certificate for plants and plant products; international veterinary certificate for animals and animal products; raw materials; feed and feed additives, issued by the Azerbaijan Food Safety Agency (AFSA). In addition, AFSA is responsible for maintaining state registration and registry of food operators in the country;

• CITES international permit certificate for the export of rare and endangered species of wild fauna and flora, by the Ministry of Ecology and Natural Resources;

• Permit for the export of religious literature, audio and video materials, by the State Committee for Work with Religious Organizations;

• Cultural assets protection certificate issued for the export of cultural assets (carpets and carpet products, paintings, handicrafts, musical instruments and jewelry), by the Ministry of Culture;

• Certificate of conformity issued by the Azerbaijan Institute of Standardization;

• Support provided to businesses by the Association "Azterminalkompleks" of the State Customs Committee to fill out declarations.

AZEXPORT – The portal Azexport.az was established by the Order of President Ilham Aliyev «On the establishment of a single database of goods produced in the Republic of

[17] Retrieved from: https://azpromo.az/en/page/haqqimizda/azpromo
[18] Retrieved from: https://ereforms.gov.az/en/page/bir-pencere-ixraca-destek-merkezi-12

Azerbaijan» dated 21 September, 2016. The portal helped to create a single database of goods produced in Azerbaijan. Azerbaijani businesses now have the opportunity to promote their local products in 150 countries around the world. The portal supports the promotion of competitive and export-oriented products made in Azerbaijan in foreign markets under the brand «Made in Azerbaijan». Azexport[19] provides transport, logistics, payment, and certification support to exporters to improve the business enabling environment in the country. Integration of the portal Azexport.az into more than 15 portals with a broader audience, such as Amazon.com, alibaba.com, all.biz, Go4worldbusiness.com, helped the country to increase the access of Azerbaijani products to the world market and expand the coverage of sales.

Import Regulations

- Tariffs and quotas to protect domestic producers from foreign competition.
- Regulations to ensure the safety and quality of imported and exported agricultural goods[20].

### II.A.1.3.4.4. Environmental and Climate Policies

Azerbaijan ratified the UN Framework Convention on Climate Change in 1995 and the Kyoto Protocol of the Convention in 2000, joining international efforts to mitigate the negative effects of global climate change. As part of its contribution to initiatives to mitigate the effects of global climate change, Azerbaijan has set the goal of maintaining a 35 percent reduction in greenhouse gas emissions by 2030 compared to the base year (1990) in the Nationally Determined Contributions (NDC) document. In the document updated in 2023, as a new commitment, the reduction of greenhouse gas emissions by 40 percent by 2050 is targeted. In addition, it was announced that the Karabakh and East Zangezur economic regions will be transformed into a decarbonization zone by 2050.

On February 28, Azerbaijan announced that it has joined the «Global Methane Pledge» initiative, which includes voluntary obligations of states to reduce global methane emissions. Accordingly, Azerbaijan is ready to join joint international efforts aimed at reducing global methane emissions by at least 30 percent by 2030[21].

This year, Azerbaijan has been selected as the Presidency of the 29th Conference of the Parties (COP29)[22], which will be held in Baku this November. Azerbaijan is committed to developing its renewable energy potential, which is an important part of the country's plan to reduce greenhouse gas emissions by 40% by 2050. The country intends to increase renewable power capacity to 30% by 2030 and diversify its existing energy system to become a leader in green energy.

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[19] Retrieved from: https://ereforms.gov.az/en/page/azexport-8

[20] Retrieved from: https://afsa.gov.az/az/idxal-ve-ixrac/olkeler-uzre-idxal-ixrac-telebleri/idxal-telebleri

[21] Retrieved from: https://cop29.az/en/news/azerbaycan-qlobal-metan-vedi-tesebbusune-qosulub

[22] Retrieved from: https://cop29.az/en

#### II.A.1.3.4.5. Digitalization and Innovation

Beginning in 2020, the Electronic Agricultural Information System[23] (EKTIS) in Azerbaijan organizes the provision of subsidies to farmers in the fields of crop husbandry and livestock breeding. EKTIS is a huge and complex system and consists of the following subsystems:

«registration of agricultural entities» subsystem;
«subsidies» subsystem;
«animal husbandry and artificial insemination» subsystem;
"electronic portal «purchase of food products by state order» subsystem;
«veterinary services monitoring» subsystem;
«workflow management» subsystem;
«information» subsystem;
«analysis and reporting» subsystem.

Also, there's a platform that delivers the market prices of agricultural products. It is possible to get information for different agricultural products on wholesale, retail and farmgate prices[24].

### II.A.1.4. Analysis of current state of agri-food production in the country

#### II.A.1.4.1. Crop production

Agriculture in Azerbaijan is highly diverse due to its varied climatic conditions and geographical features. The country cultivates a range of crops, including cereals, fruits, vegetables, and industrial crops. Wheat is the predominant cereal crop, with significant production levels, followed by barley. In 2022, wheat production neared 1.74 million tons, while barley and corn production reached 1.1 million and 0.28 million tons, respectively. The fruit and vegetable sectors are also well-developed, with key fruits including persimmons, hazelnuts, grapes, citrus, apples, and cherries, and important vegetables such as tomatoes and cucumbers. For instance, in 2022, Azerbaijan produced approximately 184.3 thousand tons of persimmons, a 28.8% increase from 2013, and 72.1 thousand tons of hazelnuts, 2.3 times higher than in 2013. Tomato production reached 826.5 thousand tons in 2022, a 65.1% increase compared to 2013. These products are the country's major exports. Additionally, Azerbaijan grows industrial crops like cotton, sugar beet, and tobacco. In 2022, cotton production was around 322.5 thousand tons, making it one of the country's key export-oriented agricultural products[25].

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[23] Retrieved from: https://e-qanun.az/framework/42750 ; https://e-qanun.az/framework/43940 ; https://president.az/az/articles/view/35334 ; https://www.agro.gov.az/az/ekt/ektis-haqqinda ; https://president.az/az/articles/view/66324 .

[24] Retrieved from: http://aqrarbazar.az/ls?action=searchPage&productCategoryGroupId=1&csrfPreventionFilter=vUWo9BNVTUt2Z9UrV5PO6xjUtD172yRCK1mk1drA

[25] Retrieved from: https://www.stat.gov.az/source/agriculture/?lang=en

### II.A.1.4.2. Livestock and animal husbandry

Animal husbandry is another significant activity in Azerbaijan's agricultural sector. The country's livestock is quite diverse, including cattle, sheep, goats, poultry, and a small number of pigs (5.1 thousand heads in 2022). In 2022, Azerbaijan had about 2.5 million cattle. The country produced approximately 368.2 thousand tons of meat and around 2.3 million tons of milk in the same year. Traditional sheep and goat farming is also prevalent, with around 7.2 million sheep and approximately 0.6 million goats in 2022. The primary purpose is to produce meat, milk, and wool in sheep. Poultry farming, particularly chicken breeding, is a dynamic and fast-growing industryin Azerbaijan. In 2022, poultry meat production reached approximately 130.1 thousand tons, accounting for 35.3% of the country's total meat production, while egg production was nearly 2.02 million[26].

### II.A.1.4.3. Land use and management (Results of land reforms and current state of land ownership.)

The total agricultural area utilized in Azerbaijan is around 4.8 million hectares, comprising arable land, permanent crops, fallow land, hayfields, and pastures. Arable land accounts for approximately 2.1 million hectares, making the country suitable for growing cereal and vegetables. Azerbaijan employs various land management practices to enhance agricultural productivity and sustain its natural resources. Crop rotation and fallow land practices are traditional methods used to maintain soil fertility. Permanent crops, including orchards and vineyards, cover about 273.6 thousand hectares and are managed with advanced horticultural techniques to maximize fruit yield. Pastures and meadows span roughly 2.4 million hectares, supporting the livestock sector. Integrated grazing management practices are implemented to prevent overgrazing and land degradation.

### II.A.1.4.4. Water resources

Water fit for drinking in Azerbaijan territory with a limited reserve is distributed unequally. Currently, the country's surface water sources comprise 27 $km^3$, but dry years reduce this reserve to 20–21 $km^3$. Foreign sources form 70-72% of our country's potable water sources. Azerbaijan derives 19,0-20,6 $km^3$ of its surface resources from transboundary sources, while 9,5-10 km3 come from domestic sources. The annual water source for rivers that spill into the Caspian, with the exception of the Samur River Sea, ranges from 2,2-2,5 $km^3$. The rivers from the north-east slope of the Great Caucasus contribute 1-1,1 $km^3$, while those from the Lankan natural province account for 1,2-1,4 km3. The total water source for the right and left branches that enter the Kur River basin is 7,5-7,8 $km^3$.

[26] Retrieved from: https://www.stat.gov.az/source/agriculture/?lang=en

Chemical elements and compounds, along with organic matters, pollute the main arteries of the Republic Kur and Araz rivers as they enter the country's territory. The coagulation of oil products, phenols, copper, bismuth, titanium, manganese, and other elements in the water of these rivers exceeds the boundaries. The degree of pollution in the Araz River which enters Armenian territory is higher than the others. Rivers' water has undergone pollution with different origins[27].

To improve the management of the nation's water resources, the State Agency of Water Resources was established in March 2023. The Agency is tasked with coordinating all activities related to the use of water resources and developing and implementing state policies concerning water issues.

The total area of irrigated land in Azerbaijan is 1,484.9 thousand hectares, with 1,481.1 thousand hectares of utilized agricultural land. Of this, 1,245.1 thousand hectares are arable land, and 180.8 thousand hectares are dedicated to permanent crops. In the country, primarily surface irrigation is used.

To encourage the use of modern irrigation systems, the government has added them to the list of subsidized machinery and equipment. As a result, the state subsidizes 40% of the cost of irrigation systems purchased by farmers. An initial 20% of the cost is paid upfront, while the remaining 40% is covered through favorable credit terms[28].

### II.A.1.4.5. Input use. Use of Fertilizer and Pesticide

Fertilizers and pesticides are significant inputs to increase agricultural productivity. According to official statistics during the first years of independence, the application of mineral fertilizers in agriculture dramatically decreased.

Statistical indicators of mineral fertilizers

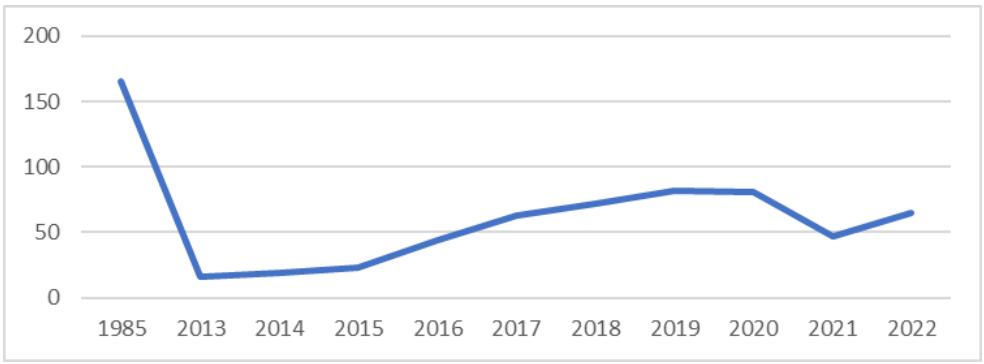


Figure II.A.12. Use of fertilizers.

Source: https://www.stat.gov.az/source/agriculture/?lang=en

[27]Retrieved from: https://azersu.az/en/static/7/link/5#:~:text=Total%20area%20of%20reservoirs%20is,03%2D0%2C05%20km3

[28] Retrieved from: http://akia.gov.az/az/content/251.html

In 1998, the use of mineral fertilizers per hectare of cultivated land, based on 100% active substances, was only 4 kg, a significant drop from 166 kg in 1985. By 2022, this figure had risen to 65 kg per hectare. In order to increase the use of fertilizers, the state started to apply subsidies.

Water Management

The most essential resource for agriculture is water, particularly in regions that are prone to drought. According to the Statistical Committee of the Republic of Azerbaijan, approximately 1.5 million of the country's agricultural lands are irrigated. There are 1324 thousand hectares of registered agricultural land. The EKTIS database shows that 33% (435 th. ha) is fed by rain, 7% (99 th. ha) by modern irrigation systems, and 60% (790 th. ha) by traditional furrow irrigation (EKTIS database, Agro Strategiya). Azerbaijan has invested in improving its irrigation infrastructure, which aims to promote efficient use of water. The plan us to use modern irrigation methods such as pivot, drip and sprinkler systems to minimize losses and increase crop yields. The government also places special emphasis on policies that promote sustainable water management. The Azerbaijani government applies a 40% discount on the cost of imported irrigation equipment. Buyers initially pay 20% of the cost of the equipment, and the remaining amount is then financed by a lending agency, with the interest paid by the government.

Labor

Labor is another important component of the agro-food industry. A significant portion of the working population in Azerbaijan is engaged in agriculture. About one third of the employed people are engaged in the agricultural sector. Compared to developed countries, the productivity of Azerbaijani workers in the agricultural sector is quite low. As a result, one of the main objectives of the Ministry of Agriculture is to increase the productivity of farmers, as well as the income of farmers. Since women play an important role in agriculture, there are special initiatives aimed at their empowerment in this field. Women have been provided with various agricultural tools through recent initiatives implemented in regions and communities to encourage their participation and improve their well-being.

Economic and Environmental Impact

Agricultural resource use has a dual impact, covering biological, economic and environmental aspects. Good governance can increase productivity and promote economic growth and development, while poor governance can harm the environment. Azerbaijan aims to balance these aspects through policies that emphasize sustainable agricultural practices (FAO 2023). Efficient use of agri-food chain resources is critical to ensuring food security and sustainability in Azerbaijan. The government collaborates with international organizations such as FAO to promote and implement best practices

in the use of fertilizers, pesticides, water and labor for equitable distribution. Continued efforts in this direction are vital for the long-term health and growth of Azerbaijan's agri-food systems and natural environment.

#### II.A.1.4.6. Market access

The agri-food sector is a strategic sector for the economy of Azerbaijan in terms of food security and food export. Given the topography and favorable environment, Azerbaijan has the ability to produce a wide range of agro-food products. It is fully dynamic and competitive, offering export potential. This study delves deeper into the current state of the market, the regulatory framework, the main players in the industry, and the prospects available to foreign investors by examining the market access for agri-food in Azerbaijan.

##### II.A.1.4.6.1. Overview of the Market

Economic Context

The Azerbaijani economy's non-oil sector is quite diverse, with agriculture playing a significant role. According to estimations of the Statistical Committee of the Republic of Azerbaijan (2024), agriculture contributed to about 5.5% of GDP in 2023 and employed up to 35% of the workforce. It includes all edible products, from cereals, fruits, and vegetables to dairy and meat products.

Agri-food Production

Azerbaijan is one of the leading countries producing different agricultural products. Given its resources, the government produces and exports to the global market a decent quantity of hazelnuts, persimmons, tomatoes, cherries, apples, and pomegranate juice, among other products. Suitable diversified climatic regions in the country are leading to the cultivation of diversified crops, including stone fruits, citrus fruits, nuts and olives.

##### II.A.1.4.6.2. Market Opportunities

Export Potential

In the long run, Azerbaijan's strategic location at the intersection of Europe, Asia, and the Middle East will lead to huge export opportunities. Azerbaijan's well-developed infrastructure and logistics will quickly help more agri-food export products to be swiftly transported from far East to Europe and America. Azerbaijan's top export destinations are the Russian Federation, Turkey, Turkmenistan, Georgia, Ukraine, and the European Union. The export market for agricultural products requires diversification due to its dependence on a few countries Farmers are now dependent on these markets as more

than 75% of agricultural exports in 2023 went to the Russian Federation (63%) and Turkey (12.2%) (Statistical Committee of the Republic of Azerbaijan, 2024).

Investment Opportunities

The government of Azerbaijan has established an attractive environment for investments in the agricultural sector. Tax cuts and subsidies linked to the investment sector are examples of government incentives that are provided to domestic and foreign investors in joint ventures, direct investments in production facilities, and local partnerships. Azerbaijan currently exempts agricultural products from all taxes, except land tax. These regulations, which went into effect in 2001 for a five-year period and have since been extended four times, will remain in effect until 2024 (https://vergiler.az/news/taxes/1197.html ). An «Investment Promotion Document» is also available; it is valid for seven years following the date of issuance. Legal entities and entrepreneurs who receive this document receive benefits specified in the Tax Code of the Republic of Azerbaijan and the Law of the Republic of Azerbaijan «On Customs Tariff». The cost of investment in Azerbaijan's expanding agri-food sector will be significantly decreased by these government incentives[29].

### II.A.1.4.7. Progresses over climate-smart and digital agriculture

Azerbaijan faces climate change and soil degradation. The country's average annual temperature has risen, and extreme weather events are more frequent. Climate-smart agriculture refers to a strategy for creating comprehensive solutions to address the problems of food security and the development of sustainable agriculture in the context of climate change. The following are some initiatives Azerbaijan has taken to promote climate-smart agriculture:

1. Policy and Strategic Framework: Azerbaijan has created extensive policies and plans to incorporate climate resilience into the country's agricultural practices in a comprehensive manner. It is proactive in developing initiatives that are in line with the requirements of international frameworks, such as the Paris Agreement.

2. Sustainable Land Management: The Azerbaijani government has developed initiatives to prevent soil erosion and manage water resources. One of these is to increase the resilience of diverse agricultural landscapes to climate change. Sensors collecting data that measure soil moisture were deployed in two regions of Azerbaijan as a pilot project after years of research and development. The country is currently taking steps to address water shortages by introducing water infrastructure that includes wastewater treatment, new irrigation systems, and closed water transportation systems. These efforts to mitigate the effects of climate change on the agricultural sector in Azerbaijan will continue. (LinkedIn, Novruzov, S.).

3. Research and Innovations: Research and development of climate-resilient farming practices and agricultural crop varieties have received substantial support. To move these initiatives forward, cooperation with foreign organizations has been essential.

[29] Retrieved from: https://cesd.az/new/wp-content/uploads/2016/08/investitsiya_senedi.pdf

Several initiatives have been undertaken to promote climate-smart agriculture (CSA), aiming to increase agricultural productivity, enhance resilience to climate change, and reduce greenhouse gas emissions. One notable project involves improving cotton productivity using CSA practices. Supported by the International Atomic Energy Agency (IAEA) in partnership with the Food and Agriculture Organization (FAO), this initiative focuses on developing guidelines, training researchers and farmers, and implementing on-farm demonstration trials. The pilot project, which began in 2021, has seen significant success with cotton yields increasing from an average of three tons per hectare to eight tons per hectare using a new variety called "cotton super" combined with optimized soil and water management practices[30].

1. Smart Farming Technologies: Cutting-edge agriculture techniques aid farmers in maximizing productivity, resource utilization, and crop health monitoring. Azerbaijan applies several smart agriculture methods, including sensors and actuators, unmanned aerial vehicles (UAVs, drones), robotics, geo-positioning systems, and big data, among others. «Smart agriculture» has huge potential for more productive and sustainable agricultural production with a precise and efficient approach. Trainings are conducted by specialists from Israel under the organization of the State Agency for Vocational Education and the «STEAM Azerbaijan» project. These drones with a water capacity of 10 and 30 liters can carry out spraying, mapping and data collection related to the determination of soil composition and use of fertilizers. These drones are controlled by artificial intelligence, are 10 times better than human labor, perform precision agronomy, and can spray one hectare of land in 10 minutes[31].

2. Digital Services: Azerbaijan has become a leader in this area by implementing a highly successful Electronic Agricultural Information System (EKTIS), which allows the government to support the agricultural sector in a more transparent, targeted and timely manner. Farmers will be able to receive subsidies, seeds, fertilizers and products through EKTIS as a system blessing. Currently, more than 470,000 farmers across the country are registered in the Electronic Agricultural Information System, who have submitted data on 719,000 hectares of planted crops.[32].

3. Capacity Building and Education: The Government of Azerbaijan aims to improve the skills and competence of workers in the agricultural sector through cooperation in educational initiatives and joint research projects. A Master of Science in Agriculture was offered as part of a collaboration between universities in Italy and Azerbaijan. The partnership with the University of Bologna includes the establishment of a Faculty of Agricultural and Food Sciences, joint research and teaching initiatives, training of teachers and administrative staff, and cultural integration projects. The University of Bologna will apply its extensive experience in the "field-to-fork" concept to the implementation of these projects..[33]

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[30] Retrieved from: https://shorturl.at/2FqiR

[31] "Ağıllı kənd təsərrüfatı"nın kəndli üçün əsas üstünlükləri nədən ibarətdir? Retrieved from: azertag.az; Dronların kənd təsərrüfatında tətbiqi məhsuldarlığı dəfələrlə artıra bilər. Retrieved from: azertag.az.

[32] Digital technologies: key accelerator of agrifood systems transformation and rural development.

[33] Retrieved from: https://www.ada.edu.az/en/schools/safs

### II.A.1.4.8. Government' Policies and Interventions (internal support, subsidies, extension services & etc.)

One of the most important sectors of the economy in Azerbaijan is agriculture, which is well integrated with government interventions and policies in line with productivity growth, sustainability and economic stability. Policies include subsidies, tax incentives, extension services and infrastructure development, all aimed at promoting sustainability and growth in the agricultural sector.

Subsidies

Subsidies are a vital means of aiding Azerbaijan's agricultural farmers. The goal of the financial aid is to lower input costs for agricultural goods production. The production of agricultural products in Azerbaijan is subsidized in accordance with the «Rule of subsidizing the production of agricultural products» approved by the Decree No. 759 of the President of the Republic of Azerbaijan dated June 27, 2019. The state budget provides funding for various agricultural production-related subsidies, such as planting, crop, seed, animal, bee, and cocoon subsidies, to individuals and legal businesses (AKIA).

Tax exemptions

Tax exemptions in agriculture are one of the main measures implemented in order to support and develop the agricultural sector in Azerbaijan. As a result of these benefits, farmers and other agricultural workers pay less in taxes and have more financial stability. According to the current legislation, producers of agricultural products in Azerbaijan are exempt from paying profit, income, value-added tax, tax under the simplified system and property tax on objects used in the process of their activity, except land tax. These concessions, which have been in place since 2001 for a duration of five years and have already been extended four times, will remain in effect until 2024[34].

Extension Services

The extension system is crucial in transferring knowledge and innovation to farmers. As part of institutional reforms, many initiatives have been taken to improve farmers' access to information and advisory services through the use of new technologies.. Through the «Digital Agriculture» project, efforts are being made to maintain the provision of electronic information and advisory services in order to boost the efficacy of the fight against pests and plant diseases. Additionally, the information-advisory service is expanded through the use of contemporary communication methods, and electronic resources are continuously enhanced.

In addition, State Agrarian Development Centers (DAIM) were established within the

[34] Kənd təsərrüfatına tətbiq olunan vergi güzəştləri. Retrieved from: www.vergiler.az .

framework of institutional reforms implemented in the agrarian field. DAIMs organize the provision of agro-service, agrochemical, information-consulting and other services to producers and processors of agricultural products based on the principles of «single window», efficiency and transparency. Currently, more than 70 services are provided in these centers.

## SECTION II.A.2. AGRI-FOOD TRADE PROFILE

### II.A.2.1. Analysis of current state of agri-food trade in the country

#### II.A.2.1.1. Export of the main agri-food products

With its favorable temperature conditions, diverse agricultural landscape and advantageous location, Azerbaijan has gained recognition in the global agri-food industry. This study provides a summary of the current year statistics on Azerbaijan's main export commodities, focusing on the country's main agri-food products.

Major Agri-Food Exports

The country's agri-food industry is quite diverse, with a large portion of different commodities being exported to other markets. Azerbaijan's high agri-food product portfolio primarily consists of unprocessed fruit and vegetable, nuts, and goods. According to the Republic of Azerbaijan's Statistical Committee, agricultural products worth $1.1 billion USD has been exported to the international market by 2023. Agricultural exports accounted for 2.9% of overall exports, a small proportion given agricultural sector's potential of Azerbaijan.

1. Fruits and Vegetables

- Fruits: The major fruit exports to various countries include shelled hazelnuts, apples, peaches, nectarines, cherries, pomegranates, strawberries, grapes, pears, melons, plums, and dried fruits. The diverse climate of Azerbaijan increases the yield of fruits with exceptional flavor and quality. Fruit exports from Azerbaijan totaled 513 million USD in 2023, accounting for about half of the country's entire agricultural export revenue.

- Persimmon: Azerbaijan is one of the leading producers and exporters of persimmon in fresh and in dried form. Persimmon is the second most exported agricultural product after tomato in 2023. From exports of 165 thousand tons of persimmon, Azerbaijan earned 127 million USD in 2023.

- Apple: The second most exported fruit of Azerbaijan is apple. Traditionally, Azerbaijan has planted this product and exported it to its nearest markets, including the Russian Federation. Azerbaijan exported 57 million USD worth of apples to the global market in 2023, setting a record for the previous ten years.

2. Vegetables

- Tomatoes: Fresh tomatoes are an important export commodity, with large numbers exported to the Russian Federation. In 2023, 140.6 thousand tons of tomatoes worth 162 million USD were exported to the global market. Tomatoes have been the top exported agricultural commodity in 2023.

3. Nuts

- Hazelnuts: Azerbaijan is among the top producers and exporters of hazelnuts in the world. It competes with other major hazelnut-producing countries such as Turkey, Italy, and the United States. The favorable conditions in the country enable the provision of good quality and a high supply volume. Major markets include the European Union, Russia, and other CIS countries (Commonwealth of Independent States) countries. The quality and taste of Azerbaijani hazelnuts make them highly sought after in international markets. In terms of 2023 global hazelnut exports, Azerbaijan ranked third, after Türkiye and Chile with 22,000 tons of exports.

4. Non-food agricultural products

- Cotton: Cotton production is a key agricultural activity in Azerbaijan, contributing significantly to the country's economy. In recent years, Azerbaijan has worked to revitalize its cotton industry. Government support and investments in modern agricultural practices have increased production volumes. Investing in the textile industry to produce value-added products such as fabrics and garments can increase export revenues.

- Tobacco and Cigarettes: Tobacco is a traditionally harvested product in the north. Tobacco is primarily grown in regions such as Zaqatala, Sheki, and Lankaran, which offer favorable climatic and soil conditions for tobacco farming. The Azerbaijani government has implemented several programs to support tobacco farmers, including subsidies for inputs, training programs, and initiatives to modernize agricultural practices.

Export Statistics and Trends

Azerbaijan's agri-food exports have been growing steadily over the past ten years, even after the depreciation of the national currency in 2015. In 2023, the aggregate worth of agri-food exports amounted to 1.1 billion USD, a rather little amount given the sector's potential.

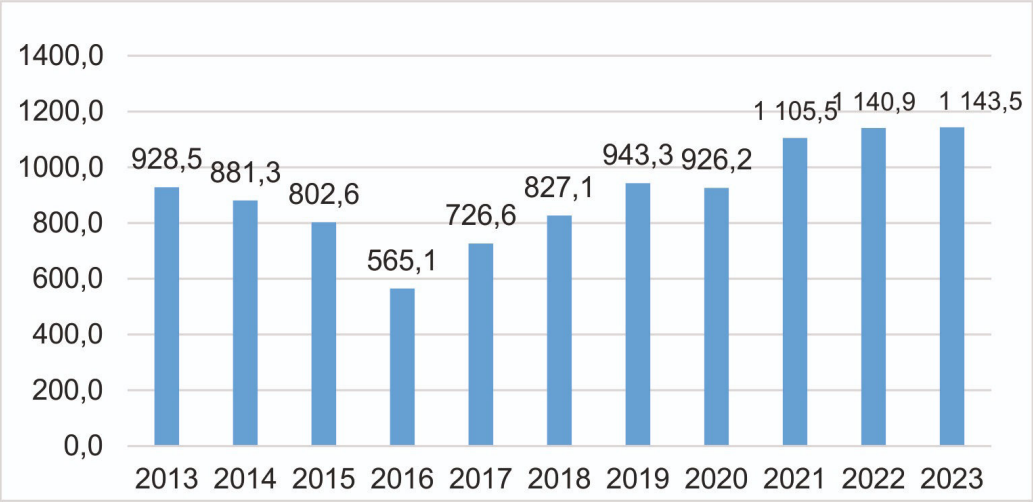


***Figure II.A.13. Agricultural exports of Azerbaijan, million USD***

Source: State Statistical Committee

- Fruits: $513 million was earned in exports in 2023, and the most significant markets were Russia (82.2%), Germany (4.4%), and Italy (3.1%).

- Tomatoes: The exports of fresh and processed tomatoes amounted to $132 million, with the Russian Federation being the largest importer.

- Cotton: Export earnings from cotton and byproducts were $153 million, with the major destinations being the Türkiye and Turkmenistan.

- Hazelnuts: The overall figure for hazelnut exports was $119.5 million, and the central importing countries were the Russian Federation, Germany and Italy.

- Persimmon: This product earned in $127.2 million in exports. Almost 90% of this product's exports went to the Russian Federation.

With its national capability and strategic export policy based on the country's agricultural history, the fresh food as well as agri-food and non-food processing industry exports have promising potential. Continuous investment in strengthening quality, marketing, and trade relations may maintain and enhance its standing in the global agri-food markets.

### II.A.2.1.2. Import of the main agri-food products

With regard to its fairly active participation in the agricultural sector, Azerbaijan imports a number of agricultural products to meet domestic demand and boost domestic production. These imports include both staple foods and other agricultural products that are not produced in sufficient quantities domestically. The following list includes the main agro-food products that Azerbaijan imports:

Grains and Cereals

Wheat: Wheat production and demand in Azerbaijan are key components of the country's agricultural sector and food security strategy. Wheat is a staple food in Azerbaijan, used primarily for bread and other baked goods. The total national wheat demand is 3.2-3.3 million tons. Azerbaijan grows wheat on 550,000 hectares, yielding approximately 31.4 cents per hectare, and produces an average of 1.9 million tons of wheat annually. Azerbaijan imports 1.1–1.3 million tons of wheat per year on average to meet its own requirements (State Statistical Committee of the Republic of Azerbaijan).

Barley: Barley is the second most produced grain in Azerbaijan. The main purpose of barley production is to feed animals. It is grown on around 370 thousand hectares, with an annual production average of 1.1 million tons. (State Statistical Committee of the Republic of Azerbaijan).

Raw sugar

Raw cane sugar ranks second in terms of agri-food imports. Azerbaijan imported 244.6 thousand tons of raw sugar worth 155 million USD in 2023, primarily from Brazil. This product is used extensively in households, food processing, and confectionery

industries. Tea, desserts, and various traditional sweets are examples of the consumption pattern. Azerbaijan produces some sugar, primarily from sugar beets grown in regions like Imishli. However, domestic production is not sufficient to meet the entire demand

Animal products

Butter: Butter imports are an essential component of Azerbaijan's food sector, given the high demand for butter in traditional cuisine and modern cooking. While Azerbaijan produces some butter domestically, production levels are insufficient to meet the full demand. Therefore, a significant portion of the butter consumed in Azerbaijan is imported. The amount of butter imported has steadily increased in recent years, averaging 15,000 tons per year. Belarus, Iran, Ukraine, and New Zealand are the main import destinations.

Chicken meat: Chicken is a common source of protein in Azerbaijan, consumed widely in households and by the food service industry. Azerbaijan has a developing poultry sector, but domestic production is not sufficient to meet the entire demand. Therefore, a significant amount of chicken products—roughly 20,000 tons annually—are imported from the Russian Federation and Ukraine.

Oilseeds and Vegetable Oils

Palm oil: Palm oil is a significant import for Azerbaijan, used extensively in the food industry and other sectors. Azerbaijan imports around 50,000-70,000 tons of palm oil to meet domestic demand. Azerbaijan receives the majority of palm oil from Indonesia and Malaysia.

Sunflower oil: Azerbaijan imports a significant amount of sunflower oil for use in cooking and food processing. Because of its proximity and reasonable pricing, the Russian Federation is the country's primary source of imported sunflower oil.

Fruits and Nuts

Bananas: These fruits mainly imported from Ecuador given the country's climatic conditions are not conducive to banana cultivation.

Tropical Fruits: As demand for exotic fruits increases, pineapples, mangoes, and avocados are also imported.

Drinks

Tea: Due to the high demand and limited local production, Azerbaijan imports a significant amount of tea. Recent data suggest that Azerbaijan imports around 10,000-12,000 tons of tea annually mainly from Sri Lanka.

### II.A.2.1.3. Level of self-sufficiency on the main agri-food products

Due to its diverse climate, Azerbaijan has high aspirations for its level of agri-food self-sufficiency. In terms of agriculture and food items, especially with regard to specific fruits, vegetables, dairy products, and meats, Azerbaijan is somewhat self-sufficient. However, the country is dependent on imports for staples like sugar, wheat, and rice as well as for certain fruits and other goods whose production is constrained by the environment. The government's initiatives are still aimed at increasing domestic output, increasing agricultural productivity, and reducing import dependence in critical sectors.

Grain and cereals

Wheat: Azerbaijan's self-sufficiency in wheat production is around 59-60%. This means that the country produces a little over half of the wheat it needs, relying on imports to cover the remaining demand.

Maize (Corn): The annual production of maize in Azerbaijan has been increasing due to government support and improved agricultural practices. Every year Azerbaijan produces about 250-270 thousand tons of maize which is primarily used as animal feed. The country has a 78% self-sufficiency on this product.

Oilseeds and Vegetable Oils

Azerbaijan's self-sufficiency in vegetable oil production is significantly low, at approximately 60 percent.

Soybeans and Soybean Oil: In terms of soybeans and soybean oil, Azerbaijan is not self-sufficient. Due to inadequate domestic production, it is nearly entirely dependent on imports from Brazil, Argentina, and Russia.

Sunflower Seed Oil: In Azerbaijan, sunflower oil is not produced in sufficient quantities and is primarily imported from the Russian Federation. According to calculations based on statistical data, Azerbaijan is about 30–40% self-sufficient in sunflower oil.

Fruits and Nuts

Azerbaijan is largely self-sufficient in many fruit types, producing enough to meet domestic consumption needs. The country has a surplus in several fruit categories, allowing for significant exports. Azerbaijan exports a considerable volume of fruits, including apples, pomegranates, and citrus fruits, to neighboring countries and beyond. The quality and variety of Azerbaijani fruits are well-regarded in international markets.

Bananas and other tropical fruits: Azerbaijan is completely dependent on imports for its banana consumption because the country's climate is not suitable for growing bananas. To meet the demands of both locals and tourists, a wider variety of fruits such as avocados, mangoes, and pineapples are imported.

Animal Products

Beef: The production of beef in Azerbaijan is not self-sufficient. In recent years, there has been a consistent rise in the production of beef; currently, 140–150 thousand tons are produced annually. With a 93% self-sufficiency level in beef production, the nation is not self-sufficient despite the increase in output. To meet domestic consumption, Azerbaijan imports beef from Brazil, India, and Ukraine.

Poultry: With the construction of modern poultry farms and the application of innovative farming methods, Azerbaijan has seen a notable increase in poultry production. In 2022, there was a 70% rise in poultry production compared to the year 2015. Poultry has a self-sufficiency rate of roughly 70–80%. Although poultry production in the country has improved significantly, imports continue to augment local production.

Sheep and goat meat: Sheep meat (lamb and mutton) is a staple in the Azerbaijani diet. With a 90–100% self-sufficiency percentage in sheep meat production, Azerbaijan is quite self-sufficient. The country's output often satisfies domestic demand, minimizing the need for imports.

Dairy: According to current figures, the country produces almost 85% of its own dairy products. But in order to maintain a steady supply of dairy-related goods, it imports cheese and other dairy products to make up for the insufficient local production.

Roots Potato: Azerbaijan produces a significant volume of potatoes. The country is more than 90% self-sufficient, with an average production of one million tons. But when domestic supplies are low, the country imports potatoes, particularly from Belarus, Russia and Iran, to cover the difference in demand.

Beverages

Tea: Tea is a staple food in Azerbaijani households with high per capita consumption. Azerbaijan is dependent on imports for tea production. Due to the gap between production and consumption, Azerbaijan imports significant amounts of tea, especially from countries such as Sri Lanka, India and Kenya, to meet domestic demand. The level of self-sufficiency in tea in Azerbaijan is relatively low. Self-sufficiency in tea in Azerbaijan is 2.1 percent.

### II.A.2.1.4. The balance of agri-food trade with member countries of the OTS

A critical aspect of regional agri-food security and economic integration is the agricultural trade between Azerbaijan and the members countries of the OTS. The objective of this section is to examine and analyze the supply chain disruption that occurs between Azerbaijan and other OTS members, as well as the balance of agri-food trade.

Trade Balance

Azerbaijan and Türkiye: Azerbaijan and Türkiye have a strong trading relationship in agricultural products, benefiting from their geographical proximity and historical ties. Azerbaijan supplies Türkiye with agri-food products such as cotton and its products and fruits, while importing raw tobacco and processed foodstuffs from this country. On the whole, the balance of trade is generally in favor of Türkiye, the reason being its relatively more extensive and more diversified agriculture sector of Türkiye. The total trade turnover in agricultural goods between Azerbaijan and Türkiye amounts to 482.8 million USD, of which 343.3 million USD are imports from Türkiye and 139.5 million USD are exports from Azerbaijan to Türkiye.

Azerbaijan and Kyrgyzstan: Azerbaijan and Kyrgyzstan have been working to improve their trade relations, particularly in the agricultural sector. Azerbaijan exports white sugar, vegetable fats and oils, chocolate and other products, and shelled hazelnuts to Kyrgyzstan, whereas major exports from Kyrgyzstan to Azerbaijan are walnuts, dried lentils, pasta products, sunflower seeds and natural honey. The trade turnover of agricultural goods between countries amounts to 6.3 million USD. Trade between Azerbaijan and Kyrgyzstan is generally complementary and balanced.

Azerbaijan and Uzbekistan: Export from Azerbaijan of agri-food products to Uzbekistan include, among others, shelled hazelnuts, vegetable fats and oils, almonds in shell and apples. Among the top-tier fresh products that Uzbekistan exports to Azerbaijan are dried grapes, shelled walnuts, chocolate products, shelled peanuts, dried beans, and other dried fruits. The trade turnover of agricultural goods between countries amounts to 31.5 million USD. Generally, the balance of trade is in favor of Uzbekistan as a result of extensive agricultural practices in the country.

Azerbaijan and Kazakhstan: Kazakhstan ranks second after Russia in terms of delivering grains to Azerbaijan. In turn, Azerbaijan supplies mineral waters, non-alcoholic energy drinks, apples, and alcoholic beverages to Kazakhstan. The total trade turnover is 85.1 million USD, of which 78.6% are imports from Kazakhstan and 21.4% are exports from Azerbaijan to Kazakhstan.

Supply chain and trade disruptions

Failure-Cause Factors

1. Geopolitical Instability: Any political conflict within the region could translate into border disruptions on cross-border trade; that is, for example, border closures or increased security measures that can delay shipments, in turn increasing costs.

2. Transportation Infrastructure: Inadequate or poorly maintained, it will block adequate transportation infrastructure for the goods' dispersion. This refers, in fact, to road, rail, and port facilities, which are of importance for operatively and economically friendly trade (OECD, 2022).

3. Customs and Trade Regulations: Procedures in customs are detailed, and such non-tariff barriers to trade slow down the process while increasing transaction costs by a considerable amount. Harmonizing standards and making customs procedures easier are therefore becoming more and more important for more and smoother trade flows (ITC, 2022).
4. Pandemic Effect: The COVID-19 pandemic has only revealed the vulnerability of the global supply chain, including the supply chains in the OTS. Lockdowns, labor shortages, and transportation restrictions have disrupted production and distribution channels (FAO, 2021).

Specific Interruptions

Kazakhstan and Kyrgyzstan: Periodic tensions at borders have led to border closures, impacting the movement of agri-food products. More developed diplomatic relations and trade agreements would be needed to circumvent these failings.

Azerbaijan and Turkey: Strong trading relations, but from time to time, temporary political disagreements result in nontariff barriers, including stepped-up inspections or suspension of trade, as would be the case temporarily (World Bank, 2022). Uzbekistan's trade policies are changing, and liberalization without clarity in policy does, at times, create a few uncertainties for exporters, manifested in the trade flow between the two countries.

### II.A.2.1.5 Government Policies and Interventions

Relevance to the Turkic World Vision-2040

An important part of Azerbaijan's economy and a major area of concentration for Turkic World Vision-2040 is the agri-food sector. In order to support regional stability and prosperity, this strategy seeks to encourage collaboration among Turkic governments in a variety of domains, such as agriculture and food security (Turkic Council, 2021). The government of Azerbaijan's agri-food policies and initiatives are examined in this section along with their applicability to the Turkic World Vision-2040.

#### II.A.2.1.5.1. Agricultural Development Policies

Research and Development

An important component of Azerbaijan's agri-food strategy is investment in agricultural research and development (R&D). Crop development, pest management, and sustainable farming methods are the main areas of concentration for R&D projects that the government funds. Collaborative research initiatives with Turkic governments foster innovation and knowledge exchange, advancing the region's overall agricultural development.

### II.A.2.1.5.2. Food Security Policies

Subsidies and Support Programs

To guarantee food security, Azerbaijan has set up a number of support initiatives including subsidies. These initiatives support farmers financially, maintain food prices, and encourage the growth of vital crops. Agricultural subsidies in Azerbaijan include planting subsidy, crop subsidy, seed subsidy, animal subsidy and cocoon subsidy. Azerbaijan helps the Turkic World Vision-2040 achieve its goals for food security by maintaining a steady and adequate food supply (AKIA).

Agricultural insurance

The Azerbaijani government has developed policies to enhance the resilience of its agri-food sector against natural disasters and economic shocks. The Agrarian Insurance Fund of the Republic of Azerbaijan provides insurance against risks in the agricultural sector. These include environmental risks, death of animals (Illness and injury, food safety, environmental factors) and cultivation and orchards. The fund paid 1.7 million manats to farmers for farm losses in 2021 and 2.3 million manats in 2022[35].

Sustainable Agricultural Practices

Environmental Sustainability

Agriculture policy in Azerbaijan places a strong emphasis on environmental sustainability. Practices including organic farming, conservation agriculture, and effective water management are supported by the government. In addition to safeguarding the environment, these actions also support Turkic World Vision-2040's objectives for sustainable development. Digital change and innovation are the cornerstones of digital agriculture, which also empowers farmers[36].

Climate Change Adaptation

Azerbaijan's agri-food policy incorporates climate change adaptation techniques. Climate-smart agriculture techniques, enhanced irrigation systems, and crop types resistant to drought are some of these strategies. Azerbaijan promotes the agri-food sector's resilience and long-term sustainability in the Turkic region by tackling the effects of climate change.

Trade and Economic Integration

Export Promotion

To encourage the export of agricultural goods, Azerbaijan has put laws in place. Some of these initiatives include financial assistance, regulatory guidelines, logistics

[35] Retrieved from: https://asf.gov.az/

[36] Rəqəmsal kənd təsərrüfatı. Retrieved from: www.agro.gov.az

infrastructure, certification and standards, trade agreements, and the organization of international trade fairs. In addition to participating in international shows, advertising and representing and promoting Azerbaijan's food, wine, and other agricultural products in foreign markets are all part of the ongoing «Made in Azerbaijan» brand initiatives. By enhancing agricultural exports, Azerbaijan supports the Turkic World Vision-2040's objectives for economic integration while fortifying its economic relations with other Turkic nations[37].

Regional Cooperation

Expansion of the political and economic relations of Azerbaijan with the OTS countries is one of the priority directions of the state policy, which was founded by the National Leader of Azerbaijan Heydar Aliyev and is purposefully continued today by the President of the Republic of Azerbaijan Mr. Ilham Aliyev. In 2020, Azerbaijan's trade turnover with the OTS countries increased by 3.5 times compared to 2009, reaching 4.4 billion US dollars. The agricultural trade turnover with OTS countries steadily increases and reaches approximately 550 thousand US dollars in 2022. Turkey places a high premium on regional collaboration in the agri-food industry. The government takes part in regional initiatives and organizations that work to improve scientific cooperation, agricultural commerce, and integration of policies among Turkic states. To achieve the Turkic World Vision-2040's goals for collective development, such cooperation is essential[38].

## SECTION II.A.3. SDGS PROGRESS

### II.A.3.1. Role of agri-food systems in relative SDGs' targets achievement

Azerbaijan has also undertaken significant initiatives to enhance sustainable development financing including the development of the Integrated National Financing Framework (INFF) Roadmap and SDGs Investment Mapping and sector-specific strategic plans within the Medium-term Expenditures Framework to address key areas like agriculture, education, and the environment while aligning them with SDGs. In Azerbaijan, as well as around the world, food security is still a major concern. The goal of a national workshop jointly organized by the Food and Agriculture Organization of the United Nations (FAO) and the National Coordination Council for Sustainable Development of the Republic of Azerbaijan (NCCSD) is to accelerate the contribution of sustainable food and agriculture to the achievement of the SDGs in Azerbaijan. This section examines the relationship between the SDGs and food security in Azerbaijan, highlighting the

[37] Yaqubzadə, Elcan (2023,APREL 7) Azərbaycanın xarici siyasəti və ixrac etdiyi məhsulların analizi.

[38] Azərbaycan Respublikasının Dövlət Statistika Komitəsi. Azərbaycanın türkdilli ölkələrlə ticarət dövriyyəsi 4,4 milyarda çatıb - "İki sahil". Retrieved from: www.ikisahil.az

links between achieving SDG 2 (zero hunger) and other goals, as well as the country's unique needs.According to United Nations in Azerbaijan FAO supports Azerbaijan in implementation of Sustainable Development Goals in food and agriculture[39].

### II.A.3.1.1. Food Security and Nutrition (SDG 2) (National priorities and indicators)

2.1. By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.

2.2. By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons.

2.4. Make sure that food production systems are sustainable by 2030 and use resilient farming methods that boost production and productivity, protect ecosystems, make it easier to adapt to climate change, extreme weather, drought, flooding, and other disasters, and gradually make the land and soil better.

2.5. By 2030, maintain the genetic diversity of seeds, cultivated plants, farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed.

2.a. To make developing countries, especially the least developed ones, more productive in agriculture, put more money into rural infrastructure, agricultural research and extension services, technology development, and plant and animal gene banks. This can be done by working together more with other countries.

2.c. Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility.

Source: https://sdg.azstat.gov.az/en/national-priority/2/acliga-son-/

### II.A.3.1.2. Poverty Reduction (SDG 1)

Poverty reduction is a critical component of sustainable development and is therefore a priority in the agri-food sector of countries such as Azerbaijan, which has a significant rural population.The United Nations has devised 17 Sustainable Development Goals, the first of which is to abolish poverty worldwide by the year 2030. This section outlines the activities, policies, and realized performance in the Azerbaijani agri-food sector and looks at the problems and efforts related to poverty alleviation.

[39] UN Department of Economic and Social Affairs. Accelerated Pathways to SDG Progress: Azerbaijan's National Commitments for Sustainable Development and SDG Advancement. Retrieved from: www.un.org .

For the majority of people in Azerbaijan, especially those living in rural areas, agriculture has historically been an important component of the economy and their primary source of income. According to Statistical Committee of the Republic of Azerbaijan, reports that 5.2% of Azerbaijan's population lived in poverty in 2023. While the poverty rate in rural areas has dropped tenfold since 2001, there are still many instances of this problem. Compared to urban areas, poverty is perceived to be more prevalent in rural communities.

Key Programs and Policies

Numerous initiatives and regulations have been approved to lower the rate of poverty in Azerbaijan's agri-food industry.

Financial Assistance and Subsidies: The Azerbaijani government provides farmers with financial assistance as well as a variety of subsidies, including fuel, fertilizer, and planting and product subsidies. The goal of these actions is to raise agricultural income and production. (AKIA).

Financing the purchase of machinery and equipment: The government of Azerbaijan finances the purchase of equipment and machines for agriculture. The amount of the allowance is 40% of the machinery's price. The buyer only pays 20% of the equipment's price; a credit institution finances the remaining 40%.

Financing the sale of breed animals on preferential terms: 60% of the import value or, in the case of local production, 60% of the breed cattle's estimated value is covered by the government. A credit institution finances the remaining amount after the farmer pays at least 25% of the total value.

Farmers and entrepreneurs receive microcredits and other low-interest rate credits. In an attempt to enhance the welfare of the rural population, these credits are intended to assist small family farms engaged in farming operations such as fruit orchards, chicken farms, cattle breeding, beekeeping, and other farming activities.

Azerbaijan Rural Investment Project: The Azerbaijan Rural Investment Project (AzRIP) provides rural communities in the country the ability to get together, identify problems, and devise solutions. Starting in 2005, the project aimed to address the sharp deterioration in rural infrastructure and services for the approximately 50% of the population living in these areas. It supported government initiatives to reduce inequality in rural communities and improve rural infrastructure standards and accessibility[40].

The "Agrarian Active Azerbaijani Women" (AFAQ) project implemented by the Ministry of Agriculture with the support of "Pasha Holding" is a project created with the aim of increasing the number of women entrepreneurs in agriculture and their development. The project facilitates women's access to information, knowledge and other opportunities to develop agriculture-based business activities, improving the social well-being of themselves, their families and rural communities[41].

[40] Rural Investment Project - GIS Map. Retrieved from: www.worldbank.org
[41] Aqrar Fəaliyyətli Azərbaycan Qadınları. Retrieved from: www.afaq.az

Challenges

There are still challenges facing rural areas even with all of the government's and organizations' initiatives and efforts to improve the welfare of the rural population.

Fragmentation and Small Farm Sizes: In the agricultural sector, farmers operate small, dispersed farms. These farms' inherent characteristics frequently prevent them from achieving high productivity levels and economies of scale. According to the EKTIS database, out of the approximately 400,000 registered farmers on the platform, 60.5% have plot sizes up to 2 hectares. Just 0.3% of registered farms are larger than 50 hectares, whereas 1.7% of farms are between 10 and 50 hectares. Due to particular legal and cultural difficulties, land consolidation has not been successful.

Climate Change: Azerbaijan is not immune from the effects of global climate change. The average annual temperature in Azerbaijan's area has risen by 0.4–1.30C over the past century. Climate change is causing extreme weather events in Azerbaijan, such as floods, strong winds, heat waves, droughts, salinization, land degradation, desertification, reduced precipitation and water supplies, etc. Poverty and other grave socioeconomic consequences follow, such as migration and an increase in the frequency of infectious and chronic illnesses[42].

Market Access and Infrastructure: Smallholder farmers are still unable to market their produce under fair and competitive pricing structures and obtain the essential inputs and services due to limited market access. Transporting agricultural products from the farm to the port in Azerbaijan is particularly costly logistically. These expenses make up eighteen percent of the total. Comparatively, the expenses of logistics are substantially lower in nations like France, Germany, and the USA (8%, 6%, and 8%, respectively)[43].

### II.A.3.1.3. Health and Well-being (SDG 3)

Implications for Agri-food on Health and Well-being

Azerbaijanis place a strong emphasis on the agri-food industry in terms of public health, nutrition, and food security. Below are challenges that Azerbaijan has to address to achieve the SDG 3:

In Azerbaijan, a robust healthcare system, currently provided free at the point of service, continues to be the cornerstone of sustainable growth. The agri-food industry in Azerbaijan has a significant impact on the health and well-being of the population. Therefore, this part aims to explore how the agri-food industry impacts health and well-being in Azerbaijan. In addition, some challenges and important projects that will help achieve SDG 3 will be highlighted. (https://unsdg.un.org/sites/default/files/2021-01/Azerbaijan-UNSDCF-2021-2025_1.pdf ).

[42] Azərbaycan Respublikası Ekologiya və Təbii Sərvətlər Nazirliyi. Retrieved from: www.eco.gov.az
[43] Mehdiyeva, I., Kerimli, V., Gafarov, N., Sultanova, N., Heydarova, K., & Taghiyev, A. (2020). Barriers and drivers of the implementation and management of green agri- and food supply chains in Azerbaijan. International Journal of Supply Chain Management, 9(4), 527-535.

1. Nutritional Deficiencies: Malnutrition is a persistent problem in rural areas, due to uninhabitable land, displacement, as well as the lack of availability of diverse and nutrient-rich foods.

2. Food Safety: Foodborne diseases can critically affect morbidity. This danger is multiplied as food safety standards are of utmost importance in disease prevention.3. Pesticides Use: Excessive use of pesticides in agricultural lands poses health risks to consumers and farm workers. Therefore, strict regulations with alternative methods need to be put in place..

Government Programs and Policies

The problems were brought before the government for consideration. Azerbaijani government has made numerous attempts to address them and improve the condition and well-being of the agro-food sector:

1. Approved by the Decree of the President of the Republic of Azerbaijan dated November 13, 2017, the Food Safety Agency of the Republic of Azerbaijan is established. The Food Safety Agency is a state institution under the responsibility of the Cabinet of Ministers of the Republic of Azerbaijan established to ensure regulation of food security. The Republic of Azerbaijan's Food Safety Agency is in charge of risk assessments, state registration of food items and the materials used in their packaging, exportation of food products to other countries, and granting food safety certificates. It is a central executive authority that oversees state policy and regulation in the aforementioned areas, as well as state control over food safety and the protection of consumers' rights on food at every point of the food chain, including disposal and destruction.

2. Food Safety Programs: Azerbaijan has received support from international organisations to achieve SDG 3 in the agri-food sector. WHO provides technical assistance to nutrition programmes, as well as some funding and support to health education campaigns. FAO supports programmes on food safety and sustainable agriculture. A number of initiatives have been implemented in Azerbaijan to increase the production of healthy, disease-free produce. The goal of Azerbaijan's Agricultural Competitiveness Improvement Project (ACIP) is to make it easier for agricultural producers to get their goods to market by improving certain value chains, strengthening sanitary and phytosanitary services, and giving financial help to agribusinesses[44].

3. Sustainable Agricultural Practices: To save the environment and the general public's health, initiatives that support organic farming and less pesticide use should be encouraged. The UN Working Group's effort aims to safeguard biodiversity and the world from various natural disasters by reducing the volume of pesticides used in agriculture by two thirds by the year 2030[45].

[44] AGRICULTURAL COMPETITIVENESS IMPROVEMENT PROJECT, P122812. Retrieved from: www.worldbank.org .

[45] AZƏRTAC. Retrieved from: www.azertag.az .

### II.A.3.1.4. Gender Equality (SDG 5)

One of the 17 Sustainable Development Goals is gender equality, because it is a critical component of sustainable development. Achieving gender parity and empowering all women and girls is the aim of Goal 5.

Increased agricultural production and food security are directly correlated with gender equality, which is a social justice issue in the Azerbaijani agri-food sector. This section assesses the situation, challenges, and steps that must be taken to advance women in the Azerbaijani agri-food sector to ensure gender equality.

Current Situation in Azerbaijan with Regard to Gender Equality in Agri-food

In the Azerbaijani agri-food industry, women play a critical role in all stages of production, processing, and marketing. They frequently have an underappreciated and undervalued contribution, which is the common problem. The Food and Agricultural Organization estimates that women make up roughly 57% of all agricultural laborers in Azerbaijan. Despite demonstrating a high degree of involvement, women encounter structural and cultural barriers that prevent them from engaging and contributing to the fullest extent possible.

Challenges faced by women in the agri-food sector

1. Access to Resources and Land Ownership: The lowest access to resources, land, credit, and agricultural inputs is the biggest challenge that women experience in the agri-food sector. In most scenarios, cultural beliefs and legal restrictions prohibit women from owning land. At the same time, owning land is the primary driver of loans and agricultural investments by all definitions (FAO, 2021).

2. Education and Training: The level of education for females in rural areas is low compared to the male population, which limits their access to training and extension services that would add value to their farm production and income. The absence of specialized training programs makes them even more incapacitated.

3. Workload and Time Poverty: A woman generally has to play multiple roles like household activities, care, and agricultural work, which limit their available time. This heavy workload limits their labor input to the point of being unable to participate in gainful income and community decision-making processes (UN Women, 2018).

4. Gender-based Violence and Discrimination: Gender-based violence and discrimination are prevalent issues that affect women's participation in the agri-food sector. This relates to physical, psychological, and economic violence against women, which undermines their self-esteem and opportunities to become upwardly mobile.

Gender Equality Initiatives and Policies

Azerbaijan has implemented numerous regulations and efforts to promote gender equality in the agri-food industry.

1. International Cooperation: A number of international organizations, including FAO and UN Women, collaborate with the Azerbaijani government and local non-governmental groups to implement various initiatives aimed at empowering women in the agricultural sector. Building capacity, expanding access to resources, and implementing gender-sensitive policies are the primary goals of the aforementioned programs (FAO, 2021).

2. Government Programs: On November 13, 2018, the Azerbaijan Rural Women's Association (ARWA) was founded as the first nationwide forum for women farmers and businesses in rural areas. The association was established to support and develop Women's Development and Enterprise Groups (WDEGs) formed on the basis of Self-Help Groups promoted within the framework of the Azerbaijan Rural Investment Project jointly funded by the World Bank and the Ministry of Agriculture. After the project's completion in September 2019, ARWA was able to assist the already-existing groups and grow them to 44 groups, supporting 600 rural women across 22 districts by August 2021[46].

3. The "Agrarian Active Azerbaijani Women" (AFAQ) project implemented by the Ministry of Agriculture with the support of "Pasha Holding" is a project created with the aim of increasing the number of women entrepreneurs in agriculture and their development. The project facilitates women's access to information, knowledge and other opportunities to develop agriculture-based business activities, improving the social well-being of themselves, their families and rural communities.

International organizations and local government projects and efforts concentrate on improving agricultural skills and knowledge through innovative methods in the cultivation of fruit trees, vegetables, cattle breeding, and chicken raising. Such initiatives, which tackle issues including the gender pay gap, the informal nature of employment, and the limited availability of social services, are essential to empowering women in agriculture[47].

In order to achieve sustainable growth and food security, Azerbaijan must have equal gender representation in its agri-food sector. Some progress has been achieved, but there are still a lot of obstacles to overcome. In order to address the situation, various strategies will need to be implemented, such as policy reforms, capacity building, the promotion of gender-sensitive practices, women's empowerment, and full awareness of these empowered women's participation in the agri-food sector. This will increase agricultural productivity, improve livelihoods, and ensure that Azerbaijan moves closer to achieving SDG 5.

### II.A.3.1.5. Climate Action (SDG 13)

Climate change poses serious physical threats to Azerbaijan. Droughts and water shortages are common throughout much of the country and are projected to become more frequent and intense as a result of extreme weather events. Meanwhile, overgrazing, desertification and soil degradation are destroying the country's natural

[46] Azərbaycan Kənd Qadınları Assosiasiyası. Retrieved from: www.arwa.az
[47] A mentor for women farmers in Azerbaijan. Retrieved from: www.fao.org .

resources, and have a detrimental impact on agriculture. Sustainable Development Goal 13 - Climate Action, which aims to reduce greenhouse gas emissions and increase resilience in order to ensure the food security of Azerbaijan's agri-food sector. Therefore, this assessment aims to highlight the current situation, obstacles, and planned actions for SDG 13 concerning the agri-food industry in Azerbaijan. According to the WBG Report (worldbank.org), investments and policy reforms towards a low-carbon transition and resilience are in Azerbaijan's economic interests.

Only 0.15% of the world's greenhouse gas (GHG) emissions come from Azerbaijan. Up to 80% of GHG emissions are mainly caused by the energy industry. About 14% of Azerbaijan's greenhouse gas emissions are attributable to the agricultural sector, primarily to the country's rice farming and livestock population. The effects of climate change are manifesting in ways such as increased temperatures, altered precipitation patterns, and an increase in extreme weather events, which are leading to impaired crop yields and a decline in animal output (Azerbaijan - EU4Climate).

Challenges

Water resources: Water resources in Azerbaijan are limited. The surface water resources of the country are 30 billion cubic meters, of which 30% are formed in the republic, and 70% come from neighboring countries. Due to the climate changes that have occurred in recent years, the surface water resources in the country have decreased sharply and will make up only 17 billion cubic meters in 2022[48].

Soil Degradation: Soil salinization has risen recently, particularly in some areas. When groundwater is exposed, salinization is inevitable. One of the primary causes is the incorrect application of some irrigation technologies.Utilizing modern irrigation technology is essential to prevent water loss, achiev high yields, and maintain soil fertility[49].

Effective water management practices: In Azerbaijan, 10% of the irrigated agricultural land has modern irrigation systems installed. Unlike the previously common furrow irrigation, modern irrigation methods such as pivot and drip irrigation can increase productivity several times over. To build modern irrigation systems, farmers only need to pay 20% of the total cost up front; the remaining 40% is covered by the government, and the remainder can be repaid over five years with an interest-free loan.Climate-Resilient Crops: Azerbaijan and ICARDA scientists closely cooperate on genome evolution. , local varieties become more varied as a result of the cooperation work between Azerbaijan and ICARDA. The government supports the initiatives to create new, high-quality, adaptable breeds. The cooperation with ICARDA led to the reduction of greenhouse gas emissions from the food systems, as well as to providing support to small producers in adapting to climate change by introducing drought and pest-resistant, high-yielding varieties. Despite the challenges posed by climate change, practices in more efficient

[48] Mikayilov, Z.: 70% of surface water resources come from neighboring countries. Retrieved from: www.report.az

[49] Rzayev, T. Torpaqlarımız sürətlə şoranlaşır - Bəs çıxış yolu nədir? Retrieved from: www.redaktor.az

irrigation and water management in the hot and dry Central-West Asia and North Africa region will play an important role in increasing agricultural productivity[50].

### II.A.3.1.6. Sustainable Consumption and Production (SDG 12)

SDG 12 assures patterns of production and consumption that are sustainable. When it comes to the agri-food industry, it means energy and resource efficiency, access to essential services, and sustainable infrastructure. It also translates into green, stable employment and an overall improvement in people's quality of life. This resonates with Azerbaijan's approach to SDG 12 in relation to the agri-food industry.

The agricultural sector plays an important role in Azerbaijan as it is seen as a source of employment and livelihood for the nation. The government uses a number of strategies to support the achievement of SDG 12, which reinforces the sustainable consumption and production strategies currently in use. These consist of technical innovations, policy frameworks and community participation initiatives.

#### Policy Frameworks

Azerbaijan has implemented state programs and strategic documents aimed at improving the ecological situation, protecting the environment, and efficiently using natural resources. These documents include: «Environmental Protection Law», «Law on the Use of Energy Resources» « Law on Use of Mineral Resources», « Law on Environmental Safety», Land Code», «Water Code». These laws and normative acts are aimed at ensuring efficient and sustainable use of Azerbaijan's natural resources. Each law defines the basic principles and rules related to the management and protection of a particular natural resource.

Azerbaijan has undertaken several waste management projects to improve its waste management infrastructure, reduce environmental impact, and promote sustainable practices.

Balakhani Industrial Park, which covers 10.15 hectares and includes the management and infrastructure required for waste recycling, was founded on December 19, 2012, by Mr. Ilham Aliyev, President of the Republic of Azerbaijan. Industrial parks recycle waste to ensure the efficient and sustainable use of natural resources[51].

#### Technological Basis Innovation

A key factor in sustainable agri-food production is technological advancement. Azerbaijan has recently made several improvements aimed at reducing environmental impact and increasing resource efficiency, including:

- Precision agriculture: This involves maximizing farm efficiency and minimizing resource usage through the use of GPS, IoT, and data analytics. As a result, this leads to greater yields.

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[50] Abousabaa, Aly. ICARDA: "Azərbaycanın COP29 tədbirinə uğurla ev sahibliyi edəcəyinə inanıram". Retrieved from: www.science.gov.az

[51] Balaxanı Sənaye Parkı - Təmiz Şəhər. Retrieved from: www.tamizshahar.az

- Renewable Energy: Solar and wind energy systems can be applied on-farm to minimize the farm's reliance on fossil fuel use in farm activities.

Challenges and Opportunities

Azerbaijan still faces a number of barriers to achieving SDG 12 in the agri-food sector, despite recent progress in this direction.

- Resource constraints: As rising temperatures and unpredictable rainfall put pressure on Azerbaijan's water resources, water resilience in the face of climate change is becoming increasingly important. To meet these difficulties and guarantee sustainable water access while reducing the effects of climate unpredictability, a comprehensive plan that incorporates adaptive water management techniques and stakeholder participation is needed. Considering land resources are scarce, optimizing their usage would expand the scope of sustainable farming operations.

- Diversification efforts: Azerbaijan, a country traditionally dependent on its oil industry. The strategic move towards diversification occurs against the backdrop of progressive economic policies designed to create an environment that is favorable for private sector growth. There have been noticeable financial gains as a result of the Azerbaijani government's proactive approach to promoting entrepreneurship using contemporary organizational methods. Now a vital component of Azerbaijan's economy, the private sector has created more jobs, diversified trade prospects, and strengthened balance the country's economy.

In the agri-food industry, Azerbaijan promotes sustainable production and consumption. The nation leverages technical advancements, legislative frameworks, and community engagement to help achieve SDG 12. This means that maintaining this pace in the interest of the nation's agri-food industry and the economy as a whole would require increased effort to conquer significant challenges.

### II.A.3.1.7. Biodiversity Conservation (SDG 15)

Conserving biodiversity in Azerbaijan's agri-food industry is crucial to achieving SDG 15. It focuses on preserving forests, preventing the loss of biodiversity, and protecting terrestrial ecosystems. The following primary strategies and initiatives are being considered in order to accomplish this:

Sustainable Agricultural Practices

In practice, it is critical to operationalize sustainability. In light of this, it is advised to combine Integrated Pest Management with organic farming and agroecology to increase soil fertility and biodiversity at the same time by minimizing the use of chemicals and fully utilizing natural processes.

Biodiversity Improvement Initiatives

In 2012, the European Bison was chosen as an iconic species for conservation in Azerbaijan and in 2012, Shahdag National Park in northeastern Azerbaijan was selected for the WWF's European Bison reintroduction program. A new reintroduction initiative started in 2019 in a joint effort of the Azerbaijan Government, IDEA and WWF. In May 2019, the 12 Bisons from zoos in Germany, France and Belgium were released into the core zone of the national park[52].

In an effort to improve the genetic variety of livestock and strengthen the agricultural sector's resilience in Azerbaijan, 116 yaks were successfully transferred from Kyrgyzstan to Azerbaijan. The Ministry of Agriculture of the Republic of Azerbaijan carried out this mission to increase agricultural biodiversity in Kalbajar, a mountainous region of the country. Silk Way West Airlines successfully transported yaks from Kyrgyzstan to Azerbaijan .

In 2023, Yenikend Sturgeon Breeding Farm released 300 Caspian salmon into the Neftchala shoreline of the Caspian Sea for the first time. This species of fish is listed in the "Red Book". The Kura River is the primary breeding habitat for the migratory Caspian salmon. Fishlings spend their first 1.5 to 2 years of life mostly in freshwater rivers before moving to the ocean[53].

Policy and Legislation

The Republic of Azerbaijan's great efforts to conserve biodiversity are outlined in the National Strategy for 2017–2020 on the protection and sustainable use of biodiversity.

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[52] "Azərbaycan Respublikasında bioloji müxtəlifliyin qorunmasına və davamlı istifadəsinə dair 2017–2020-ci illər üçün Milli Strategiya"nın təsdiq edilməsi haqqında. Retrieved from: www.e-qanun.az .

[53] Biomüxtəliflik. Azərbaycan Respublikası Ekologiya və Təbii Sərvətlər Nazirliyi. Retrieved from: www.eco.gov.az . .

Enforcing the Land Use Law, Forestry, and related environmental restrictions, together with other similar standards, continues to achieve even better outcomes in this field[54].

Community Involvement and Education

In Azerbaijan, hunting ranches started to function in the 1960s of the previous century. In order to maintain the ideal quantity of animals at the population level, a farming system makes sure that wild animals and birds are secured. Ten hunting farms that span more than 196,423 thousand hectares are currently in operation around the nation. Nine of them are local in significance, and one is of national significance[55].

Sample Projects and Case Studies

National Parks and Reserves

National parks with the status of nature protection and scientific research centers were created for the purpose of preserving characteristic and rare natural complexes and objects in their natural state and studying the course of natural processes and phenomena. It is prohibited to use the land of the state nature reserves, as well as the water, flora and fauna within its boundaries for economic purposes[56].

Caucasus Nature Fund

The Caucasus Nature Fund ensures that the distinctive flora, fauna and ecosystems of the Caucasus Ecoregion are preserved and restored for future generations in national parks and other significant protected areas. The fund offers these protected sites in Armenia, Azerbaijan, and Georgia long-term financial and technical help[57].

Integrated Biodiversity Management in the South Caucasus

There has been an improvement in the coordination between the many governmental and non-governmental entities and social categories like farmers and herders, through obtaining trustworthy information on the various sectors to aid in the processes of planning and decision-making[58].

Only a complex approach, like that employed by Azerbaijan's agri-food sector, would be able to reach SDG 15's seemingly sustainable state. This strategy includes community engagement, policy frameworks that are supplied, sustainable practices,

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[54] "Azərbaycan Respublikasında bioloji müxtəlifliyin qorunmasına və davamlı istifadəsinə dair 2017–2020-ci illər üçün Milli Strategiya"nın təsdiq edilməsi haqqında. Retrieved from: www.e-qanun.az .

[55] Biomüxtəliflik. Azərbaycan Respublikası Ekologiya və Təbii Sərvətlər Nazirliyi. Retrieved from: www.eco.gov.az .

[56] Qoruqlar. Azərbaycan Respublikası Ekologiya və Təbii Sərvətlər Nazirliyi. Retrieved from: www.eco.gov.az

[57] Caucasus Nature Fund - Supporting People, Conserving Nature in the Caucasus. Retrieved from: www.caucasus-naturefund.org

[58] Integrated Biodiversity Management in the South Caucasus. Retrieved from: www.giz.de.

ongoing research, and monitoring. By addressing challenges and opportunities, the rich biodiversity of Azerbaijan would be sustained over the long run.

### II.A.3.1.8. Water and Sanitation (SDG 6)

Ensuring equal access to water and sanitation for all is the sixth goal of sustainable development. Azerbaijan produces a decent amount of agri-food products and there is an upward trend parallel to the rising population. Despite being essential to food and economic security, access to water and sanitation is a major obstacle. Therefore, the goals of this section are as follows: to evaluate the state of affairs, the obstacles faced, and the steps made in the Azerbaijani agri-food sector to achieve SDG 6.

Current Water and Sanitation Situation in Azerbaijan

Azerbaijan is classified as the eighteenth most water-stressed country in the world and sixty-first in terms of being in danger of experiencing severe natural disasters. The country currently has 27 cubic kilometers of surface water reserve, which drops to 20–21 cubic kilometers during dry years. Glaciers, lakes, rivers, and reservoirs are the sources of surface water resources. 70–72 percent of the fresh water resources of our nation are formed beyond its borders. The country's water resources have declined in recent decades as a result of climate change, and climate models indicate that this decline is likely to continue[59].

Challenges of water sector

The agricultural sector uses an excessive amount of water, as evidenced by unsustainable irrigation methods, a lack of cooperation between state agencies, decreased rainfall, environmental deterioration, and a lack of transboundary cooperation[60].

Barriers in the Agri-Food Industry

1. Overuse and Scarcity of Water: In Azerbaijan, agriculture accounts for 70% of total water use. The sector suffers greatly from the fact that irrigation and rain-fed agriculture are the main causes of water shortages. In addition, the sector has to deal with the growing impacts of climate change and inefficient irrigation. Traditional flood irrigation methods lead to additional water losses.

2. Water Pollution and Sanitary Problems:

Fertilizers and pesticides from agriculture pollute water through runoff, endangering human health as well as the overall ecological balance of life. Fertilizer consumption per hectare in Azerbaijan has increased significantly over two decades. The average fertilizer consumption per hectare in Azerbaijan was 106 kg, which is still less than the world average of 140 kg per hectare.Efforts and Initiatives

[59] Azərsu. Retrieved from: www.azersu.az .

[60] idd_policy_brief_-_young_ada_scholars_-_19_january.pdf . Retrieved from: www.zeroline.az

1. Government Policies and Programs: «In the action plan for 2020-2022 on ensuring the efficient use of water resources, it is envisaged to present the draft of the «National Strategy on the Efficient Use of Water Resources» to the President of the Republic of Azerbaijan. The strategy aims to provide water management based on the principle of modern, progressive management in the short, medium and long-term planning period[61].

2. Technological innovations:

In Azerbaijan, 10% of the irrigated agricultural land is equipped with modern irrigation systems. Unlike the widely used furrow irrigation that was formerly widespread, modern irrigation techniques such as pivot and drip irrigation enable productivity to be increased several times. To construct contemporary irrigation systems, farmers have to pay 20% of the total cost up front; the remaining 40% is covered by the state, and the remaining balance can be paid back over the course of five years with an interest-free loan.

3. International Cooperation: Azerbaijan actively cooperates with international institutions such as the World Bank and FAO in order to support water management techniques and systems that will result in the most efficient, sustainable use of resources while accomplishing SDG 6.

### II.A.3.1.9. Decent Work and Economic Growth (SDG 8)

Encourage full and productive employment, equitable and sustainable economic growth, and decent work for all. In this context, the tasks given to the Azerbaijani agri-food sector present a variety of opportunities as well as challenges.

Economic Environment

As a non-oil sector of the economy, the agri-food industry is becoming increasingly significant, accounting for 35 percent of employment in Azerbaijan in 2022 and 4.8% of the country's GDP. This industry includes food item production, distribution, and processing, as well as agricultural activities. It makes up a vital interface between urban markets and rural development.

Employment and Labor Conditions

Although the agricultural sector employs more than 35% of the employed population of Azerbaijan, most of these people are not registered and do not file tax returns. The implication is that these people will ultimately be entitled to a basic pension and will not be eligible for further benefits. As a result, the proportion of people living in poverty or at risk of poverty may increase. (Valiyev, A., 2020)[62].

[61] Su ehtiyatlarından səmərəli istifadənin təmin edilməsi ilə bağlı əlavə tədbirlər haqqında. Retrieved from: www.e-qanun.az

[62] Valiyev, A., 2020. Attaining SDG 8 in Azerbaijan: The challenges of economic transformation and job creation. International Labor Office.

Gender and Youth Employment

In the agri-food sector workforce, women is the group most affected by barriers to decent work. Addressing these issues will be critical to promoting equitable economic growth and ensuring that the untapped potential of the agri-food sector is realized..

Technological Development and Innovation Mechanization

In the Azerbaijani agri-food sector, technological innovation remains an important means for boosting production and enhancing the working conditions of employees. Mechanization, digital tools, precision farming, and modern agricultural methods are all combined to increase productivity and improve resource management, resulting in more reliable and excellent employment.

Policy and Institutional Framework

It is challenging to regulate and protect workers' rights in agriculture because a large percentage of work is done informally. Legal protections, social benefits, and formal contracts are frequently missing in informal employment. To increase traceability and performance in the sector, a number of smallholder support programs for rural development have been implemented, along with the Azerbaijani government's implementation of several policies supporting sustainable agriculture and improved labor conditions in that direction. SDG 8 goals must still be met through efficient implementation and enforcement of labor laws.

International Collaboration and Trade

Market access may ultimately provide a window of opportunity for economic growth and job creation, but compliance with sustainability standards and international labor laws can also be a barrier to meeting the needs of international buyers and markets. Azerbaijan will be further assisted in meeting all of these international standards through international cooperation with organizations and trading partners. Therefore, several steps have to be taken to achieve decent work and economic growth in Azerbaijan's agri-food sector. These include improving gender and youth employment, addressing working conditions, achieving technological improvements, and ensuring policy effectiveness. If this continues, Azerbaijan will be on a progressive path to achieving SDG 8, and it will ensure that agri-food businesses can become more sustainable and inclusive in the country.

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# Kazakhstan country chapter

# SECTION II.B.1. KAZAKHSTAN DOMESTIC AGRI-FOOD PROFILE

## II.B.1.1. Background and purpose of the report

### II.B.1.1.1. Background

Food security is crucial for Kazakhstan, given its role in ensuring national stability, economic development, and public health.

Agricultural production, government policies, climate change, and socio-economic conditions are factors that influence food security in Kazakhstan. As a major grain producer, particularly of wheat, Kazakhstan plays a significant role in global food markets. The government prioritizes food security, implementing strategies to ensure a stable food supply for its population.

Agriculture is vital to Kazakhstan's economy, however its productivity heavily relies on sustainable water management due to the country's semi-arid climate. Climate change, with its risks of unpredictable weather and water scarcity, poses challenges to food production.

To address these challenges, the government promotes modern agricultural practices, invests in irrigation infrastructure, and encourages the use of drought-resistant crops. Efforts are also being made to support smallholder farmers and diversify agricultural output.

In the latest Global Food Security Index, which assesses financial affordability, quality and safety of products, as well as sustainability, Kazakhstan has improved its position, rising from 41st to 32nd place out of 113 countries (Impact Economist, 2023).

This advancement in the global food security ranking indicates that the measures taken to provide citizens with affordable and high-quality food are gradually yielding results. As per the FAO categorization, Kazakhstan presently occupies a position within the third most advantageous cohort of nations concerning food security, along with China, Australia, as well as numerous countries across Europe and North America.

### II.B.1.1.2. Purpose of the report

This report provides a comprehensive insight into the agri-food sector and the implementation of the Sustainable Development Goals (SDGs) in Kazakhstan. It highlights the country's ongoing efforts to advance food security through targeted policies and strategies, ensuring that the population has consistent access to safe and nutritious food.

## II.B.1.2. Methodology

### II.B.1.2.1. Data sources

The methodology of this report involves qualitative and quantitative research approaches, and a comparative analysis of statistical data. A literature review includesre-

ports of international organizations and government publications related to food security and sustainable development in Kazakhstan.

The analysis incorporates data from the Bureau of National Statistics of Kazakhstan, prepared in cooperation with members of five Interdepartmental Working Groups established within the framework of the Coordination Council on Sustainable Development Goals (SDGs). During the work, 278 global and national SDG indicators were considered, of which 16 global indicators were recognized as irrelevant for Kazakhstan. The system of national indicators for monitoring the SDGs includes 262 indicators (QazStat, 2023), of which:

**146** global indicators were adopted without changes;

**44** global indicators include minor changes;

**30** alternative/proxy indicators were proposed;

**42** national indicators were additionally included.

The Coordination Council on Sustainable Development Goals in Kazakhstan was another important source for analytical data.

For the analysis of trade statistics, data from the National Statistics Bureau, the State Revenue Committee of the Ministry of Finance of the Republic of Kazakhstan, and international data from the International Trade Center Trade.Map were used. Finally, reviews and reports from international organizations such as FAO, OECD, and the World Bank were also analyzed.

### II.B.1.2.2. Conceptual framework

In the framework of Kazakhstan's state planning system, the strategic documents are classified by level, highlighting the interconnectedness of government bodies in achieving the Sustainable Development Goals (SDGs) and ensuring food security. For instance, the Medium-Term Food Security Plan is guided by the Laws on National Security and State Regulation of the Agro-Industrial Complex's Development, establishing a legal foundation for its implementation.

The conceptual basis for ensuring food security in Kazakhstan is built upon three key criteria (FAO, 2022):

- **Physical Availability of Food:** This criterion reflects the level of food availability in the market, ensuring that sufficient quantities are accessible to meet the population's needs.
- **Economic Accessibility of Food:** This criterion addresses the population's ability to purchase food, emphasizing the importance of affordability in securing adequate nutrition for all citizens.
- **Food Safety:** This criterion focuses on ensuring that the food available is safe for consumption, free from contamination, and meets health standards.

Achieving food security in Kazakhstan is inherently cross-sectoral, requiring coordinated actions from all stakeholders. National policies aimed at food security are closely aligned with the SDGs, particularly SDG 2, "Zero Hunger." However, the attainment of these goals necessitates an integrated approach that not only improves agricultural pro-

ductivity but also promotes sustainable resource management. Strengthening institutional support and enhancing coordination across sectors and stakeholders are crucial steps in minimizing risks and addressing gaps in the implementation of existing strategies.

Kazakhstan has made significant progress in its pursuit of the SDGs, embedding 87 key indicators into its state planning system. These indicators are fully integrated into National Projects and Regional Development Programs, providing a clear roadmap for the country's progress towards achieving the SDGs. By setting target values for all 87 indicators by 2025, Kazakhstan aims to ensure that progress is driven by improved institutional mechanisms, legislation, and sufficient funding.

To successfully achieve the SDGs by 2030, it is essential that budgetary plans accurately reflect the actual needs required to meet these goals. This means aligning financial allocations with SDG priorities, ensuring that resources are used effectively to support and accelerate progress in both the short and long term.

In line with this, the report critically evaluates policy frameworks, institutional capacities, and interventions aimed at enhancing food security and development to identify gaps and opportunities for improvement. The goal is to provide recommendations that will help Kazakhstan achieve its sustainable development goals and ensure food security for its population (Government of the Republic of Kazakhstan, 2022, March 31).

### II.B.1.3. Analysis of the current state of food insecurity in the country

#### II.B.1.3.1. Access to food in the country

Food security issues in Kazakhstan impact national sovereignty and governance. The country's -potential in agro-industrial complex allows for a diverse range of food products that meet scientific nutritional standards. With its vast agricultural sector and rich natural resources, Kazakhstan is one of the most self-sufficient countries in the production of grain, meat, and other products. This extensive agricultural capability contributes to food production and impacts both the availability and quality of food products, which is essential for improving the quality of life and overall public welfare in the region.

Agriculture, a fundamental sector of the economy, is a cornerstone of food security in Kazakhstan. To advance the industry further, President K.K. Tokayev has outlined strategic goals aimed at increasing production volumes and bolstering the advantages of domestic agricultural products. In his Address to the People of Kazakhstan, the President emphasized the immense potential of the domestic agricultural sector, declaring that the country's strategic goal is to become a leading agricultural hub on the Eurasian continent.

The Food Security Plan for 2022-2024 aims to ensure both the physical and economic accessibility of food products while maintaining their safety.

Kazakhstan aims to achieve at least 90% self-sufficiency in food products, including socially significant ones, by 2029 through comprehensive plans and strategic docu-

ments in the field of agri-food and food security. To ensure this level of food security, a holistic approach is required, focusing on boosting food production, reducing import dependence, and increasing the export of processed products.

### II.B.1.3.1.1. Food consumption (Level of undernourished groups, share of imported calories)

Kazakhstan has demonstrated notable advancements in food consumption in recent years, by virtue of government initiatives aimed at strengthening national food security. Domestic agricultural production now sufficiently meets the population's demand for essential food products, such as grain, meat, and dairy. In addition to satisfying domestic needs, Kazakhstan remains one of the world's leading grain exporters, further underscoring its agricultural capacity.

The incidence of malnutrition in Kazakhstan is relatively low, reflecting a high level of food security. One critical measure of this is the population's perception of food insecurity, which serves as an indicator of the proportion of individuals facing moderate or severe difficulties in accessing food. Moderate food insecurity is often associated with an inability to consistently maintain a nutritious and balanced diet. From 2015 to 2021, this indicator improved by 2.6 percentage points, decreasing to 5.2%. This decline is consistent with the continuing annual growth in the population's consumption of basic foodstuffs.

These improvements highlight the effectiveness of Kazakhstan's agricultural policies in enhancing access to nutritious food for its population, while also reinforcing the country's position as a key actor in global food markets.

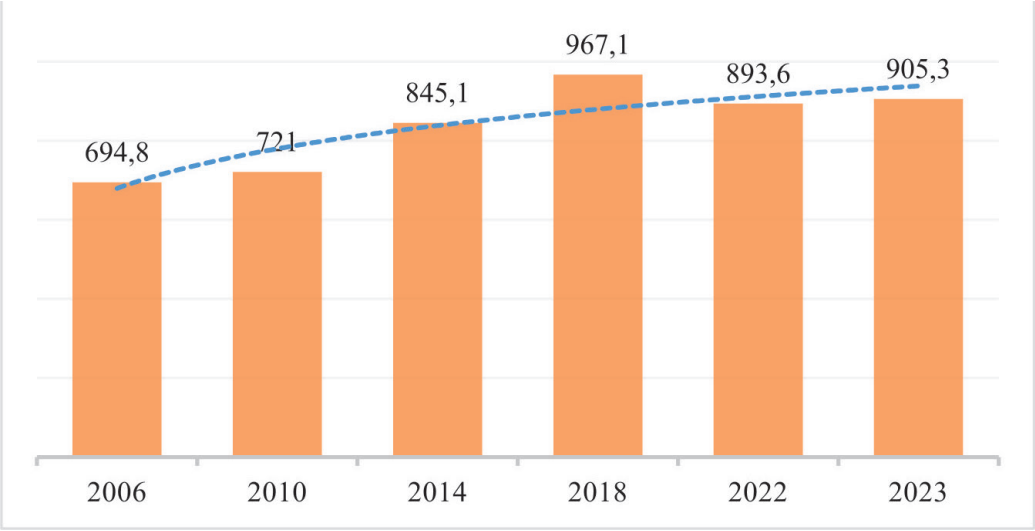


***Figure 1. Level of consumption of basic foodstuffs, ton***

Source: Bureau of national statistics of the Republic of Kazakhstan

An analysis of basic food consumption in Kazakhstan from 2006 to 2023 reveals a steady upward trend between 2006 and 2018, with consumption rising from 694.8 thousand tons in 2006 to a peak of 967.1 thousand tons in 2018. This growth can likely be attributed to improved living standards and an increased demand for a wider variety of products. However, following 2018, a decline in consumption happened, dropping to 893.6 thousand tons in 2022, followed by a modest recovery to 905.3 thousand tons in 2023 (FAO, 2023).

The rise in consumption between 2006 and 2018 can be explained by several factors: increasing household incomes, the process of urbanization, population growth, and greater availability of foodstuffs due to the expansion of domestic production and trade networks. Additionally, government initiatives aimed at supporting the agricultural sector played a critical role in facilitating this growth. However, the decine in the 2018-2022 period may suggest emerging economic challenges or shifts in consumer behavior that require further research

#### II.B.1.3.1.2. Income, employment and poverty

The income of the population of the Republic of Kazakhstan grows annually under the influence of effective economic factors. According to statistics, over the past five years, the average per capita income has increased by 1.8 times. A further increase in the average per capita income is important for Kazakhstan, as well as minimizing the difference in income between the city, the village, and the region.

The employment rate in the Republic of Kazakhstan has steadily increased in recent years, driven by state benefits, support for small and medium-sized enterprises, and the creation of new job opportunities. According to 2020 data, the employment rate had risen by 4% by the end of 2023. Notably, the agricultural, forestry, and fisheries sectors contribute 12% to the total employment figures. This positive trend is expected to continue, particularly in light of President K. K. Tokayev's 2023 address, which emphasized food security, agricultural development, and the modernization of the agro-industrial complex as national priorities. The government has initiated measures to create additional employment opportunities and offer loans to individual entrepreneurs, further bolstering job growth in these critical sectors.

The unemployment rate in Kazakhstan has remained stable in the range of 4.7–4.9% for more than a decade. Even during the global surge in unemployment caused by the COVID-19 pandemic in 2020, Kazakhstan's unemployment rate remained stable within this range, reflecting the resilience of the country's labor market.

According to official statistics, in 2023 the share of the population with incomes below the subsistence level was 5.2%, or just over 1 million people.

The minimum subsistence level is defined by the law on minimum social standards and their guarantees as the minimum monetary income per person, equivalent to the cost of the minimum consumer basket. This basket includes a basic set of food products, goods, and services necessary to meet a person's essential needs.

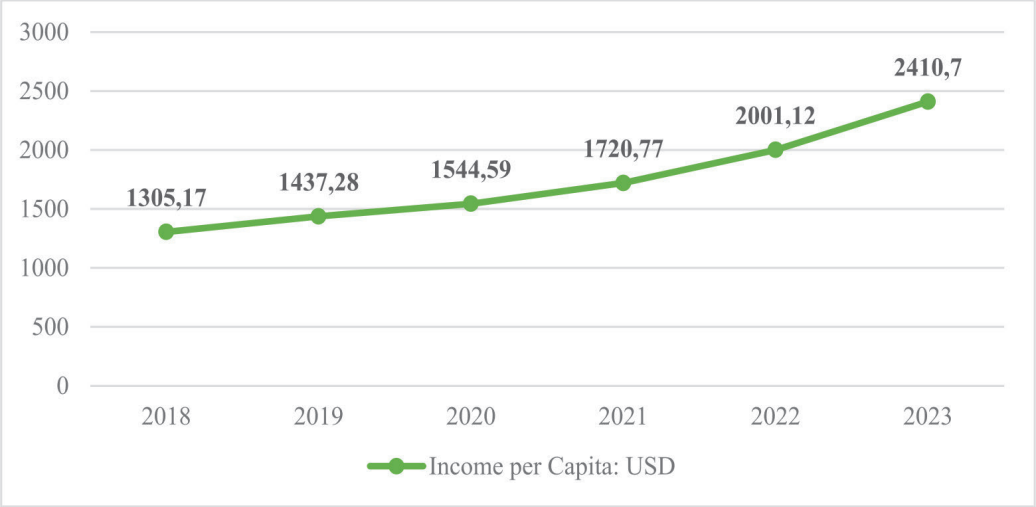


***Figure 2. Income, on average per capita***

Source: Bureau of national statistics of the Republic of Kazakhstan

The food basket is calculated by the authorized body in the field of state statistics based on scientifically substantiated physiological norms for food consumption. These norms are approved by the authorized body in the field of sanitary and epidemiological welfare in coordination with health authorities. According to the Order of the Minister of National Economy of the Republic of Kazakhstan dated December 9, 2016, No. 503, the calculation includes rational per capita consumption norms for various age and gender groups, as well as the energy and nutritional value of daily food consumption.

#### II.B.1.3.1.3. Prices, markets and logistics infrastructure

The Government of Kazakhstan, in collaboration with the National Bank and local executive bodies, has been implementing a series of measures aimed at controlling and reducing inflation. As a result, inflation dropped by half last year, reaching 9.8% compared to 20.3% in 2022. Food prices increased by 8.5% over the year, down from 25.3% in 2022, while non-food prices rose by 9.1% (compared to 19.4% in 2022), and paid services had a 12.4% increase (compared to 14.1% in November 2023). Notably, for the first time, food inflation was lower than non-food inflation. For 2024, the target is to maintain inflation within the 6-8% range.

Kazakhstan revised its price stabilization mechanisms. The “revolving loan” scheme was restructured to provide direct support to producers, while the stabilization fund model was adjusted to purchase products during the harvest season, when market prices are competitive, to sell them during the off-season. Next, a forward purchase mechanism was introduced, which allows for contracts with agricultural producers incentivizing to store products until they are ready for sale.

The primary factor driving inflation is the trade markets. To address this, a program is being developed to increase the share of modern trade formats to 70% by 2027. Modern trade formats are crucial as they ensure quality, traceability, and control over trade margins.

Currently, Kazakhstan has 1,208 fruit and vegetable storage facilities with a total capacity of 1,952.8 thousand tons. This includes 770 vegetable storage facilities with a capacity of 1,200 thousand tons, 382 potato storage facilities with a capacity of 560 thousand tons, and 55 fruit and vegetable storage facilities with a capacity of 172 thousand tons.

286 storage facilities were constructed before 1991, followed by 985 facilities from 1991 to 2011, and an additional 537 facilities since 2011. Of the existing storage capacities, approximately 1,093 thousand tons (55%) are equipped with climate control systems.

To enhance vegetable storage capacity, a Comprehensive Plan for the construction and modernization of storage facilities has been developed in collaboration with regional akimats, the capital, and cities of national significance. The Plan is based on a thorough analysis of regional production and consumption of fruit and vegetable products, the current state of existing storage facilities, the need for modernization, and the required additional capacity.

The analysis identified indicative targets for new storage facilities across regions. The plan aims to commission 97 new storage facilities for fruit and vegetable products, with a total capacity of 335.6 thousand tons. This includes 85 vegetable storage facilities (276.5 thousand tons), 9 potato storage facilities (33.2 thousand tons), and 3 fruit storage facilities (26 thousand tons).

To stimulate investment in the development and modernization of storage facilities, the Plan proposes amending the Rules for investment subsidies. The subsidy rate is to be increased from 25% to 40-50% for modern storage facilities equipped with specialized technology that ensures the long-term preservation of products' commercial qualities. Last but not least, the Plan suggests developing specific financial programs through Baiterek Holding to support projects aimed at building and modernizing storage facilities.

### II.B.1.3.2. Food quality (safety)

Kazakhstan enforces food quality and safety standards under the legislation titled "On the Quality and Safety of Food Products". The legislation ensures the quality and safety of food products in Kazakhstan and involves a comprehensive framework of state regulation and oversight. The government authorities have specific regulatory measures to ensure that products meet established quality and safety criteria. Both individuals and legal entities involved in the food supply chain are required to adhere to organizational, agrochemical, veterinary, technological, and sanitary anti-epidemic measures as specified in regulatory documents. These measures are designed to ensure product quality andthe conditions under which they are distributed.

Production oversight is a key component of the quality assurance framework, which includes monitoring adherence to established standards. Certain categories of food products and materials must undergo mandatory certification to verify compliance with regulatory requirements. Additionally, a sanitary and epidemiological assessment is conducted for further oversight. Implementing advanced quality management systems is also a significant part of this process.

Both individuals and legal entities are required to provide accurate and comprehensive information about the quality and safety of food products to consumers and regulatory bodies. Authorized organizations, including those responsible for standardization, metrology, sanitary and epidemiological control, as well as veterinary and phytosanitary services, are tasked with informing stakeholders about regulatory requirements, the state registration of products, and measures to prevent the circulation of substandard products.

Food safety is a collective responsibility and must be ensured at every stage of the food production chain—from production and storage to distribution, preparation, and consumption. Kazakhstan is a member of the Eurasian Economic Union (EAEU), which means that the Technical Regulation of the Customs Union on Food Safety (TR CU 021/2011), dated December 9, 2011, No. 880, is in force in the country. Food products in circulation within the Customs Union must remain safe throughout their shelf life when used as intended.

Manufacturers must develop, implement, and maintain procedures based on HACCP principles (Hazard Analysis and Critical Control Points) to ensure food safety. The basic primary sources defining the principles of the HACCP system worldwide are the guidelines of the Joint FAO/WHO Codex Alimentarius Commission.

Documentation: Food products must be accompanied by documentation that ensures traceability, such as invoices and delivery notes.

Special Requirements for Baby Food: For baby food, as well as for food intended for pregnant and breastfeeding women, the use of raw materials containing GMOs is prohibited, and the use of benzoic and sorbic acids and their salts is banned.

Compliance Assessment: Compliance with the Technical Regulations of the Customs Union is assessed through product conformity declarations, state registration of specialized and new food products, and veterinary and sanitary inspections.

ISO 22000 harmonizes management system requirements (such as ISO 9001) with HACCP principles. This standard integrates key elements of HACCP, including systematic management, food hazard control, interaction with suppliers, consumers, and regulatory bodies, as well as continuous improvement and process optimization. ISO 22000 is a standard that encompasses all HACCP principles and establishes the framework for food safety management systems.

### II.B.1.3.3. Demographic considerations

Kazakhstan's demographic landscape is characterized by steady population growth. As of early 2024, the population of the Republic of Kazakhstan reached 20,033,842. This growth brings considerable demographic pressure, impacting various economic and social dimensions of the country.

One of the key challenges posed by population growth is its direct effect on food security. As the population expands, the demand for food increases, necessitating a corresponding rise in agricultural production. The growing population also drives up demand for consumer goods. While this may incentivize manufacturers to boost production, maintaining quality standards becomes crucial to avoid any decline in product quality. Also, an increased demand can lead to price hikes, particularly for essential goods and services.

Kazakhstan has also experienced significant urbanization in recent years. By 2024, the urban population had increased by 22.5% compared to 2017. This rapid urban growth places additional strain on infrastructure, emphasizing the need for more effective urban planning and improvements in transportation systems, water supply, electricity, and other essential services.

As living standards rise in urban areas, there is also a growing interest in healthier lifestyles and proper nutrition. Urbanization facilitates access to a wider range of foods and stimulates the growth of organic and healthy food markets.

In summary, the trends of population growth and urbanization in Kazakhstan present both challenges and opportunities for sustainable development, particularly in areas such as food security, product quality enhancement, and the improvement of living standards.

### II.B.1.3.4. Health and sanitation

The Republic of Kazakhstan places a high priority on the health and well-being of its citizens. The “Social Wallet” project has been in operation since the end of 2023.. This program aims to provide essential services, including the distribution of medications to specific groups of citizens and the provision of free or subsidized meals in schools. As of September 1, the project has expanded to offer free and reduced-price meals to schoolchildren in all regions of Kazakhstan. A total of 30,000 medications will be made available, and 93 organizations are involved in supplying free and subsidized meals in educational institutions.

Improved access to drinking water can prevent diseases such as diarrhea, malaria, and malnutrition, and is especially important for women and children, particularly in rural areas.

In Kazakhstan, the vast majority of the population—97.3%—has access to improved drinking water sources, with 99.7% in urban areas and 94.6% in rural regions. Piped water is the primary source of drinking water, used by nearly 80% of the population.

Additionally, 46.4% of households that rely on unimproved drinking water sources use appropriate water treatment methods. Almost one-third of the population boils their water, 25.8% use filters, and over 8% rely on water settling methods for treatment.

Effective sanitation, access to potable water, and the provision of safe food are crucial in reducing the transmission of infectious diseases. These measures are not only vital for individual well-being but also play a key role in protecting public health.

### II.B.1.3.5. Government Policies and Interventions

**Country road maps on agricultural development (if any)**

The rural development strategy for the Republic of Kazakhstan for 2023 to 2027 is currently in effect, with the primary goal of creating essential conditions for farming in response to recent declines in agricultural productivity. This initiative outlines comprehensive measures aimed at raising rural incomes by advancing the agricultural sector and fostering agricultural cooperation. The ultimate objective is to establish a resilient agricultural framework that ensures food security and improves the quality of life for rural communities.

A key focus of the strategy is the shift from a raw material-based economy to a product-processing, to increase added value and income for rural producers. For example, the cultivation and processing of grains in the North Kazakhstan region and sheep farming in the Almaty region are driving local economic growth and job creation. Diversifying production by transitioning to more profitable crops, such as forage, could boost profitability by 20 to 30 percent. Finally, the adoption of intensive animal husbandry and adherence to technological standards are expected to enhance land-use efficiency.

Improving agricultural infrastructure is another critical component, including advancements in veterinary and phytosanitary safety, as well as storage and processing facilities for agricultural goods. Financial and insurance support will be essential to these developments. Furthermore, the integration of digital technologies such as product tracking systems and remote sensing for land monitoring will increase transparency and boost productivity.

Another essential document is the Comprehensive Action Plan for the Development of Agricultural Processing and the Food Industry for 2024-2028 (Government of the Republic of Kazakhstan, 2024, June 28).

Kazakhstan possesses several key factors for the successful growth of agricultural processing, including an expanding domestic market, underutilized capacities of existing enterprises, and an available labor force. To ensure the country's food security, a holistic approach to industry development is necessary, focusing on significantly increasing food production, reducing import dependence, and boosting the export of processed products.

The goal of the plan is to meet the President's target of raising the agricultural sector's processing rate to 70%. To achieve this, the Comprehensive Plan outlines a range of projects eligible for preferential lending through financial institutions.

These projects primarily focus on constructing dairy farms, building vegetable storage facilities, expanding livestock farming, developing irrigation systems, and processing grains, meats, fruits, and vegetables. With state support mechanisms like interest rate subsidies, the final lending rate for agricultural producers will be capped at 6% per annum.

The main objectives of the plan include ensuring affordable raw materials for agricultural producers through subsidies for products submitted for processing, increasing

production profitability via preferential loans and subsidized interest rates, enhancing the competitiveness of domestic processed products in local markets through protective measures, and opening new markets to increase the export potential of agricultural products.

### II.B.1.4. Analysis of current state of agri-food production in the country

Agriculture is one of the key drivers of long-term sustainable development, economic diversification, improved living standards, and food security in Kazakhstan. The country has immense agricultural potential due to its vast territory and abundant resources. By leveraging these assets, Kazakhstan strengthens its food security, ensuring a stable supply of essential products for both domestic consumption and export markets.

One of the main advantages of Kazakhstan's agriculture is its extensive land area with a low population density, providing access to vast agricultural lands. According to the Ministry of Agriculture, the total agricultural land area exceeds 200 million hectares, placing the country among the top 10 globally. This includes 25 million hectares of arable land and 180 million hectares of pastures.

However, the distribution of agricultural land is uneven, leading to significant regional differences in agricultural activities. Crop farming is mainly concentrated in the northern (Akmola, Kostanay, and North Kazakhstan regions), eastern (Pavlodar region), and southern (Turkestan region) parts of the country, while extensive livestock farming dominates the central regions. In the southeast (Almaty and East Kazakhstan regions), mixed farming is prevalent. Other regions, like the West Kazakhstan, Atyrau, and Mangystau regions, focus more on livestock due to arid conditions, while Zhambyl region has a combination of crop production and livestock farming (Halyk Finance, 2023).

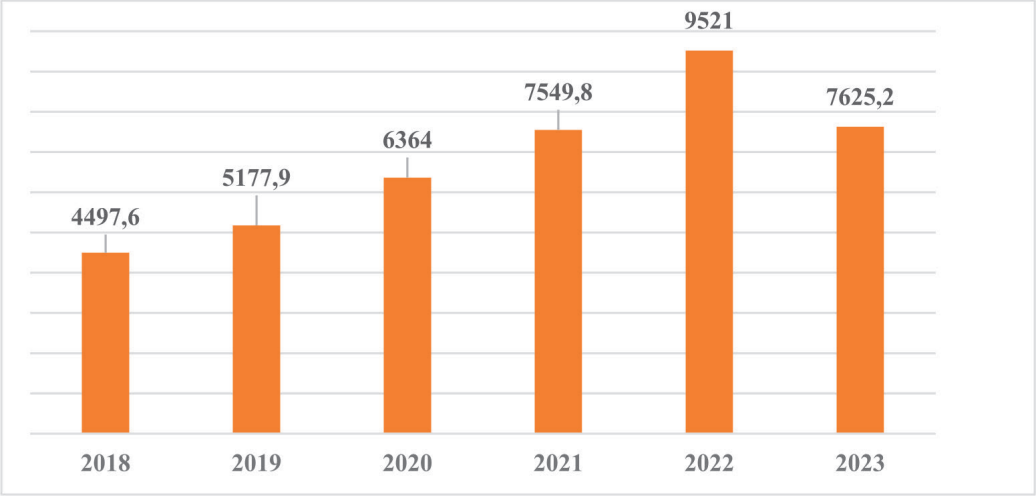


***Figure 3. Dynamics of gross output of agriculture, forestry and fisheries, bln tenge.***

This regional specialization reflects the diverse climate and geographical conditions across Kazakhstan.

In 2023, most crops, including wheat and oilseeds, saw an expansion in acreage. Despite the overall growth, areas under some crops like barley remained stable. The trend of increasing acreage continued into 2024, particularly for potatoes and vegetables, driven by rising demand and advancements in agronomic practice.

The chart illustrates trends in the gross output of agriculture, forestry, and fisheries from 2018 to 2023. Between 2018 and 2022, the average annual growth in gross output was 1,255.85 billion tenge, reflecting a 20.7% increase. However, in 2023, there was a significant decline of 1,895.8 billion tenge, representing a 19.91% drop.

Overall, the average growth rate over the entire period was 12.57%, marked by a steady upward trend until 2022, followed by a sharp downturn in 2023.

The gross output of agricultural products (services) in 2023 amounted to 7,576.5 billion tenge, which is 8.4% less than in the previous year.

#### II.B.1.4.1. Crop production

In 2023, crop production remained a key component of Kazakhstan's agriculture sector, despite significant challenges. The gross output of agricultural products (services) totaled 7,576.5 billion tenge, marking a decrease of 8.4% compared to the previous year. The primary decline was driven by a 14.1% reduction in crop production.

This downturn was mainly due to a sharp drop in the production of grain and leguminous crops by 22.8%, and oilseeds by 31%. Unfavorable weather conditions played a major role in this reduction. At the start of the harvest, heavy rainfall slowed down the pace of harvesting and negatively impacted grain quality. Additionally, the growing season faced complications from summer droughts and heavy rains in August and September, which further affected crop conditions and the quality of the harvested yield.

#### II.B.1.4.2. Livestock and animal husbandry

Currently, over 40% of Kazakhstan's total agricultural output comes from livestock production. Based on an analysis of external market potential and domestic production capacities, meat livestock farming has been identified as a long-term priority for the development of the agro-industrial complex. The aim is to elevate the country's livestock sector to a leading position through the opening of new export markets and reducing meat production costs.

To achieve these goals, a Roadmap for the Development of Meat Cattle and Sheep Farming for 2024–2026 has been developed, focusing on supporting producers, enhancing competitiveness, and improving logistical infrastructure.

The registries of importing countries are being updated with new Kazakh companies: over 520 domestic enterprises are already included in these registries, reflecting the growing international interest in Kazakh meat products.

In Kazakhstan, the gross output of livestock production increased by 4.5%, driven by growth across several categories. Poultry farming saw the most significant rise, with an increase of 11.7%, followed by dairy cattle at 2.7%, horses and other equines at 6.7%, and other cattle and buffaloes at 3.1%.

Livestock production in agricultural enterprises grew by 12.1%, while individual entrepreneurs and peasant or farming households saw an increase of 4.1%, and household farms experienced a more modest growth of 1.5%.

The regions contributing the most to the overall livestock production in 2023 were Almaty (10.9%), Turkestan (10.8%), and Akmola (9.8%) regions.

### II.B.1.4.3. Land use and management (Results of land reforms and current state of land ownership.)

Land reforms aimed at improving agricultural productivity, clarifying land ownership rights, and promoting economic development created significant changes in the land use and management in Kazakhstan.

After the collapse of the Soviet Union in 1991, Kazakhstan inherited a state-controlled land management system, where all land was owned by the state. The transition to a market economy required a comprehensive reform of this system. A major milestone was the adoption of the Land Code in 2003, which allowed private ownership of land for individuals and legal entities. This made the buying and selling of land legal and helped attract investment in agriculture and other sectors.

Since 2016, Kazakhstan has maintained a moratorium on the sale and lease of agricultural land to foreign nationals. This decision was made in response to public protests against the sale of land to foreigners, particularly agricultural land. Land is seen as a national asset in Kazakhstan, making this issue highly sensitive.

In 2021, President Kassym-Jomart Tokayev signed a law amending several legislative acts related to land relations. The new law imposes a complete ban on the sale and lease of agricultural land to foreign nationals, foreign companies, Kazakh companies with foreign ownership, stateless persons, scientific centers with international participation, and kandas (ethnic Kazakh repatriates). The law stipulates that agricultural land previously leased by foreign nationals or companies with foreign ownership cannot be extended after the lease expires. Kandas can receive land for personal household use and construction, but they can only lease agricultural land after obtaining Kazakh citizenship.

In 2022, a Working Commission was established to address the recovery of unused and illegally allocated land, as directed by the president. Interdepartmental groups involving law enforcement and government agencies have been formed across all regions of Kazakhstan to carry out this task. By 2023, the state had reclaimed 4.6 million hectares of land, with a total of 10 million hectares reclaimed since the beginning of 2022. These reclaimed lands are primarily being allocated for agricultural purposes and redistributed among local farmers. Owners of 3.4 million hectares of previously unused land have also started developing their land.

An interactive map, "Jerkarta.gharysh.kz," has been introduced, allowing users to track the location and area of reclaimed agricultural land. In 2023, 145 million hectares of agricultural land were digitized, accounting for 77% of the total agricultural land in the country. Full digitization of agricultural land is expected to be completed by 2025.

According to Kazakhstan's land balance, pastureland covers 183.4 million hectares, including 82.4 million hectares designated as agricultural land, 63.9 million hectares of reserve land, 21.2 million hectares adjacent to settlements, and 15.9 million hectares in other categories, such as forest reserves and protected areas. The Ministry of Agriculture is developing a methodology for the rational use of these lands, including diversification for irrigated crops and pastures.

### II.B.1.4.4. Water resources

Given the increasing importance of water resources, which impacts many countries, including Kazakhstan, it is essential to develop and implement effective water management measures. In this context, the new **Water Code**, initiated by the Ministry of Water Resources and Irrigation, is of particular importance. The new Water Code will serve as a crucial tool for modern water use, enabling better forecasting, planning, and response to extreme events like floods and droughts.

**Modernization of Water Management Infrastructure**

A full-scale modernization of water management infrastructure is underway, incorporating advanced water-saving technologies and the digitalization of water accounting and distribution systems. As part of the Water Resources Management System Development Concept, the key initiatives include (Government of the Republic of Kazakhstan, 2024, February 5):

- Construction of 20 new reservoirs and reconstruction of 15 existing ones.
- Modernization of more than 14,000 kilometers of irrigation canals.
- Digitalization of 3,500 kilometers of irrigation networks in the Almaty, Zhambyl, Kyzylorda, and Turkestan regions, including the automation of 2,600 kilometers of irrigation canals in the Kyzylorda region.
- Development of a Unified Water Resources Information System in cooperation with the national company "Kazakhstan Gharysh Sapary." This system will provide real-time data on water infrastructure and allow for monitoring water distribution and usage down to the end consumer.

**Transboundary Cooperation**

In 2024, Kazakhstan became a party to the UN Convention on the Law of the Non-Navigational Uses of International Watercourses. This international agreement ensures the equitable sharing of transboundary rivers, lakes, and related groundwater resources while regulating their use among countries.

**Support for Farmers**

Since the beginning of the irrigation season, more than 20,000 Kazakh farmers have been supplied with 2.8 billion cubic meters of water, with the irrigation period proceeding as scheduled. Since 2020, water-saving technologies have been implemented on 91,000 hectares of land. Farmers are subsidized for 50% of the costs of installing irrigation systems and building necessary water infrastructure. As a result, the total area using water-saving technologies has reached 312,200 hectares.

From December 10, 2023, new investment subsidy rules came into effect, increasing the share of farmers' cost reimbursement for well drilling and water infrastructure on irrigated lands from 50% to 80%, with 30% of the subsidies funded by local budgets.

**Training Qualified Personnel**

In accordance with a government resolution, the Kazakh National University of Water Management and Irrigation will open in Taraz, offering new programs such as "Water Management and Land Reclamation," "Geodesy and Cartography," "Hydrotechnical Construction in Water Management," "Water Supply Engineering Systems," and "Innovative Technologies in Water Management." For the 2024-2025 academic years, the government has allocated 245 places across bachelor's, master's, and doctoral programs, with a total enrollment capacity of 4,000 students.

To address the shortage of qualified specialists, the Ministry of Water Resources and Irrigation is taking steps to enhance the appeal of water-related fields by including them in the Bolashak Program, allowing students to study abroad.

In collaboration with the Ministry of Science and Higher Education, a consortium of leading research and educational institutions specializing in water resources has been established. One of the consortium's key goals is to explore and expand freshwater reserves.

Kazvodkhoz has signed memorandums of cooperation with nine universities, allowing students to undertake practical training at its branches. Additionally, M.Kh. Dulati Taraz Regional University has signed a memorandum with the Tashkent Institute of Irrigation Engineers and Agricultural Mechanization to offer a dual-degree program, enabling Kazakh students to earn degrees recognized in both countries.

### II.B.1.4.5. Market access

Restrictions and Bans on Agricultural and Food Products in Kazakhstan (2020–2024)

Between 2020 and 2024, the Government of Kazakhstan introduced various bans and quantitative restrictions on the export and import of agricultural and food products, in line with WTO and EAEU regulations. Key measures include:

- Ban on the export of breeding cattle and sheep (Cattle and Sheep): from January 8 to July 7, 2024 (extended for 6 months in July 2024), as well as in 2021–2023.
- Ban on the import of apples by road transport: introduced on August 27, 2024, and effective until the end of 2024.

- Ban on the import of chicken eggs: from May 1 to October 31, 2024.
- Ban on the export of sugar: from June 14 to August 31, 2024, and also in 2022.
- Ban on the import of wheat by road, water, and rail transport: from April 12 to October 11, 2024 (extended until the end of 2024), and also in 2023.
- Quantitative restrictions (export quotas) on cattle and sheep exports: from February 2 to August 1, 2024, and in 2023.
- Ban on the export of raw fish (catfish, pike perch): from February 3 to August 2, 2024, and in 2023.
- Ban on the export of onions: in 2023.
- Ban on the export of potatoes and carrots: in 2022.
- Quantitative restrictions (export quotas) on grain and flour: in 2022.
- Quantitative restrictions (export quotas) on sunflower oil and seeds: in 2021–2022.
- Ban on the export of animal feed: in 2021.
- Ban on the export of socially significant food products (SSFP): in 2020, in response to COVID-19.

**Non-Tariff Regulation within the EAEU**

The following unified non-tariff regulation measures apply in trade with third countries:

- Temporary export bans and quotas: to prevent critical shortages of essential goods in the EAEU internal market (EEC Decision No. 83 of July 26, 2016).
- Export/import bans or quotas: related to international standards for product classification and sales.
- Import restrictions on biological water resources: in line with international agreements.
- Licensing of imports and exports: for products subject to quotas, exclusive rights, or tariff quotas (EEC Decision No. 30 of April 21, 2015).
- Measures to protect the financial situation and balance of payments.

**Kazakhstan's National Legislation**

Kazakhstan's national legislation allows for bans and quantitative restrictions to protect the country's economic interests, stabilize the domestic market, and fulfill international obligations.

### II.B.1.4.6. Progresses over climate-smart and digital agriculture

The primary trends in Kazakhstan's agricultural sector today are digitalization, sustainability, and climate-smart agriculture. The Kazakh agri-food sector must strive for sustainable farming by maximizing land potential, ensuring environmental safety, and continuously replenishing ecosystem fertility.

Kazakhstan's agriculture plays a crucial role in the strategy to achieve carbon neutrality by 2060. In the context of climate change, it is essential to transform this sector by directing efforts toward sustainable development and decarbonization.

Key actions for decarbonization in agriculture include:

- Sustainable farming and livestock management: This involves improving irrigation systems and implementing sustainable livestock management practices, including the development of genetic resources and technological solutions to reduce methane emissions.
- Sustainable forest management and reforestation: Measures to halt deforestation and restore degraded lands.

There is an expectation for the active development of climate-smart agriculture, which includes carbon farming, precision agriculture principles, and organic farming practices. As a result of changes in land use, the sector could become a net absorber of carbon dioxide, allowing it to offset greenhouse gas emissions from agricultural production by 2060.

Digitalization plays a vital role in modernizing Kazakhstan's agriculture. By utilizing satellite and computer technologies, farmers have significantly increased yields; with an average yield of 13 centners per hectare, they have achieved up to 25 centners. On highly fertile lands, this figure has exceeded 40 centners per hectare, which has also contributed to a reduction in production costs.

The active implementation of "digital farms," which have increased nearly fourfold—from 40 to 150 due to government support—enables effective management of agricultural processes. In crop production, electronic field maps, GPS navigation, and access control systems for combines are utilized. In livestock farming, milking parlors with software, automated systems for water and feed supply, manure removal systems, animal activity monitoring systems, and robotic milkers are being introduced.

Kazakhstan has become the first country in the region to implement a unified system for livestock accounting, allowing for the registration of over 35 million agricultural animals and the involvement of approximately 4,500 veterinary specialists. More than 90,000 agricultural producers receive subsidies through an automated electronic platform, simplifying access to government services.

Satellite monitoring also plays a significant role. JSC "Kazakhstan Gharysh Sapary" conducts monitoring of pastures and arable lands, enabling assessments of vegetation health, analysis of crop rotation data, and determination of sown areas, crop conditions, and harvest timing.

In summary, the integration of digitalization and climate-smart approaches in Kazakhstan's agriculture enhances its efficiency, resilience, and food security.

### II.B.1.4.7. Government Policies and Interventions (internal support, subsidies, extension services & etc.)

In recent years, a systematic effort has been undertaken to develop the agro-industrial complex (AIC) and support agribusiness in Kazakhstan. The volume of concessional

financing for the agricultural sector has increased, the subsidy system is undergoing reform, and new tools for supporting agricultural producers are being introduced.

**Concessional Lending to the Agro-Industrial Complex**

The government of Kazakhstan has set the objective of gradually transitioning from direct subsidies to the AIC towards providing accessible lending options for industry participants. In 2024, the volume of concessional financing for spring field and harvesting operations was increased more than threefold, reaching 580 billion tenge, which will enable the provision of credit for at least 5 million hectares of agricultural land.

The concessional lending program offers loans to end borrowers, AIC entities, at a rate not exceeding 5% per annum in tenge, with a loan term of up to 12 months. This framework allows farmers to market their harvest under the most favorable conditions, ensuring the potential for maximizing their profits.

To ensure broad access to this program, the Agrarian Credit Corporation provides funding to financial institutions. Consequently, concessional loans are issued directly through the Agrarian Credit Corporation, as well as regionally through second-tier banks, credit cooperatives, social entrepreneurial corporations, regional investment centers, and microfinance organizations.

In addition to concessional lending, subsidized diesel fuel is provided to farmers for harvesting operations.

**Subsidies in the Agro-Industrial Complex**

Subsidies in crop production aim to enhance the efficiency of agricultural production. For example, to improve the accessibility of fertilizers, 50% to 60% of their cost is subsidized by the state. This direct subsidy mechanism allows farmers to receive discounted fertilizers at the outset of the production cycle.

Moreover, crop production subsidies cover seeds, plant protection products, and support for the adoption of water-saving irrigation technologies, as well as the provision of water supply services to agricultural producers.

In the processing sector, the state also subsidizes the costs incurred by processing enterprises for purchasing agricultural raw materials for further processing (e.g., milk for butter, hard cheese, and dry milk production, as well as meat and sugar beet).

**State Support in Livestock Production**

State support in livestock production covers areas such as the development of pedigree livestock, including breeding and pedigree work, acquisition of breeding stock, semen, embryos, and livestock production, with subsidies to reduce the cost of chicken meat, cow's milk, mare's milk, camel's milk, as well as the feeding of young cattle, sheep, and others.

Subsidies are provided within the scope of funds allocated from local budgets for each fiscal year. Support is also provided in the form of investment subsidies, which partially compensate for expenses incurred by AIC entities when implementing investment projects in livestock, crop production, agricultural processing, and the purchase of agricultural machinery.

Additionally, subsidies are available for loan guarantees and insurance for AIC entities. This tool aims to support risk management for credit guarantees, enabling AIC entities to secure loans even in cases where collateral is insufficient. Through this scheme, partial collateral for loans is provided by the guarantor.

Moreover, the state subsidizes insurance premiums, primarily to enhance the accessibility of loan and trade financing for agricultural producers (Ministry of Agriculture of the Republic of Kazakhstan, 2023).

**Concessional Loan Program for the Construction of Dairy Farms**

In 2023, a concessional loan program was launched to support the construction of 65 modern dairy farms, with an initial allocation of 100 billion tenge. The program includes subsidies for the import of breeding stock and the delivery of milk.

In 2024, the program expanded to include support for irrigation systems, vegetable storage facilities, and poultry farms. Additionally, eight new areas of support were introduced, including beef cattle farming, the construction of fruit and vegetable storage facilities, the development of industrial greenhouses, as well as projects related to fish farming and breeding centers**.**

**Extension Centers in Kazakhstan**

The establishment of Extension Centers in Kazakhstan began in 2009, with the support of the Ministry of Agriculture of the Republic of Kazakhstan. The primary objective of these centers is to foster the development of the agricultural sector and enhance its profitability by implementing scientific advancements and promoting the application of highly efficient technologies.

The main providers of knowledge transfer services in Kazakhstan are the Non-Profit Joint Stock Company “National Agrarian Scientific and Educational Center.” This organization offers information, educational, and consulting services to agricultural producers through a national budgetary program. The structure of the NAO includes three higher agricultural education institutions, 16 research organizations and scientific-production centers, 11 agricultural experimental stations, 6 experimental farms, 3 service companies, and 25 Extension Centers. The Extension Centers at the regional level provide educational and consulting services to rural producers.

## SECTION II.B.2. AGRI-FOOD TRADE PROFILE

### II.B.2.1. Analysis of the current state of agri-food trade in the country Export and Import of the main agri-food products

Kazakhstan established trade relations with 204 countries by the end of 2023. In 2023, Kazakhstan's total foreign trade turnover amounted to 139.6 billion US dollars, including exports of goods - 79.1 billion US dollars, imports - 60.4 billion US dollars. Compared to 2022, the volume of foreign trade turnover increased by 3.0%, or 4.0 billion US dollars, exports decreased by 6.4% (by 5.5 billion US dollars), imports increased by 18.6% (by 9.5 billion US dollars). In 2023, China became the main trading partner of Kazakhstan: the volume of trade between the countries increased by 24.2% over the year, Russia is in second place. Previously, Russia was the main trading partner of Kazakhstan (Kulbatyrov, 2024).

10 countries - the largest trading partners of Kazakhstan provided the republic with almost 76% of the total trade turnover. China's share in the republic's foreign trade operations reached 21.5% or 30.1 billion US dollars, while Russia's share was 19.4% or 27.1 billion US dollars. These are followed by countries such as Italy (11.5%), South Korea (4.3%), Turkey (4.3%), the Netherlands (3.2%), Uzbekistan (3.2%) and others. An analysis of data for 2019–2023 shows that Kazakhstan has increased its trade in agricultural products in both value and physical terms. The greatest growth was observed in 2021 and 2022. However, in 2023, despite continued growth in physical terms, the volume of trade decreased, which may indicate stabilization of prices for agricultural products.

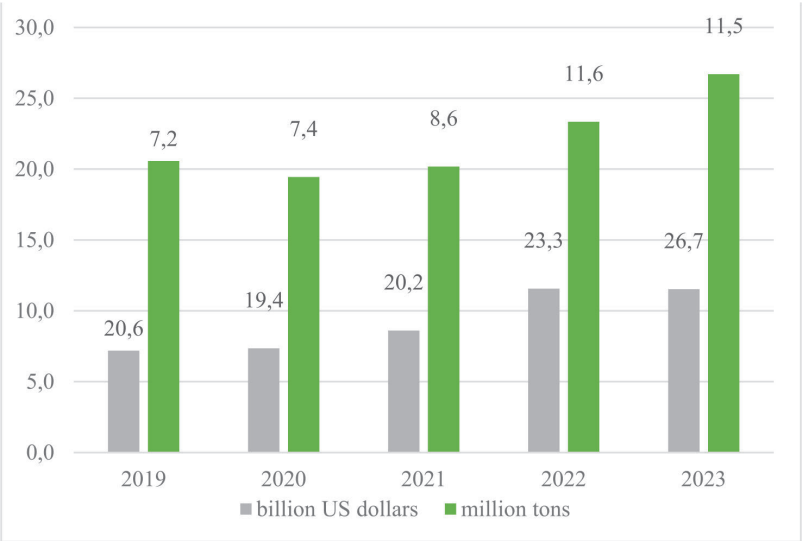


***Figure 4. Dynamics of foreign trade in agricultural products of Kazakhstan***

Source: according to the data of the Bureau of National Statistics, State Revenue Committee of the Ministry of Finance of the Republic of Kazakhstan

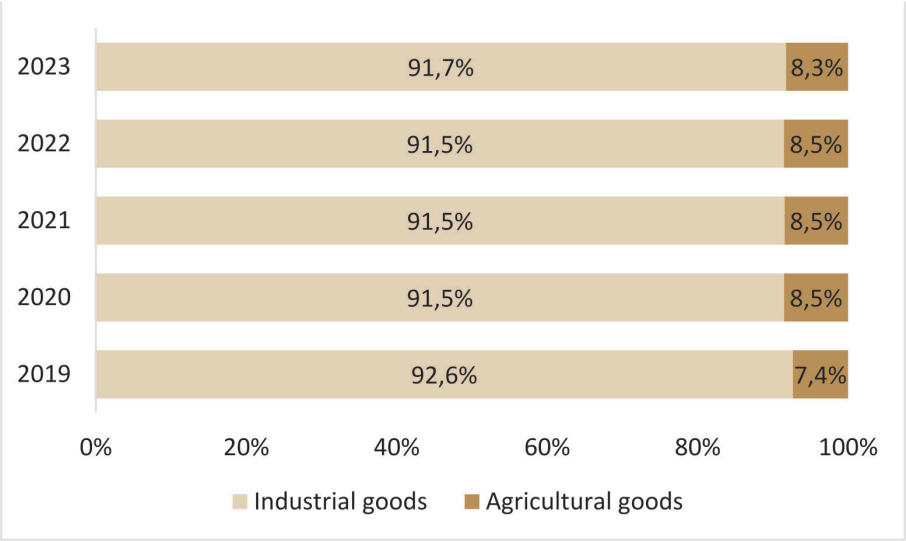


***Figure 5. The share of agricultural products in Kazakhstan's foreign trade***

Source: according to the data of the Bureau of National Statistics, State Revenue Committee of the Ministry of Finance of the Republic of Kazakhstan

According to the results of 2023, the share of agricultural products Kazakhstan's foreign trade amounted to 8.3%, which is 0.2 percentage points lower than the 2022 figure and 0.9 percentage points higher than the 2019 figure. For 2020-2022, this figure remained at 8.5%.

### II.B.2.1.1. Export of Main agricultural products

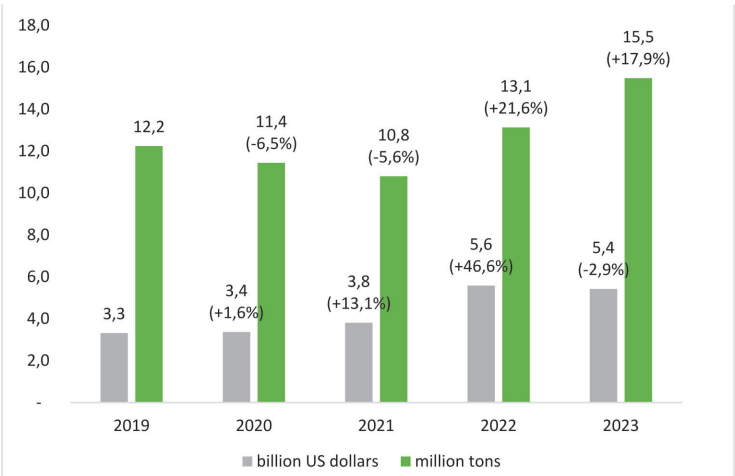


***Figure 6. Dynamics of agricultural exports from Kazakhstan***

Source: according to the data of the Bureau of National Statistics, State Revenue Committee of the Ministry of Finance of the Republic of Kazakhstan

In 2023, the value of agricultural exports amounted to $5.4 billion, down 2.9% from 2022 ($5.6 billion). Despite the decline in value, the physical volume of exports continued to grow. In 2023, exports amounted to 15.5 million tons, up 17.9% from 2022 (13.1 million tons).

Thus, after a sharp increase in 2022, prices for agricultural products stabilized in 2023.

The decline in agricultural exports from 2019 to 2021 is due to restrictions caused by the COVID-19 pandemic and the need to ensure the country's food security.

**Export structure**

The structure of agricultural exports is dominated by wheat - 34.1%. Thus, in 2023, the country exported wheat worth 1.9 billion US dollars. In addition, a significant share in exports was provided by the following goods: wheat or wheat-rye flour - $ 580.7 million (10.7%), sunflower, safflower or cottonseed oil - $ 338.1 million (6.2%), barley - $ 263.7 million (4.9%), flax seeds - $ 227.8 million (4.2%), water, including mineral and carbonated, with sugar - $ 168.6 million (3.1%), uncombed cotton fiber - $ 135.2 million (2.5%), sunflower seeds - $ 120 million (2.2%), dried legumes - $ 117.4 million (2.2%), tobacco products - $ 114.1 million (2.1%). The first 10 types of agricultural products account for 72% of the total volume of exports of goods in this category.

**Export geography**

In 2023, the main markets for agricultural products were: Uzbekistan (28.1%), China (18.6%), Afghanistan (10.2%), Russia (8.9%), Tajikistan (8.2%), Kyrgyzstan (5.5%), Turkmenistan (3.9%).

The 10 countries that are the largest importers of agricultural products from Kazakhstan account for almost 92% of the export volume (ADB, 2022).

**Table 1. Geography of agricultural exports from Kazakhstan**

| № | Страна | 2022 | | 2023 | | Growth 2023/2022 |
|---|---|---|---|---|---|---|
| | | mln USD | share | mln USD | share | |
| | Total | **5 586,3** | **100,0%** | **5 426,3** | **100,0%** | **-2,9%** |
| 1 | Uzbekistan | 1 542,3 | 27,6% | 1 522,4 | 28,1% | -1,3% |
| 2 | China | 548,0 | 9,8% | 1 007,1 | 18,6% | 83,8% |
| 3 | Afghanistan | 860,4 | 15,4% | 551,6 | 10,2% | -35,9% |
| 4 | Russia | 546,8 | 9,8% | 483,2 | 8,9% | -11,6% |
| 5 | Tajikistan | 507,7 | 9,1% | 446,5 | 8,2% | -12,1% |

| | | | | | | |
|---|---|---|---|---|---|---|
| 6 | Kyrgyzstan | 229,3 | 4,1% | 299,6 | 5,5% | 30,6% |
| 7 | Turkmenistan | 168,9 | 3,0% | 210,1 | 3,9% | 24,4% |
| 8 | Turkey | 170,2 | 3,0% | 190,8 | 3,5% | 12,1% |
| 9 | Italy | 85,0 | 1,5% | 176,0 | 3,2% | 106,9% |
| 10 | Iran | 308,0 | 5,5% | 81,5 | 1,5% | -73,5% |
| | Others | 619,5 | 11,1% | 457,8 | 8,4% | -26,1% |

Source: according to the data of the Bureau of National Statistics, State Revenue Committee of the Ministry of Finance of the Republic of Kazakhstan

### II.B.2.1.2. Import of key agricultural products

Since 2020, there has been a general growth trend in agricultural imports both in value and in kind.

Thus, by the end of 2023, imports showed growth in both value and in kind. In 2023, the value of agricultural imports amounted to $6.1 billion, which is 2.0% higher than in 2022 ($5.6 billion). In kind, imports amounted to 11.2 million tons, which is 9.9% more than in 2022 (10.2 million tons).

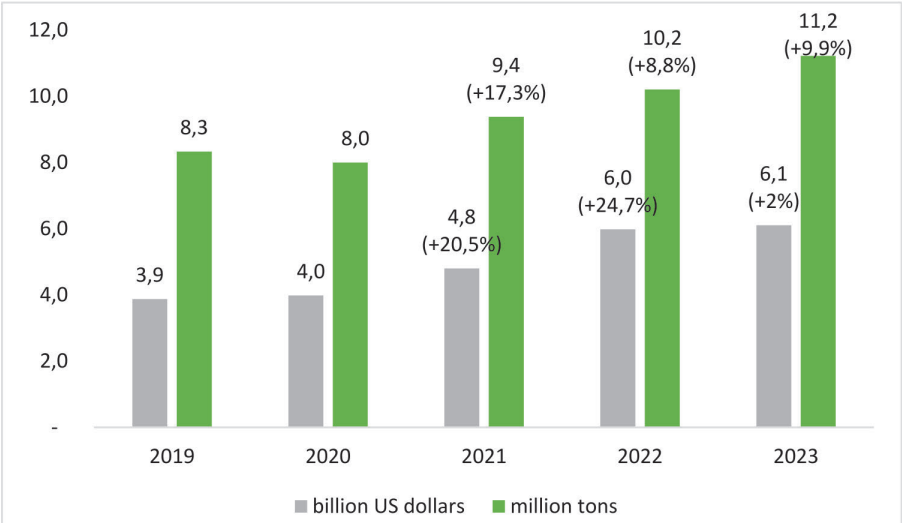


***Figure 7. Dynamics of imports of agricultural products to Kazakhstan***

Source: according to the data of the Bureau of National Statistics, State Revenue Committee of the Ministry of Finance of the Republic of Kazakhstan

**Structure of imports**

The main import commodities in Kazakhstan are: wheat - 372.3 million US dollars (with a share of 6.1%), sugar - 312.7 million US dollars (5.1%), chocolate and other finished food products containing cocoa - 309.2 million US dollars (5.1%), other food products - 295.3 million US dollars (4.8%), bread and flour confectionery - 285.1 million US dollars (4.7%), water, including mineral and carbonated, with sugar - 249 million US dollars (4.1%), meat and edible offal of poultry - 184.9 million US dollars (3%), strong alcoholic beverages - 161.9 million US dollars (2.7%), cheeses and cottage cheese - 158.9 million US dollars (2.6%), sunflower seeds - USD 137.9 million (2.3%).

The import structure is quite diversified. The first 10 types of agricultural products account for only 40% of the total volume of imports of goods in this category.

**Geography of imports**

Russia is the main supplier of agricultural goods to the country. In 2022, Russia accounted for 54.2% of the total volume of agricultural imports to Kazakhstan, but in 2023 this share decreased to 52.2%. However, despite the relative decline, the amount of imports from Russia makes up a significant part of the total volume. The remaining volume of imported agricultural goods comes from countries such as: China (4.6%), Uzbekistan (3.7%), Belarus (3.6%), USA (2.8%), Ukraine (2.2%), Turkey (2.2%), Italy (2.0%), Brazil (1.7%), Germany (1.6%).

The 10 countries that are the largest suppliers of agricultural goods to Kazakhstan account for almost 77% of the import volume.

***Table 2. Geography of agricultural imports to Kazakhstan***

| № | Country | 2022 | | 2023 | | Growth 2023/2022 |
|---|---|---|---|---|---|---|
| | | mln USD | share | mln USD | share | |
| | Total | **5 980,2** | **100,0%** | **6 102,1** | **100,0%** | **2,0%** |
| 1 | Russia | 3 243,4 | 54,2% | 3 185,9 | 52,2% | -1,8% |
| 2 | China | 220,0 | 3,7% | 283,6 | 4,6% | 28,9% |
| 3 | Uzbekistan | 287,9 | 4,8% | 226,8 | 3,7% | -21,2% |
| 4 | Belarus | 249,0 | 4,2% | 216,6 | 3,6% | -13,0% |
| 5 | USA | 177,0 | 3,0% | 168,2 | 2,8% | -5,0% |
| 6 | Ukraine | 112,3 | 1,9% | 133,2 | 2,2% | 18,6% |
| 7 | Turkey | 112,1 | 1,9% | 131,5 | 2,2% | 17,3% |
| 8 | Italy | 73,5 | 1,2% | 121,5 | 2,0% | 65,3% |
| 9 | Brazil | 169,0 | 2,8% | 103,2 | 1,7% | -39,0% |
| 10 | Germany | 74,1 | 1,2% | 100,2 | 1,6% | 35,1% |
| | Others | 1 262,1 | 21,1% | 1 431,5 | 23,5% | 13,4% |

Source: according to the data of the Bureau of National Statistics, State Revenue Committee of the Ministry of Finance of the Republic of Kazakhstan

**Trade turnover between Kazakhstan and OTS**

Trade turnover between Kazakhstan and OTS countries increased by 61.4% in 2019-2023, amounting to $12.5 billion.

Exports increased by 66.3% over 5 years, from $5.2 billion to $8.6 billion.

Imports increased by 51.6% over the period under review, amounting to $3.9 billion in 2023.

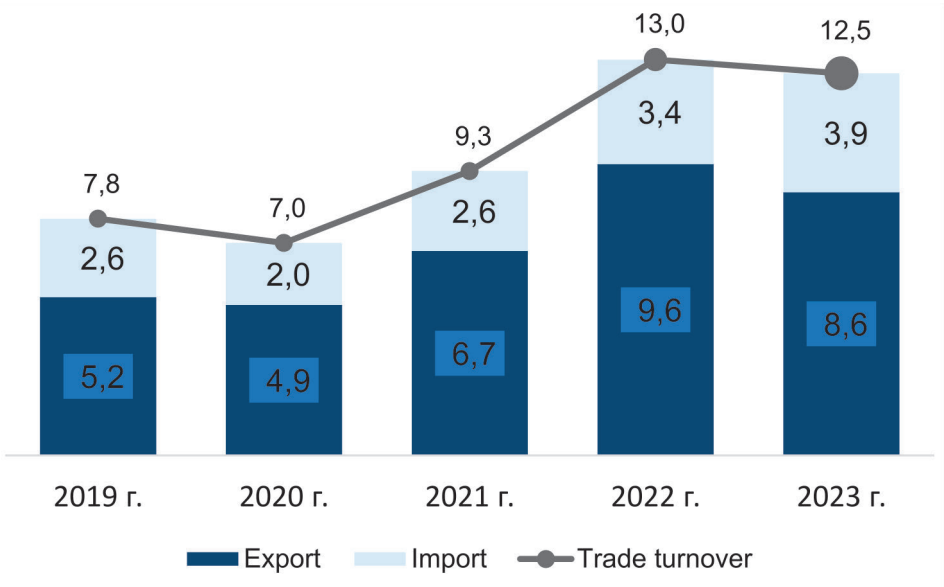


***Figure 8. turnover between Kazakhstan and OTS***

Source: according to the data of the Bureau of National Statistics, State Revenue Committee of the Ministry of Finance of the Republic of Kazakhstan

The potential for increasing exports to Kazakhstan from the Organization of Turkic States is estimated by Qaztrade experts at 614.2 million US dollars

### II.B.2.1.3. Level of self-sufficiency in the main agri-food products

Kazakhstan has achieved significant success in meeting the needs of the population for socially significant food products (SSP). The list of these products includes 19 items that play a key role in the diet of Kazakhstani people and in ensuring the country's food security. The list includes products such as flour, bread, pasta, eggs, buckwheat, rice, sugar, sunflower and butter, beef, chicken, milk, kefir, cottage cheese, potatoes, carrots, onions, cabbage, and salt.

**Full Self-Sufficiency:** Kazakhstan fully meets the domestic demand for 11 of these products, including flour, bread, rice, pasta, buckwheat, potatoes, beef, eggs, onions,

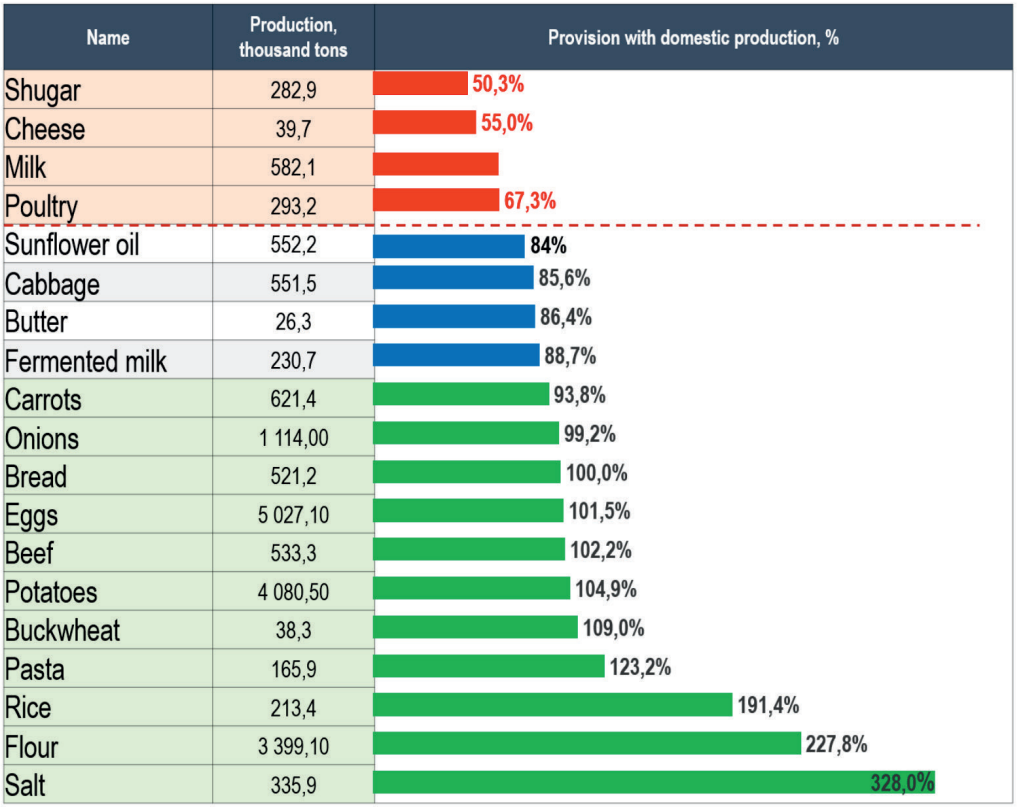


***Figure 9. Kazakhstan's Self-Sufficiency in Socially Significant Food Products***

Source: according to the data of the Bureau of National Statistics, author's calculation

carrots, and salt. These products are produced in sufficient quantities to meet the population's needs completely, which is a significant achievement in food security. Wheat remains a key product influencing the cost and production of 10 socially significant products, including flour, bread, pasta, milk, kefir, cottage cheese, chicken, butter, beef, and eggs. Stable wheat production is critically important for ensuring the availability and stability of prices for these products (Pyagay, A., Bespaeva R., Naukenova B., 2023).

**High Level of Self-Sufficiency:** Furthermore, the country has achieved a self-sufficiency level of 80% to 90% for products such as kefir, butter, cabbage, and refined sunflower oil. These categories are almost entirely covered by domestic production, reducing dependence on imports and strengthening national food independence.

**Problem Areas:** However, there are still products where the level of self-sufficiency is below 80%, presenting certain challenges. These include poultry meat, cheese and cottage cheese, sugar, and liquid milk. Despite a reduction in the number of products with critically low self-sufficiency levels, these issues remain significant and require further attention and measures to increase domestic production.

It is noteworthy that the situation with refined sunflower oil has significantly improved, with the self-sufficiency level rising from 69% to 84%. This indicates that the measures to support producers have started to yield results, and this category is no longer among the vulnerable ones.

**Storage of Vegetables and Fruits:** Although Kazakhstan largely meets its needs for vegetables and fruits, there are still issues with their storage. Due to insufficient and unstable storage infrastructure, losses can reach up to 30-40% of the harvested crop. Therefore, it is important to develop storage infrastructure to minimize losses and improve the availability of these products.

**Import of Dairy Products:** The import of dairy products remains significant, reaching up to 570,000 tons. This is due to the fact that a large portion of milk produced in Kazakhstan does not reach dairy plants, as approximately 70% is produced in small holdings. This situation requires the development and implementation of measures to stimulate cooperation and milk processing. To fully meet the population's milk needs, it is necessary to increase commercial milk production by 573,000 tons. To achieve this goal, it is planned to create approximately 115 dairy farms with a livestock of over 50,000 heads by 2025. These farms should provide the necessary production growth, reducing dependence on imports and stabilizing the domestic milk market.

**Strategy for Poultry Meat Self-Sufficiency:** To increase the level of self-sufficiency in chicken meat to 80% (currently at 67.3%), the construction of 15 large poultry farms with a production capacity of at least 120,000 tons of chicken meat per year is planned. Given the average import of 150,000 tons, these measures will significantly strengthen food security in this category. Moreover, with additional construction of large poultry farms by private sector entities, Kazakhstan is expected to achieve full self-sufficiency in chicken meat by 2026.

**Sugar Self-Sufficiency:** Currently, Kazakhstan's self-sufficiency in sugar from domestic raw materials is only 7%. This is a critically low figure, especially considering the importance of sugar in the country's food balance. To address this issue, a Comprehensive Plan for the Development of the Sugar Industry has been developed, under which the volume of sugar beet production was planned to be increased to 564,000 tons by 2023, which would raise sugar self-sufficiency to 12%. Further, by 2026, production is expected to increase to 1.8 million tons of sugar beet, providing 43% of the country's sugar needs from domestic raw materials. To achieve these goals, a significant expansion of sugar beet cultivation areas is planned. In 2023, the area of sugar beet cultivation was to be 16,700 hectares, with an increase to 38,000 hectares by 2026. These measures are aimed at strengthening the country's production base and reducing dependence on sugar imports.

### II.B.2.1.4. Agri-food trade balance with countries- members of OTS (Organizationof Turkic States).

In 2023, the volume of mutual trade in agricultural products between Kazakhstan and the countries of the OTS exceeded 2.5 billion US dollars. Over the past five years, this figure has grown by more than 67%. Exports from Kazakhstan to the OTG countries increased by an impressive 85%, while imports from these countries grew by 17%. These data indicate the strengthening of trade and economic ties between Kazakhstan and

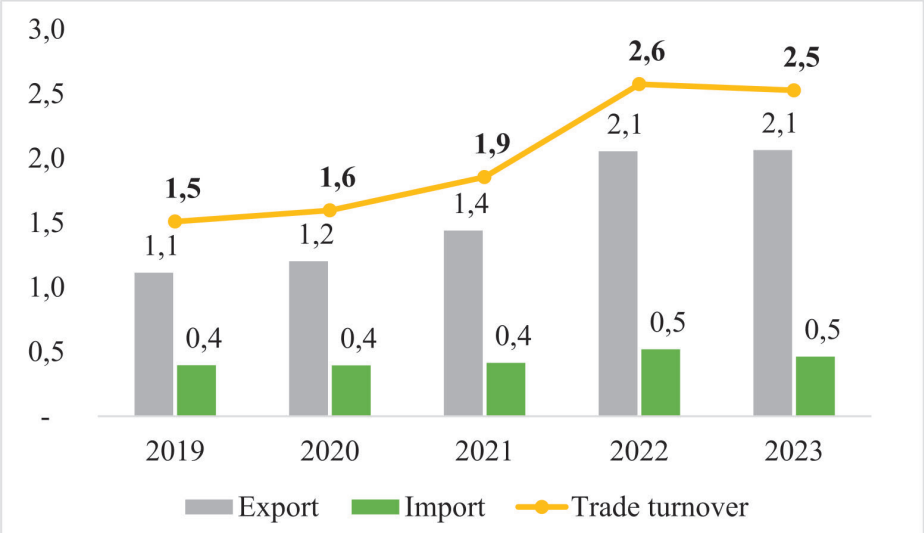


***Figure 10. Dynamics of mutual trade between Kazakhstan and the OTS countries, billion US dollars***

Source: according to the data of the Bureau of National Statistics, State Revenue Committee of the Ministry of Finance of the Republic of Kazakhstan

other OTG countries, as well as the growing role of Kazakhstan as a key exporter of agricultural products in the region.

Kazakhstan's main exports to this region are wheat, flour, soft drinks, sunflower oil and beef. At the same time, Kazakhstan mainly imports vegetables, fruits and nuts from the UTG countries. Such exchange of goods not only strengthens bilateral relations, but also diversifies the agricultural market in Kazakhstan and partner countries. Uzbekistan, being Kazakhstan's largest trading partner among the UTG countries, accounts for almost two-thirds of mutual trade in agricultural products, which emphasizes its key role in regional trade. Kyrgyzstan and Turkey follow with shares of 15% and 13%, Azerbaijan - with 3%.

### II.B.2.1.5. Certification and Foreign Trade Procedures. Compliance with WTO standards and procedures

Kazakhstan's integration into the global trading system is largely driven by its commitment to the standards and procedures of the World Trade Organization (WTO). In December 2015, Kazakhstan became a full member of this organization. The country has undertaken significant reforms to align its certification and foreign trade procedures with these international norms, which facilitates trade and enhances competitiveness.

Kazakhstan has established a comprehensive certification system to ensure the quality and safety of products in both domestic and international markets. Key aspects of this system include:

- Kazakhstan has adopted numerous international standards, including those established by the International Organization for Standardization (ISO) and the Codex Alimentarius for food safety. This harmonization ensures that Kazakhstani products meet global quality standards.
- Certification bodies in Kazakhstan are required to undergo accreditation according to ISO/IEC 17065 standards. This guarantees that these bodies operate impartially and competently, providing reliable certification services.
- In line with its WTO commitments, Kazakhstan is working to simplify certification procedures, reducing bureaucratic barriers for exporters and importers. This includes the implementation of electronic certification systems that facilitate the submission and processing of documents.

Kazakhstan has implemented various measures to enhance the efficiency of its foreign trade procedures:

The introduction of a single window system allows companies to submit all necessary documentation for import and export operations through a single platform. This reduces the time and resources spent on compliance with regulatory requirements.

Kazakhstan is committed to ensuring the transparency of its trade rules and procedures. A trade portal is successfully operating in Kazakhstan, where export, import, and transit procedures are documented.

Kazakhstan's adherence to WTO standards is reflected in several key areas:

The country has committed to reducing tariffs and eliminating non-tariff barriers in line with its WTO obligations. This commitment fosters a more open and competitive trading environment.

**Trade Facilitation Agreement:** Kazakhstan is actively implementing the WTO Trade Facilitation Agreement, aimed at accelerating customs procedures and improving trade flows. This includes measures to enhance border management and simplify documentation requirements.

**National Trade Facilitation Report:** In 2023, Kazakhstan prepared its first National Trade Facilitation Report, developed by the Ministry of Trade and Integration in collaboration with QazTrade and international organizations. This document provides an analysis of the measures taken by the government to simplify trade procedures since the country joined the WTO and serves as a self-assessment tool.

**Trade Policy Review:** In 2024, Kazakhstan will undergo its first Trade Policy Review within the WTO framework, further confirming its commitment to transparency and adherence to international trade standards.

Kazakhstan's efforts to align its certification and foreign trade procedures with WTO standards reflect its aspiration to become a vital partner the global trading community. The country also provides consultative support and shares its experience in negotiating the accession of Azerbaijan, Turkmenistan, and Uzbekistan to the WTO.

### II.B.2.1.6. Impact of Middle Corridor on Country's Food Security

A key driver for increasing cargo flows is a well-developed transport and logistics infrastructure and services, including international transport corridors that facilitate

sustainable exports and capitalize on transit potential. Kazakhstan is actively developing transit routes from China to Europe, including pathways to the Caucasus and Turkey. The country is leveraging its accumulated positive experience to enhance the Trans-Caspian International Transport Route (TITR).

Currently, a significant portion of Kazakhstan's export cargo is being redirected to the TITR, which includes products such as petrochemicals, ferrous and non-ferrous metals, coal, ferroalloys, grains, and other goods. The capacity of the Trans-Caspian route is planned to increase to 10 million tons by 2025 (World Bank, 2023).

In 2023, the cargo turnover of Kazakhstan's ports of Aktau and Kuryk within the TITR project grew by 1.86 times compared to the previous year, reaching 2.8 million tons. There has also been an 86% increase in cargo transshipment through the seaports of Aktau and Kuryk, with volumes in 2023 totaling 2.8 million tons (up from 1.5 million tons in 2022). For the first time, 1.5 million tons of Kazakhstani oil were transported through this corridor last year, and grain terminals were constructed at the port of Kuryk.

The capacity of the TITR, which spans approximately 11,000 km, is expected to increase from 6 to 10 million tons of cargo by 2025. A high-quality and efficient infrastructure remains critically important for the development of international trade and economic growth (OECD, 2023).

In addition to the development of "hard infrastructure" in the Caspian trading region, there is a need for sustainable and consistent growth of "soft infrastructure." This entails strengthening trade connectivity, digitizing customs procedures, and simplifying overall trade processes. Kazakhstan, in collaboration with the International Trade Centre (ITC), has thoroughly documented all trading procedures for exports and imports at the country's seaports to develop the Kazakhstan Trade Information Portal, which simplifies trade procedures.

During visits to the seaports, practical aspects of various control measures were thoroughly studied and analyzed, including border, export-import, veterinary, phytosanitary, sanitary, and transportation controls. Step-by-step procedures for the import and export of specific goods were also documented, which will help improve the efficiency of trade operations and reduce administrative barriers.

### II.B.2.1.7.. Digital tools used in agri-food trade

Kazakhstan's agriculture sector has embarked on a digital transformation journey, driven by the ambitious goals set forth in the Concept for the Development of the Agro-Industrial Complex of the Republic of Kazakhstan for 2021-2030. This transformation aims to enhance productivity, reduce costs, and improve the efficiency of agricultural practices, with a particular focus on integrating digital tools into both farming and trade processes.

#### Agri-Food Export via Global Marketplaces

Kazakhstan has also made progress in using digital tools for international trade, particularly through partnerships with global e-commerce platforms. QazTrade, with the

support of the Ministry of Trade and Integration, launched a program during the pandemic to help agricultural producers enter the international marketplace Alibaba.com. Participants receive "Gold Supplier" status, granting them access to a global audience and enhancing their visibility on the platform. The program also includes comprehensive training on exporting products through online marketplaces, with a focus on categories like "Food & Beverage" and "Agriculture." As a result, Kazakhstani products, such as honey and flour, have become highly sought after on Alibaba, contributing to a combined sales volume of over $400 million between 2020 and 2023.

In addition to Alibaba, QazTrade has partnered with another Chinese marketplace, JD.com, where 25 Kazakhstani brands are represented. The success of these digital trade initiatives underscores Kazakhstan's growing presence in global agri-food markets, facilitated by strategic use of digital tools.

**Access to trade information**

In July 2022, the National Information Portal on Trade Facilitation was launched in Kazakhstan. Today, the portal provides information on trade operations of export, import, transit, re-export, re-import and others for more than 80 product groups, including most agricultural products. This portal provides step-by-step information on cross-border trade processes, representing a significant tool in optimizing operations related to international trade (ITC, 2022).

**Precision Agriculture and Digital Farming**

One of the key initiatives is the implementation of precision agriculture techniques in pilot farms. These practices have led to a 20% reduction in farmers' costs and increased yields, particularly in grain production, where yields have risen to 25 centners per hectare. In livestock farming, digitalization has similarly brought about a 15-20% reduction in costs, alongside a 15% decrease in mortality rates and a 10% increase in herd sizes. These advancements are supported by the development of a unified digital platform for the agro-industrial complex, which will integrate all information systems in the sector, enabling farmers to access government services through a "one-stop-shop" model.

**Digitalization of Government Support and Traceability**

The automation of government services is a critical component of this digital transformation. The introduction of an information system for traceability in crop production (ISR) will ensure transparency and traceability from "farm to table." This system is expected to streamline processes and enhance food safety by allowing the tracking of agricultural products throughout the supply chain.

In the realm of government support, the digitalization of measures has led to the automation of all business processes, ensuring that state support is provided exclusively in electronic form. The Agrarian Credit Corporation (ACC) has also developed an online platform that reduces the time required to receive credit decisions to just five minutes.

This platform, integrated with over 50 government databases and services, has optimized payment processes and enabled farmers to make payments online without commissions.

**Integration of Satellite Technology**

The AgroSpace.gharysh.kz platform, developed in collaboration with the National Company "Kazakhstan Gharysh Sapary" and the Ministry of Agriculture, integrates satellite technology to enhance agricultural management in Kazakhstan. This platform provides personalized access for agricultural producers, allowing them to store and manage data, monitor crop rotations, and apply for government subsidies through an electronic field map system. By utilizing satellite imagery, AgroSpace enables precise field management and real-time monitoring, contributing to increased productivity and the digitalization of Kazakhstan's agricultural sector.

### II.B.2.1.8. Government Policies and Interventions. Relevance to the Turkic World Vision-2040

The action plan proposed by Kazakhstan, based on the eight priorities of "TURKTIME!": Traditions, Unification, Reforms, Knowledge, Trust, Investments, Mediation, and Energy - reflects coordinated efforts to align national policies with the broader objectives of the Turkic Council. This initiative aims to promote collaboration among Turkic organizations within the framework of the Coordination Committee of the Turkic Council during Kazakhstan's presidency.

As the founding member of the Turkic Council, Kazakhstan places great importance on the development and strengthening of Turkic integration. The country's presidency signifies not only its leadership role but also its commitment to enhancing the welfare of Turkic peoples. It focuses on identifying new avenues for development, reinforcing fraternal ties, and ensuring stability in the region.

The synchrony between Kazakhstan's policies and the objectives of the Turkic Council is evident in several key areas:

1. **Shared Development Goals**: The priorities outlined in "TURKTIME!" resonate with the Turkic World Vision-2040, which aims to promote sustainable development and prosperity among member states. Kazakhstan's emphasis on unification and trust aligns with the Council's goal of fostering a sense of community among Turkic nations.
2. **Cultural and Historical Connections**: By emphasizing traditions and knowledge, Kazakhstan seeks to strengthen cultural ties among Turkic peoples, which is a central aspect of the Turkic Council's vision. This cultural solidarity promotes collaboration across various sectors, including education, culture, and heritage preservation.
3. **Economic Cooperation**: By focusing on investments and energy, Kazakhstan reflects the Turkic Council's goals of economic integration and collaboration. Promoting investments in infrastructure and energy projects aims to create a more interconnected Turkic economic space.

4. **Conflict Resolution and Mediation**: The emphasis on mediation within "TURK-TIME!" underscores Kazakhstan's role as a peacemaker in the region. This aligns with the Turkic Council's vision of fostering stability and resolving conflicts through dialogue and cooperation.

5. **Comprehensive Engagement**: Under Kazakhstan's presidency, over 80 events have been organized across 30 different areas of cooperation, demonstrating a holistic approach to engagement among Turkic states. A prominent event highlighting this engagement was the successful hosting of the 5th World Nomad Games in Astana, showcasing cultural exchange and collaboration among Turkic nations.

In conclusion, Kazakhstan's policies are well-aligned with the objectives of the Turkic Council, contributing to a shared vision for the future. By prioritizing cooperation, cultural ties, economic development, and conflict resolution, Kazakhstan strengthens its leadership role in the Turkic world as well as contributes to the stability and prosperity of the entire region, as envisioned in the Turkic World Vision-2040.

# SECTION II.B.3. SDGS PROGRESS

## II.B.3.1. Role of agri-food systems in relative SDGs' targets achievement

### II.B.3.1.1. National Implementation of SDGs (Kazakhstan)[1]
### Kazakhstan's Commitment to Sustainable Development

Since its independence, Kazakhstan has steadily advanced its agenda for sustainable development. In 2019, the country submitted its inaugural Voluntary National Review (VNR), reaffirming its commitment to the Sustainable Development Goals (SDGs). Three years later, Kazakhstan presented its second VNR, assessing progress and showcasing the implementation of national objectives. Currently, Kazakhstan is in the process of preparing its third VNR (UN, 2022).

The VNRs have underscored Kazakhstan's efforts to harmonize its national budgeting framework with the SDGs. A significant milestone in this endeavor has been the implementation of the Integrated National Financing Framework (INFF). The INFF is now instrumental in enhancing SDG planning processes and addressing existing challenges in financing sustainable development at the national level.

Moreover, Kazakhstan has conducted a Rapid Integrated Assessment (RIA) of its budgetary programs. The RIA findings reveal a clear alignment between budgetary allocations and the SDGs, providing insights into the adequacy of funding dedicated to these goals. This information is crucial for optimizing resource allocation and ensuring the effective pursuit of sustainable development targets.

**Coordinating Council on Sustainable Development Goals in Kazakhstan**

The Coordinating Council on Sustainable Development Goals (SDGs), chaired by the Deputy Prime Minister of the Republic of Kazakhstan, was established by the directive of the Prime Minister of the Republic of Kazakhstan on August 15, 2018. The Ministry of National Economy serves as the coordinating body for the Council's activities (Prime Minister of the Republic of Kazakhstan, 2022, October 11).

The Secretariat of the Council is represented by the Economic Research Institute which provides expert and analytical support.

The primary responsibilities of the Council include:

- Reviewing and developing proposals for the formation of a unified policy for SDG implementation in the Republic of Kazakhstan;
- Coordinating the activities of interagency working groups focused on specific SDG areas;
- Reviewing and making recommendations for the achievement of the SDGs;
- Contributing to the development of Kazakhstan's National Voluntary Review on SDGs.

[1] Source: Voluntary National Review of Kazakhstan on the Implementation of the 2030 Agenda for Sustainable Development https://digitallibrary.un.org/record/3997270?ln=ar&v=pdf

### SDG 1: No Poverty

Kazakhstan is taking significant steps to reduce poverty and enhance citizens' income, showing a strong commitment to social welfare. The government has implemented measures to uplift low-income families and improve living standards.

A key achievement is the increase in the minimum subsistence level, which rose from KZT 29.3 thousand to KZT 37.3 thousand by 2021, providing families with a realistic baseline for essentials.

In 2022, the "Program to Increase the Income of the Population until 2025" was launched, creating sustainable pathways for higher incomes. Quarterly targeted social assistance ensures timely support, with the assessment period for a family's financial situation streamlined to seven days.

Focusing on families with children, the government offers guaranteed social packages for low-income households. Families with multiple children can receive allowances regardless of their overall financial status. Kazakhstan emphasizes empowerment in social assistance. Families are encouraged to participate in employment measures, fostering responsibility and community engagement. Cash assistance is available for families without able-bodied members, balancing support with promoting self-sufficiency.

Between 2019 and 2021, the number of families receiving targeted social assistance decreased from 468.3 thousand to 198.4 thousand, reflecting the success of initiatives promoting economic independence.

Looking ahead, Kazakhstan plans to enhance its social security framework through a new Social Code, aligning policies with international standards. There are also plans to increase minimum social standards and establish centers for low-income and multi-child families. Overall, Kazakhstan is making progress in its mission to alleviate poverty and boost citizens' income. With continued focus and innovative policies, the nation is on track to create a supportive environment for families to thrive.

### II.B.3.1.3 SDG 2: Zero Hunger

Kazakhstan has made steps in eliminating hunger, by creating an environment where food security is a priority. The country ranks 54th on the Global Food Security Index, reflecting its commitment to food availability and quality. Agricultural production has seen a positive increase of 1.9%, with the total value of food production reaching approximately KZT 2.2 trillion tenge in 2021. While there have been challenges due to adverse weather conditions, the government is actively addressing these issues to ensure a sustainable food supply.

Malnutrition remains an area of focus, with 4.4% of the population reported to have dietary energy intake below the minimum acceptable level in 2020, up slightly from 4.1% in 2019. The government is dedicated to improving food security by ensuring access to nutritious food, particularly in rural areas. Initiatives are underway to enhance dietary quality for vulnerable groups, including children and pregnant women, and to promote healthy lifestyles to combat rising obesity rates among children aged 0 to 14 years.

Kazakhstan is also committed to ensuring that all schoolchildren have access to a balanced diet, with plans to improve school canteen nutrition. The government's proactive measures aim to create a healthier, more food-secure future for all citizens.

#### II.B.3.1.4 SDG 5: Gender Equality

Kazakhstan is an example of progress in gender equality, emerging as a leader in the Central Asian region. In 2023, Kazakhstan achieved a 62nd place out of 146 countries in the Global Gender Gap Index. This achievement was made possible through coordinated efforts by the government, the private sector, and civil society. Key factors included government programs aimed at empowering women, improving working conditions, and advancing initiatives that support women in business and leadership roles.

Access to primary and secondary education is nearly equal for boys and girls, highlighting significant advancements in educational attainment (ERI,2019).

In political participation, the representation of women in local bodies has reached 30.5%, with 27.4% of deputies in the Mazhilis of Parliament being women, following the January 2021 elections. The government recognizes the importance of further enhancing women's representation in high-ranking positions and is actively working to create more opportunities for women leaders.

Various initiatives have been implemented to combat domestic violence, improve reproductive health services, and enhance women's economic empowerment. Legislative frameworks, such as the Concept of Family and Gender Policy, address important issues and promote equal opportunities. The government is dedicated to closing the gender wage gap, which has improved from 34.2% in 2018 to 25% in 2020.

Through educational programs and community engagement, the government continues to raise awareness of gender issues and ensure that women are well-represented in all areas of society.

#### SDG 6: Clean Water and Sanitation

Kazakhstan is making significant progress in ensuring access to clean water and sanitation. With 96% of the population having access to safe drinking water, the country is well on its way to achieving its water management goals. Access to water supply services in urban areas is approximately 98.1%, while rural areas are at 93%. The government has achieved a notable 79.3% coverage in wastewater treatment facilities across cities.

In terms of water quality, Kazakhstan is on an upward trajectory, with 30.8% of water bodies meeting good quality standards as of 2020, a significant increase from 7.4% in 2016. This positive trend reflects the government's ongoing efforts to enhance water management practices. Initiatives are in place to further improve the quality of drinking water, including the construction and renovation of water supply systems.

The government is also addressing climate-related challenges that affect water resources by launching initiatives to promote sustainable agricultural practices and improve water use efficiency. Plans are in place to reduce water losses during ir-

rigation by 4 km³ by 2025, demonstrating a proactive approach to environmental stewardship.

#### II.B.3.1.6. SDG 10: Reduced Inequalities

Kazakhstan is dedicated to fostering inclusivity and reducing income inequality across the nation. As of 2021, 5.2% of the population lives below the subsistence minimum, which reflects ongoing efforts to uplift the most vulnerable. The depth of poverty is measured at 0.8%, indicating a commitment to ameliorating the living conditions of those in need.

The government aims to elevate the income share of the least affluent 40% of the population to 27% by 2025, showcasing a clear vision for a more equitable future. National projects targeting economic growth and job creation are being implemented to address these disparities.

Additionally, the government is enhancing access to essential services and support for vulnerable groups, including individuals with disabilities and low-income families. Through comprehensive policies and community engagement, Kazakhstan is committed to ensuring that all citizens can fully participate in the country's socio-economic development.

#### II.B.3.1.7. SDG 12: Responsible Consumption and Production

Kazakhstan is actively promoting sustainable consumption and production practices. The country aims to minimize environmental impacts while enhancing living standards for its citizens. Solid waste processing has increased from 14.9% in 2019 to 21.1% in 2021, reflecting growing awareness and effective waste management initiatives.

The government encourages businesses to adopt environmentally friendly practices and has established an International Center for Green Technologies, which seeks to promote sustainable development. In 2020, Kazakhstan's export of organic products reached USD 12.5 million, highlighting the increasing interest in organic farming and sustainable agricultural practices.

The strategic transition to a circular economy aims to optimize resource use and minimize waste across the nation. The government is also enhancing regulations around mineral resource extraction, ensuring that subsurface users develop responsible utilization programs for associated gas.

#### II.B.3.1.8. SDG 14: Life Below Water

Kazakhstan, while landlocked, is proactively addressing environmental challenges related to its water bodies. The government has taken significant steps to conserve the North Aral Sea, with plans to increase its volume by 35% through restoration efforts. In 2021, the country harvested an impressive 48.9 thousand tons of fish and produced 14.9 thousand tons of commercial fish, reflecting the importance of sustainable fishing practices.

Continued efforts to combat illegal fishing and protect endangered species, including the Caspian seal, showcase the government's dedication to preserving marine biodiversity. Collaborative action plans with neighboring countries, such as Russia, further enhance conservation efforts and promote regional cooperation.

In terms of fisheries, Kazakhstan fully supported the adoption of the WTO Agreement on Fisheries Subsidies at the 12th Ministerial Conference (MC12) on 17 June 2022, which marked a major step forward for ocean sustainability by prohibiting harmful fisheries subsidies, which are a key factor in the widespread depletion of the world's fish stocks. The Agreement represents a historic achievement for the membership as the first Sustainable Development Goal (SDG) target to be fully met (WTO, 2024).

#### II.B.3.1.7. SDG 15: Life on Land

Kazakhstan boasts a rich diversity of ecosystems, and the government is committed to preserving its natural heritage. The designated area for specially protected natural reservations spans approximately 244,000 km². Comprehensive plans for forest rehabilitation are in effect, with an impressive 138.3 million trees planted in 2021 to combat deforestation and promote biodiversity.

While challenges related to land degradation exist, with over 90 million hectares of land affected by erosion, the government is actively working on restoration programs and enhancing natural resource management. Through these efforts, Kazakhstan is taking actions towards maintaining ecological balance and ensuring a sustainable environment for future generations.

In summary, Kazakhstan is making good progress toward achieving the SDGs through a combination of innovative policy initiatives and a commitment to inclusivity. These efforts reflect the country's dedication to addressing poverty, ensuring food security, promoting gender equality, and fostering sustainable development while embracing the opportunities presented by climate change and social advancements.

### II.B.3.2 SDGs' indicators' current monitoring results SDGs' Indicators' Current Monitoring Results

| Country | SDG_ Indicator | Definition/ Custodian International Agency | International Monitoring Results (measured indicator) | National Implementation Institution Assessment |
|---|---|---|---|---|
| **REGARDING National Implementation Institution Assessment**<br><br>**NOTE: all the data regarding all indicators mentioned in this table are primarily taken from the below mentioned source of the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan.**<br><br>**(The Monitoring of the SDG Until 2030 rubric)**<br>https://stat.gov.kz/en/sustainable-development-goals/goal/<br><br>**Bureau of National statistics of the ASPR RK, together with members of **5** Interagency Working Groups established within the framework of the Coordinating Council on Sustainable Development Goals, reviewed **278** global and national SDG indicators.*<br><br>**There is progress in implementation of the next SDGs:**<br>2.2.1; 2.2.2; 2.2.3; 2.3.1; 2.B.1; 2.C.1; 14.6.1; 14.B.1; 15.1.1; 15.2.1; 15.4.2.<br>_____<br><br>**REGARDING International Monitoring Results**<br>**NOTE: all the data used in the table taken from The UN Sustainable Development Solutions Network's (SDSN) SUSTAINABLE DEVELOPMENT REPORT for 2024**<br>https://unstats.un.org/sdgs/report/2024/<br><br>Kazakhstan is ranked at **66th** place *(71.1 points)* according to SUSTAINABLE DEVELOPMENT REPORT 2024 amongst 167 evaluated countries. | | | | |

| SDG 1 | | NO POVERTY | End poverty in all its forms everywhere. | |
|---|---|---|---|---|
| **KAZAKHSTAN** | **Indicator 1.4.2** | The proportion of the total adult population with secure tenure rights to land. | According to the UN Sustainable Development Solutions Network's (SDSN) SUSTAINABLE DEVELOPMENT REPORT 2024, Kazakhstan in the past years made a **significant achievement** in implementing SDG 1, which made it possible to mark SDG1 for Kazakhstan as **SDG ACHIEVED** *(already maintaining SDG)* | According to the latest data of Bureau of National Statistics, in 2021, **4.36%** of adults population have secure land rights (Male- **7.43%**, female- **1.55%**). The Committee of Land Administration of the Ministry of Agriculture of the Republic of Kazakhstan is a national implementation institution. |
| **KAZAKHSTAN** | **Indicator 1.5.2** | Direct economic loss attributed to disasters affects global gross domestic product (GDP). | | According to the latest data of Bureau of National Statistics, in 2022, direct economic losses due to disasters amounted to **16.5 billion tenge** or **7.3%** of GDP in 2022. The Ministry for Emergency Situations of the Republic of Kazakhstan is a national implementation institution. |

| SDG 2 | | ZERO HUNGER | End hunger, achieve food security and improved nutrition and promote sustainable agriculture. | |
|---|---|---|---|---|
| **KAZAKHSTAN** | **Indicator 2.1.1** | Prevalence of undernourishment | According to the UN SDSN SD REPORT 2024, Kazakhstan **neither progressed, nor regressed**, in implementing **SDG 2**, which marked the level of implementation as **STAGNATING.** | According to the latest data of Bureau of National Statistics, in 2022, on average **8.4%** of the population was undernourished (**10.4%**- in urban area, **5.1%** - rural). The Ministry of Healthcare and the Ministry of Agriculture of the Republic of Kazakhstan are both national implementation institutions. |
| **KAZAKHSTAN** | **Indicator 2.1.2** | Prevalence of moderate and severe insecurity | | According to the latest data of Bureau of National Statistics, in 2022, **1.8%** of the population experienced moderate or severe food insecurity, and **0.7%** - severe food insecurity. The Ministry of Agriculture of the Republic of Kazakhstan is a national implementation institution. |
| **KAZAKHSTAN** | **2.2.1** | Prevalence of stunting among children under five years of age/ UNICEF, WHO, WB. | | According to the latest data of Bureau of National Statistics, in 2015, the prevalence of stunting among children under 5 was at **8%** (Male- **7.7%**, female- **8.3%**). The Ministry of Healthcare of Kazakhstan is a national implementation institution. |
| **KAZAKHSTAN** | **2.2.2** | Prevalence of malnutrition among children under five years of age. | | According to the latest data of Bureau of National Statistics, in 2015, the level of prevalence of malnutrition among children under 5 was at **3.1%** (Male- **2.9%**, female- **3.3%**). The Ministry of Healthcare of Kazakhstan is a national implementation institution. |

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| **KAZAKHSTAN** | **2.2.3** | Prevalence of anaemia in women aged 15 to 49 years, by pregnancy status (percentage)<br>UNICEF,<br>WHO and the World Bank. | | According to the latest data of Bureau of National Statistics, in 2021, the level of prevalence of anaemia in women aged 15 to 49 years, by pregnancy status was at **28.6%.**<br><br>The Ministry of Healthcare of Kazakhstan is a national implementation institution. |
| **KAZAKHSTAN** | **2.3.1** | The volume of production per labour unit by classes of farming/pastoral/ forestry enterprise size | | According to the latest data of Bureau of National Statistics, in 2022, the volume of production per labour unit by classes of farming/pastoral/forestry enterprise amounted to **4.6 mln tenge** (or **9,800 US dollars** at the time).<br>The Ministry of Agriculture of Kazakhstan is a national implementation institution. |
| **KAZAKHSTAN** | **2.3.2** | The average income of small-scale food producers by sex and Indigenous status | | No data. The Ministry of Labor and Social Protection of Population of the Republic of Kazakhstan is a national implementation institution. |
| **KAZAKHSTAN** | **2.5.1** | Number of (a) plant and (b) animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities | | According to the latest data of Bureau of National Statistics, in 2022, the number of (a) plant and (b) animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities was **63,493.**<br>The Ministry of Agriculture of Kazakhstan is a national implementation institution. |

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| **KAZAKHSTAN** | **2.5.2** | The proportion of local breeds classified as being at risk, not-at-risk or at unknown level of risk of extinction | | According to the latest data of Bureau of National Statistics, in 2022, there was an increase in the number of rare and endangered species of ungulates by **10.1%** on average. **(only this type of data is available)** The Forestry and Wildlife Committee Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan is a national implementation institution. |
| **KAZAKHSTAN** | **2.A.1** | The agriculture orientation index for government expenditures. | | According to the latest data of Bureau of National Statistics, in 2022, the agriculture orientation index for government expenditures stood at **0.6%.** The Ministry of Agriculture and the Ministry of Finance of Kazakhstan are both national implementation institutions. |
| **KAZAKHSTAN** | **2.B.1** | Agricultural export subsidies | | Kazakshtan **has not applied agricultural export subsidies** so far. The Ministry of Trade and Integration, the Ministry of Agriculture of Kazakhstan are national implementation institutions. |
| **KAZAKHSTAN** | **2.C.1** . | Indicator of food price anomalies. | | According to the latest data of Bureau of National Statistics, in 2021-2022, there were **no food price anomalies reported**. The Ministry of Trade and Integration, Ministry of National Economy, Ministry of Agriculture of Kazakhstan are national implementation institutions. |

| SDG 5. | | GENDER EQUALITY | Achieve gender equality and empower all women and girls. | |
|---|---|---|---|---|
| KAZAKHSTAN | 5.A.1 | Proportion of total agricultural population with ownership or secure rights over agricultural land by sex | According to the UN SDSN SD REPORT 2024, Kazakhstan neither progressed, nor regressed, in implementing **SDG 5**, which marked the level of implementation as STAGNATING. | According to the latest data of Bureau of National Statistics, in 2021, the share of women who were given land for agricultural purposes was at **1.55%.**<br><br>The Committee or Land Administration of the Ministry of Agriculture of the Republic of Kazakhstan is a national implementation institution. |
| KAZAKHSTAN | 5.A.2 | Proportion of countries where the legal framework (including customary law) guarantees women's equal land ownership and control rights. | | *(Excerpt (comment) from the data Bureau of National Statistics of the Agency for Strategic Planning and Reforms of Kazakhstan)*<br>*According to para. 1 of Article 6 of the Land Code of the Republic of Kazakhstan (hereinafter - the Code), land legislation in Kazakhstan is based on the Constitution of Kazakhstan and consists of the Code and normative legal acts of Kazakhstan adopted in accordance with it. Features of the legal regulation of certain categories of land in the land fund of Kazakhstan are established by the laws Kazakhstan. In accordance with para. 1 of Article 20 of the Code, state and private ownership of land are recognized and equally protected in Kazakhstan. According to paragraph 2 of Article 20 of the Code, Kazakhstan is the subject of state ownership of land on the territory of the Republic, citizens and non-state legal entities are recognized as subjects of private ownership of land on the grounds, conditions and within the limits established by this Code.* ***Thus, the current land legislation does not separate subjects on the basis of gender when granting a land plot, and does not limit the rights of women.***<br><br>The Ministry of Agriculture of Kazakhstan is a national implementation institution. |

| SDG 6. | | WATER AND SANITATION FOR ALL | Ensure availability and sustainable management of water and sanitation for all. | |
|---|---|---|---|---|
| KAZAKHSTAN | 6.4.1 | Change in water-use efficiency over time. | According to the UN SDSN SD REPORT 2024, Kazakhstan **neither progressed, nor regressed**, in implementing **SDG 6**, which marked the level of implementation as **STAGNATING.** | According to the latest data of Bureau of National Statistics, the water-use efficiency in 2015-2020 fluctuated at **6.1-8%.**<br><br>The Ministry of Agriculture and Ministry of Ecology and Natural Resources of Kazakhstan are both national implementation institutions. |
| KAZAKHSTAN | 6.4.2 | Level of water stress: freshwater withdrawal as a proportion of available freshwater resources. | | According to the latest data of Bureau of National Statistics, in 2022, **34.6%** of freshwater was withdrawn from all available freshwater resourses.<br>The Ministry of Ecology and Natural Resources of Kazakhstan is a national implementation institution. |

| SDG 10 | | REDUCE INEQUALITY | Reduce inequality within and among countries. |
|---|---|---|---|
| 10.A.1 | The proportion of tariff lines applied to imports from least developed and developing countries with zero tariff. | According to the UN SDSN SD REPORT 2024, Kazakhstan's progress in implementing **SDG 10** is shown as **CHALLENGES REMAIN.** | According to the latest data of the Ministry of Trade and Integration and the Bureau of National Statistics, Kazakhstan applies zero tariff in the context of tariff preferences to imports from least developed and developing countries to **20.4%** of tariff lines.<br>The Ministry of Trade and Integration of Kazakhstan is a national implementation institution. |
| **SDG 12** | | **SUSTAINABLE CONSUMPTION AND PRODUCTION** | Ensure sustainable consumption and production patterns |
| 12.3.1.A | Food loss index | According to the UN SDSN SD REPORT 2024, Kazakhstan **neither progressed, nor regressed**, in implementing **SDG 12**, which marked the level of implementation as **STAGNATING.** | No data available. The Ministry of Agriculture of Kazakhstan is a national implementation institution. |

| SDG 14 | | LIFE BELOW WATER | Conserve and sustainably use the oceans, seas and marine resources for sustainable development. | |
|---|---|---|---|---|
| KAZAKHSTAN | 14.4.1 | Proportion of fish stocks within biologically sustainable levels. | According to the UN SDSN SD REPORT 2024, **no data available for SDG 14** | No data available. The Ministry of Ecology and Natural Resources of Kazakhstan is a national implementation institution. |
| KAZAKHSTAN | 14.6.1 | Degree of implementation of international instruments aiming to combat illegal, unreported and unregulated fishing. | | Kazakhstan fully supported the adoption of the **WTO Agreement on Fisheries Subsidies** at the 12th Ministerial Conference (MC12) on 17 June 2022, which marked a major step forward for ocean sustainability by prohibiting harmful fisheries subsidies, which are a key factor in the widespread depletion of the world's fish stocks. **The Agreement represents a historic achievement for the membership as the first Sustainable Development Goal (SDG) target to be fully** met, the first SDG target met through a multilateral agreement. The Ministry of Trade and Integration of Kazakhstan is a national implementation institution. |
| KAZAKHSTAN | 14.7.1 | Sustainable fisheries are a proportion of GDP in small island developing states, the least developed countries, and all other countries. | | According to the latest data of Bureau of National Statistics, in 2013-2022, the share of fisheries in total GDP was at the same level- **0.2%.** The Ministry of Ecology and Natural Resources of Kazakhstan is a national implementation institution. |
| KAZAKHSTAN | 14.B.1 | Degree of application of a legal/ regulatory/ policy/institutional framework recognising and protecting access rights for small-scale fisheries. | | According to the latest data of Bureau of National Statistics, as of 2021, Kazakhstan scored **7.5** points in application of a legal/ regulatory/ policy/institutional framework recognising and protecting access rights for small-scale fisheries. In contrast, in 2019 this indicator was 0 (at the time there was measures protecting small-scale fisheries). The Ministry of Ecology and Natural Resources of Kazakhstan is a national implementation institution. |

| SDG 15 | | LIFE ON LAND | Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and biodiversity loss. | |
|---|---|---|---|---|
| **KAZAKHSTAN** | **15.1.1** | Forest area as a proportion of total land area. | According to the UN SDSN SD REPORT 2024, Kazakhstan **neither progressed, nor regressed**, in implementing **SDG 15**, which marked the level of implementation as **STAGNATING.** | According to the latest data of Bureau of National Statistics, in 2013-2022, there was an increase of the proportion of forest area in total land area from 4.6 to **5%.** The Ministry of Agriculture and Ministry of Ecology and Natural Resources of Kazakhstan are both national implementation institutions. |
| **KAZAKHSTAN** | **15.2.1** | Progress towards sustainable forest management. | | According to the latest data of Bureau of National Statistics, in 2013-2022, there was a constant increase in the area of land covered by forests, from 12,6 to **13,7 mln hectares** of land. The Ministry of Ecology and Natural Resources of Kazakhstan is a national implementation institution. |
| **KAZAKHSTAN** | **15.3.1** | The proportion of land that is degraded over total land area. | | According to the latest data of Bureau of National Statistics, as of 2022, there were **29,3 mln hectares** of degraded agricultural land, which is **25%** of total agricultural land (116 mln hectares). The Ministry of Agriculture of Kazakhstan is a national implementation institution. https://www.gov.kz/uploads/2024/1/4/528f6bfdb5e70c6bd0c85d001c0a733e_original.6863558.pdf (pages 18, 141) |

| | | | | |
|---|---|---|---|---|
| **KAZAKHSTAN** | **15.4.2** | (a) Mountain Green Cover Index and<br>(b) the proportion of degraded mountainland; | | According to the latest data of Bureau of National Statistics, as of 2022, Kazakhstan had **5.7 mln hectares** of mountain forests. In general, this indicator fluctuated insignificantly in 2010-2022 at 5.6-5.7 **mln hectares**, **so there is no degraded mountainland**.<br>The Forestry and Wildlife Committee Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan and local executive bodies (Akimats) are national implementation institutions. |
| **KAZAKHSTAN** | **15.6.1** | Several countries have adopted legislative, administrative and policy frameworks to ensure fair and equitable sharing of benefits. | | According to the latest data of Bureau of National Statistics, as of 2022, Kazakhstan had **375 (pcs) plant genetic resources** for biodiversity conservation, including genetic resources for agriculture and food production.<br>The Forestry and Wildlife Committee Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan is a national implementation institution. |

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# Kyrgyzstan country chapter

# SECTION II.C.1. KYRGYZSTAN DOMESTIC AGRI-FOOD PROFILE

## II.C.1.1. Introduction

### The Kyrgyz Republic

The Kyrgyz Republic experienced the constant growth of the GDP (in current USD) since 2020 and reached 13.99 billion USD in 2023 (WB database, 2024)[1]. As of constant 2015 USD, Kyrgyzstan's GDP marked 8.98 billion USD.

The GDP per capita in 2022 reached 1740.1 USD showing the constant growth since 2020 when this indicator was equal to 1230.3 USD.[2]

The annual inflation rates for Kyrgyzstan from 2020 to 2023 were the following[3]:

- **2020**: 6.3%
- **2021**: 11.9%
- **2022**: 13.9%
- **2023**: 10.8%

These rates indicate significant inflationary pressure in Kyrgyzstan, particularly during 2021 and 2022, which was influenced by a variety of global and regional economic factors. The rate in 2023 showed some decline, but remained elevated compared to pre-2020 levels. In 2019, it was equivalent to 1.1% even before the pandemic.

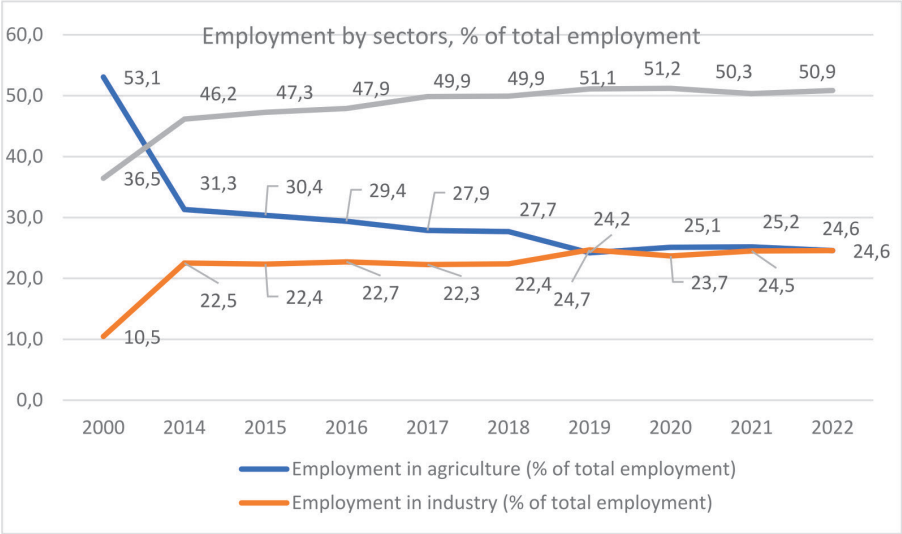


***Figure II.C.1. Employment by sectors***

Source: World Bank Indicators database

[1] World Bank database, 2024. https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=KG

[2] NSC, 2024. https://www.stat.gov.kg/ru/opendata/category/27/

[3] World Bank, 2024. https://data.worldbank.org/indicator/FP.CPI.TOTL.ZG?locations=KG

According to the WB database, the total labor force participation rate (15-64 yo) marks the constant increase since 2019, from 67.2% to 68.9% in 2023. Of them, the female labor force participation rate in Kyrgyzstan for women aged 15-64 showed a gradual increase from 55% in 2019 to 57% in 2022 with a slight decrease to 56% in 2021.

Employment in agriculture declined significantly from 53.1% in 2000 to 24.6% in 2022, with some fluctuations in between. The same shares of employment in industry reached being equal to 24.6% in 2022, while in 2000 this indicator was equivalent to 10.5%. The significant reorientation of the employment rate occurred in the service sector, from 36.5% in 2000 to 50.9% in 2022.

As given in Figure 1, the data reveals a general decline in total employment in agriculture from 54.8% in 2000 to 31.5% in 2019, reflecting a shift away from agricultural work. However, the recent years show some fluctuations, with a slight increase in 2020 and 2021 before a drop in 2022, potentially indicating the impact of external factors like the COVID-19 pandemic, economic uncertainties, or other sectoral shifts.

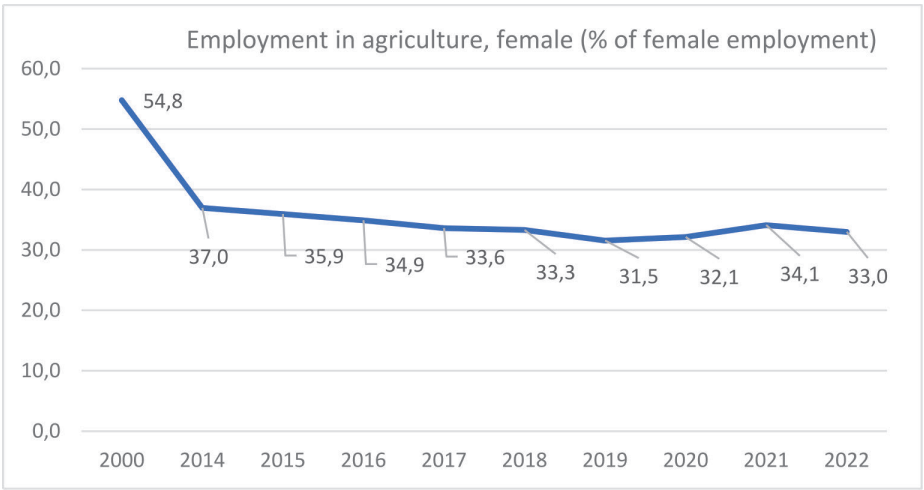


***Figure II.C.2. Female employment in agriculture***

Source: World Bank Indicators database

The data on Figure 2 illustrates a significant shift in Kyrgyzstan's labor market, with female employment in agriculture declining from 54.8% in 2000 to 31.5% in 2019 and fluctuating slightly in recent years. This trend is consistent with broader economic changes, including a steady increase in GDP and GDP per capita in 2020, coupled with rising inflation rates and a growing labor force participation rate.

As of the share to GDP, the data on Figure 3 shows the percentage of GDP contributed by agriculture, forestry, and fishing from 2019 to 2023. There was a noticeable increase from 10.4% in 2019 to a peak of 12.4% in 2021. However, this upward trend was followed by a decline in the subsequent years, dropping to 11.0% in 2022 and further decreasing to 9.7% in 2023. This trend shows that its contribution to GDP has since diminished, reflecting either a relative decrease in the sector's growth or an acceleration in other sectors of the economy.

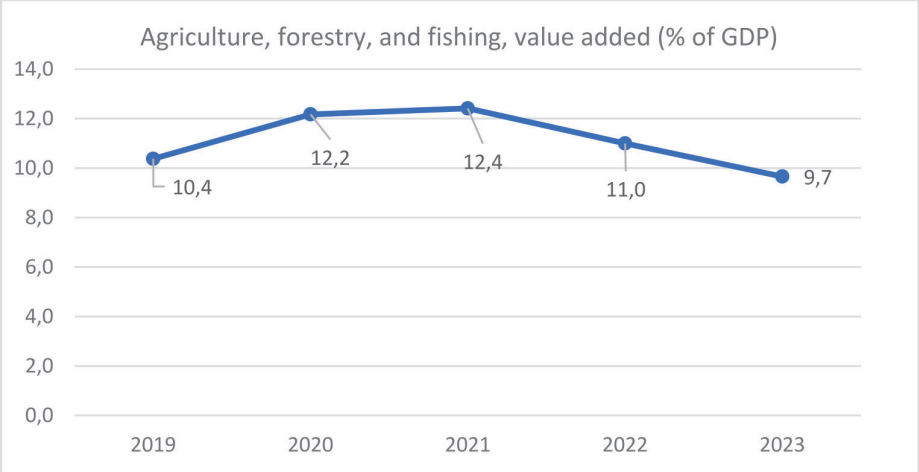


***Figure II.C.3. Agriculture, forestry, and fishing, value added***

Source: World Bank database, https://data.worldbank.org/

The data in Figure 3 illustrates the change in the contribution of agriculture, forestry and fisheries to GDP from 2019 to 2023. In 2019, the sector's contribution to GDP was 10.4%, which increased significantly to 12.2% in 2020 and increased slightly to 12.4% in 2021. However, this upward trajectory was not sustainable, as the sector's share of GDP declined to 11.0% in 2022 and continued to decline to 9.7% in 2023.

**Table II.C.1. Annual % growth in agriculture, forestry and fishing**

| | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Agriculture, forestry, and fishing, value added (annual % growth) | 2.5 | 0.9 | -4.5 | 7.3 | 0.6 |

Source: World Bank database, https://data.worldbank.org/

In summary, the Kyrgyzstan's economy has undergone significant structural shifts in recent years. Despite robust overall GDP and GDP per capita growth, the share of agriculture, forestry, and fisheries in GDP has declined since 2021, reflecting the diminishing role of these sectors in the economy. The rise in inflation over the same period suggests that, although the economy has been expanding, inflationary pressures and changing labor market dynamics have likely contributed to the decline in the contribution of traditional sectors such as agriculture to GDP. Kyrgyzstan is experiencing one of the fastest **population growth rates** in Asia, surpassed only by Pakistan, Afghanistan, Tajikistan, and Yemen (Bekmurzaev, 2022). According to the National Statistics Committee, the country's population is increasing by 2.1 percent annually; the average fertility rate is 2.81 in 2022, of them 2.93 births occur in urban areas, and 2.73 births – in rural. The high internal migration processes are responsible for the prevalence of urban fertility rates over rural ones.

Kyrgyzstan's agricultural sector has faced a number of challenges in recent years amid ongoing economic and demographic shifts. Despite population growth and inflationary pressures, employment in agriculture has been declining, reflecting a broader trend of urbanization and labor shifts to other sectors. In addition, agriculture's share of the country's total value added has been declining, reflecting a changing economic structure as Kyrgyzstan's economy diversifies.

### II.C.1.2. Review of the current state of food security

#### II.C.1.2.1. Overall agri-food production in the country

According to the National Statistic Committee of the Kyrgyz Republic (NSC), under the **food security** is understood as the physical availability of food in sufficient quantities, the ability of households to access this food (including food produced by the households themselves, as well as food acquired through the market, gifts, and other sources), and the consumption of food in amounts necessary to meet nutritional needs.[4]

To assess food security in Kyrgyzstan, nine staple foods were identified: bread and cereal products, potatoes, fruits and berries, vegetables and gourds, sugar, vegetable oil, milk and dairy products, meat and meat products, and eggs.

Among the nine staple foods, Kyrgyzstan currently cannot self-supply five items, according to the Ministry of Water Resources, Agriculture, and Processing Industry (MWRAPI – here and after). These items are vegetable oil, sugar, meat and meat products, bread, and eggs. They are imported from Russia, Kazakhstan, Belarus, Uzbekistan, Ukraine, China, and European countries. Despite this, the MWRAPI asserts that there is no shortage of these foods today.

**Table II.C.2.**

| | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Gross output of agriculture, hunting, and forestry by categories of farms in the Kyrgyz Republic, at current prices, million Soms[5] | **220958.0** | **249534.7** | **324535.6** | **358324.3** | **378699.3** |
| Crop production | 110782.2 | 125749.6 | 169701.3 | 177432.8 | 182815.5 |
| Animal husbandry | 104063.1 | 116345.7 | 145334.3 | 167860.8 | 181319.1 |
| Services | 5326.8 | 6196.6 | 7600.2 | 8263.0 | 9274.6 |
| Hunting and forestry | 360.0 | 304.0 | 373.0 | 580.5 | 580.4 |
| Fishing | 425.9 | 938.8 | 1526.8 | 4187.2 | 4709.7 |

Source: NSC, https://stat.kg/ru/statistics/download/dynamic/880/

[4] NSC, 2023. https://stat.kg/media/publicationarchive/5a85d9da-31d1-4099-8c0b-8f1cd5f6a12f.pdf

[5] The average exchange rates of the Kyrgyz som (KGS) against the US dollar (USD) for each year from 2019 to 2023 are as follows: 2019: 69.8 KGS/USD; 2020: 77.2 KGS/USD; 2021: 84.6 KGS/USD; 2022: 85.4 KGS/USD; 2023: 88.0 KGS/USD (Data retrieved from the National Bank of the KR)

From 2019 to 2023, the gross output of agriculture, hunting, and forestry in the Kyrgyz Republic consistently increased, rising from 220,958.0 million KGS in 2019 to 378,699.3 million KGS in 2023. Crop production and livestock farming showed significant growth, with crop production increasing from 110,782.2 million soms in 2019 to 182,815.5 million soms in 2023, and livestock farming from 104,063.1 million soms to 181,319.1 million soms over the same period. Services related to these sectors also grew, reaching 9,274.6 million soms in 2023. While hunting and forestry experienced fluctuations, they grew overall, and fisheries showed significant growth, especially from 2021, reaching 4,709.7 million soms in 2023.

**Table II.C.3. Production of the Major Agricultural Crops, tons**

| | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Cereals and legumes | 31355.7 | 35693.0 | 41596.3 | 49566.8 | 46022.2 |
| Potatoes | 15379.8 | 20415.6 | 31959.1 | 26906.3 | 32387.8 |
| Vegetables | 29253.1 | 25701.8 | 42662.9 | 41429.5 | 42091.5 |
| Raw cotton | 3694.9 | 3963.1 | 6804.6 | 7355.8 | 4051.1 |
| Tobacco | 150.8 | 131.3 | 83.2 | 199.0 | 162.4 |
| Sugar beet (factory) | 2463.7 | 1400.7 | 1532.9 | 2846.5 | 3534.6 |
| Melons | 3215.4 | 3593.5 | 3539.1 | 4437.1 | 4440.9 |
| Fruit and berries | 9193.4 | 12991.0 | 13778.0 | 15566.2 | 21324.8 |
| Grapes | 490.4 | 472.8 | 489.1 | 424.9 | 606.4 |
| Others | 15585.0 | 21386.8 | 27256.0 | 28700.7 | 28193.8 |

Source: NSC, https://stat.kg/ru/statistics/download/dynamic/880/

The data in Table 3 highlights both growth and variability across different agricultural sectors performing the production of major agricultural products in the Kyrgyz Republic from 2019 to 2023. It shows fluctuations in grain production, with a notable drop in 2021, especially in wheat and barley, followed by a recovery in 2022 and 2023. Corn production increased steadily, reaching its peak in 2023. Potato and vegetable production remained stable, with slight increases in 2023. Melon and fruit outputs also

showed moderate changes. Cotton and oil-producing crops saw a decline in production, while tobacco production remained relatively consistent. Milk production consistently increased each year, reaching a new high in 2023. Meat production showed a steady rise, and egg production saw significant growth, surpassing 600 million pieces in 2023. Wool production remained stable throughout the period.

The Table 4 data shows that the average annual milk yield per cow shows a gradual but very small increase over the five years, rising from 2,002 kg in 2019 to 2,022 kg in 2023. Throughout the period, the average annual wool yield per sheep remained constant at 2 kg. In contrast, the average annual egg production per laying hen displayed more variability, starting at 119 eggs in 2019, dipping slightly to 117 eggs in 2020, then increasing significantly to 136 eggs in 2022, and slightly further to 137 eggs in 2023. This data indicates steady improvements in dairy and poultry productivity, while wool production has remained stable.

**Table II.C.4. Productivity of Livestock and Poultry across the Territory of the Kyrgyz Republic**

| | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Average annual milk yield per cow, kg | 2,002 | 2,006 | 2,009 | 2,014 | 2,022 |
| Average annual wool yield per sheep (in physical weight), kg | 2 | 2 | 2 | 2 | 2 |
| Average annual egg production per laying hen, pcs | 119 | 117 | 119 | 136 | 137 |

Source: National Statistic Committee of the KR, https://www.stat.gov.kg/ru/statistics/download/dynamic/1265/

Table 5 shows that over this period, the cattle population steadily increased from 1,680,750 in 2019 to 1,802,299 in 2023, with a similar rise in the number of cows, reaching 902,244 in 2023. The pig population fluctuated slightly, with a notable dip in 2022 before recovering to 29,676 in 2023. The sheep and goat population remained relatively stable, hovering around 6.2 million heads, with a slight decrease in 2022. The horse population saw modest growth but experienced a small decline in 2022 before increasing again to 542,527 in 2023. Poultry numbers showed more significant fluctuations, with a decrease from 6,211,184 in 2019 to 5,924,734 in 2021, followed by a sharp increase to 6,988,968 in 2023. This data suggests a generally stable or growing livestock population, with some variations, particularly in poultry, which experienced the most volatility.

**Table II.C.5. The Livestock and Poultry Population in the Kyrgyz Republic (at the end of the year, heads)**

| | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Cattle | 1,680,750 | 1,715,776 | 1,750,467 | 1,783,469 | 1,802,299 |
| Cows | 835,270 | 855,050 | 868,820 | 885,673 | 902,244 |
| Pigs | 34,750 | 29,465 | 29,508 | 25,640 | 29,676 |
| Sheep & goats | 6,266,739 | 6,278,736 | 6,278,104 | 6,200,961 | 6,216,125 |
| Horses | 522,611 | 539,644 | 547,253 | 533,979 | 542,527 |
| Poultry | 6,211,184 | 6,070,443 | 5,924,734 | 6,368,695 | 6,988,968 |

Source: National Statistic Committee of the KR, https://www.stat.gov.kg/ru/statistics/download/dynamic/362/

### II.C.1.2.2 Level of undernourished groups, share of imported calories

According to World Bank data from FAOSTAT, the prevalence of undernourishment (% of population) in the Kyrgyz Republic has decreased from 14.6% in 2001 to 4.8% in 2021. Although the prevalence of undernourishment in the country has been steadily declining over the years, it remains a persistent problem. In fact, since 2018, the share has even started to increase slightly, from 4.5% to 4.8% in 2021.

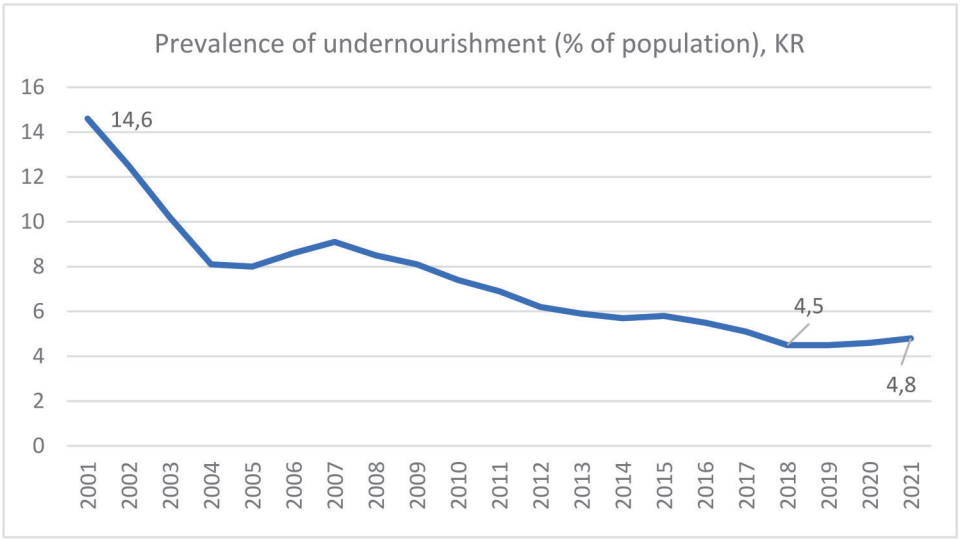


***Figure II.C.4. Prevalence of undernourishment (% 0f Population)***

Source: WB database.

The prevalence of severe food insecurity in the population (%) indicator has increased from 0.8% to 1.1% in 2021, while the prevalence of moderate or severe food insecurity in the population (%) indicator has increased from 6.3% to 6.9% in 2021 (WB database, retrieved from FAOSTAT).

**Table II.C.6. The cost of the food basket of the subsistence minimum in Kyrgyzstan for 2018-2022, KGS[6]**

| Year | Cost (KGS) |
|---|---|
| 2018 | 3115.2 |
| 2019 | 3124.1 |
| 2020 | 3483.1 |
| 2021 | 4074.4 |
| 2022 | 4665.9 |
| 2023 | 4993.02 |

Source: NSC, https://stat.kg/media/publicationarchive/3ce0a404-9863-4870-aa39-f5fecbc85ccf.pdf

The NSC publishes data on the subsistence minimum for the main food products on average per capita.

**Table II.C.7. Subsistence minimum for the main food products on average per capita, KGS per month[7]**

| Food Groups | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Bread Products | 460.13 | 503.42 | 539.18 | 642.08 | 703.15 |
| Potatoes | 89.94 | 125.38 | 169.53 | 171.29 | 179.93 |
| Vegetables | 231.08 | 251.84 | 314.95 | 393.09 | 367.06 |
| Fruits and Berries | 380.37 | 450.96 | 472.93 | 459.31 | 489.52 |

[6] The average exchange rates of the Kyrgyz som (KGS) against the US dollar (USD) for each year from 2019 to 2023 are as follows: 2018: 68.8 KGS/USD; 2019: 69.8 KGS/USD; 2020: 77.2 KGS/USD; 2021: 84.6 KGS/USD; 2022: 85.4 KGS/USD; 2023: 88.0 KGS/USD (Data retrieved from the National Bank of the KR)

[7] The average exchange rates of the Kyrgyz som (KGS) against the US dollar (USD) for each year from 2019 to 2023 are as follows: 2019: 69.8 KGS/USD; 2020: 77.2 KGS/USD; 2021: 84.6 KGS/USD; 2022: 85.4 KGS/USD; 2023: 88.0 KGS/USD (Data retrieved from the National Bank of the KR)

| | | | | | |
|---|---|---|---|---|---|
| Milk & Dairy Products | 614.7 | 650.86 | 687.79 | 905.91 | 995.45 |
| Meat | 956.27 | 1075.26 | 1343.25 | 1465.69 | 1582.09 |
| Fish | 71.6 | 79.3 | 84.28 | 98 | 126.08 |
| Eggs | 113.59 | 126.83 | 161.51 | 164.67 | 187.69 |
| Sugar | 75.54 | 77.65 | 107.9 | 147.99 | 148.07 |
| Vegetable Oil | 77.92 | 87.06 | 134.13 | 150.08 | 140.82 |
| Lodized Salt | 3.21 | 3.26 | 3.15 | 3.43 | 3.69 |
| Tea | 49.76 | 51.24 | 55.8 | 64.39 | 69.47 |
| **Total cost, KGS** | **3124.11** | **3483.06** | **4074.4** | **4665.93** | **4993.02** |

Source: NSC, https://stat.kg/ru/living-wage/

Over the years, the data (Table 7) shows a significant increase in the cost of food groups on average per capita, with some items experiencing more significant growth rates than others. For instance, the cost of bread products has increased by approximately 53% from 460.13 KGS in 2019 to 703.15 KGS in 2023, while the cost of potatoes has increased by approximately 100% from 89.94 KGS in 2019 to 179.93 KGS in 2023. The cost of milk and dairy products has also increased significantly, from 614.7 KGS in 2019 to 995.45 KGS in 2023, representing a growth rate of approximately 62%. On the other hand, the cost of iodized salt has remained relatively stable, with a slight increase from 3.21 KGS in 2019 to 3.69 KGS in 2023. Overall, the data shows that the cost of food groups in Kyrgyzstan has increased significantly over the years, with some items experiencing more significant growth rates than others.

**Table II.C.8. Average per capita daily caloric intake by chemical composition**

| Average per capita daily caloric intake by chemical composition | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Energy value, kcal | 2,240.1 | 2,271.8 | 2,240.2 | 2,265.5 | 2,304 |
| Proteins, gram | 60.8 | 62.3 | 61.5 | 62.0 | 63.3 |
| Fats, gram | 63.3 | 66.5 | 66.3 | 68.7 | 71.1 |

Source: NSC, https://stat.kg/ru/statistics/download/dynamic/540/

The energy value, measured in kilocalories (kcal), has increased slightly from 2,240.1 kcal in 2019 to 2,265.5 kcal in 2022, representing a growth rate of approximately 1.2%. The protein content, measured in grams, has also increased slightly from 60.8 grams in 2019 to 62.0 grams in 2022, representing a growth rate of approximately 1.5%. The fat content, measured in grams, has increased more significantly from 63.3 grams in 2019 to 68.7 grams in 2022, representing a growth rate of approximately 8.5%. In 2023 these

data even increased – the energy value grew up to 2304 kcal, proteins reached 63.3 gram, and fats – 71.1 gram. Thus, the data suggests that the average per capita daily caloric intake in the given period has increased slightly, with a more significant increase in fat content.

**Table II.C.9. Difference in daily intakes and daily needs, kcal per day**

| | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Daily intake, Kcal per capita per day | 2,240.1 | 2,271.8 | 2,240.2 | 2,265.5 | 2,304 |
| Daily needs, Kcal per capita per day | 2,101 | 2,101 | 2,101 | 2,101 | 2,101 |
| Balance (+) or (-) | 139.1 | 170.8 | 139.2 | 164.5 | 203 |

Source: NSC, https://stat.kg/ru/statistics/download/dynamic/540/

Table II.C.9 provides an overview of daily dietary intake and nutritional balances from 2019 to 2023. Data shows the daily intake of calories per capita, which increased from 2,240.1 Kcal in 2019 to 2,304 Kcal in 2023. This intake consistently exceeded the daily needs of 2,101 Kcal per capita, resulting in a positive balance that grew from 139.1 Kcal in 2019 to 203 Kcal in 2023.

**Table II.C.10. Difference in daily intakes and daily needs in proteins and fats**

| | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Daily needs, Proteins per capita per day, grams | 73 | 73 | 73 | 73 | 73 |
| Balance in proteins consumption per capita, per day | -12 | -11 | -12 | -11 | -10 |
| Daily needs, Fats per capita per day, grams | 71 | 71 | 71 | 71 | 71 |
| Balance in fats consumption per capita, per day | -8 | -5 | -5 | -2 | 0 |

Source: NSC, https://stat.kg/ru/statistics/download/dynamic/540/

Table II.C.10 focuses on daily protein and fat needs per capita, both set at 73 grams and 71 grams, respectively. However, there were consistent deficiencies in protein consumption, with a slight improvement from a deficit of 12 grams in 2019 to 10 grams in 2023. The balance in fat consumption showed a notable improvement, moving from a deficit of 8 grams in 2019 to meeting the daily needs by 2023. These data suggest an overall increase in caloric intake, slight improvements in protein consumption, and a significant improvement in fat consumption over the five-year period.

**Table II.C.11. Sufficiency of selected foods consumption[8] (average per capita, kg per month)**

| Year | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Grain and products of its processing (kg/month) | 13.3 | 14.2 | 15.1 | 15.9 | 17.4 |
| Meat and meat products (kg/month) | 3.6 | 3.6 | 3.7 | 3.9 | 3.9 |
| Milk and dairy products (kg/month) | 18.4 | 18.2 | 18.5 | 18.4 | 19.8 |
| Eggs (pieces/month) | 8.1 | 8.4 | 8.6 | 10.1 | 10.9 |
| Potatoes and products of its processing (kg/month) | 10.6 | 9.2 | 9.3 | 8.8 | 8.9 |
| Sugar and confectionery (kg/month) | 2.1 | 1.3 | 2.1 | 3.0 | 2.0 |
| Vegetable oil (kg/month) | 1.0 | 1.3 | 1.3 | 1.3 | 0.9 |

Source:https://www.stat.gov.kg/media/publicationarchive/2f7634b1-1cc4-4d18-a6bf-2b40892e71c3.pdf

Table II.C.11 provides an overview of the average per capita monthly consumption of selected foods from 2019 to 2023. Over this period, consumption of grain and grain products showed steady growth, increasing from 13.3 kg in 2019 to 17.4 kg in 2023. Consumption of meat and meat products increased slightly from 3.6 kg to 3.9 kg. Milk and dairy products remained relatively stable, with a slight increase to 19.8 kg in 2023. Egg consumption increased significantly from 8.1 pieces in 2019 to 10.9 pieces in 2023. In contrast, consumption of potatoes and potato products decreased from 10.6 kg in 2019 to 8.9 kg in 2023. Consumption of sugar and confectionery fluctuated, peaking at 3.0 kg in 2022 and then decreasing to 2.0 kg in 2023. Vegetable oil consumption remained stable at around 1.0-1.3 kg but declined to 0.9 kg in 2023.

Kyrgyzstan faces a complex malnutrition problem characterized by persistent stunting and anaemia among children and women of reproductive age, despite progress in reducing stunting since 1990. Poor dietary habits, including high consumption of starchy staples and increasing intake of processed foods high in fats, sugars, and salts, contribute to undernutrition, malnutrition, and obesity. In 2020, 38 percent of the population could not afford a nutritious diet, a situation worsened by a 34 percent increase in the cost of a nutrient-adequate diet by 2022 due to inflation (WFP, 2022).

The 2022 National Integrated Micronutrient Anthropometric Survey (NIMAS) revealed a reduction in child stunting rates from 11 percent in 2021 to 7 percent among children aged 6–59 months. Despite this progress, stunting remains a concern for children with low birth weight, those in Batken, and those from lower-income households with inadequate sanitation or unsafe drinking water. Wasting and underweight in children are rare, while overweight and obesity in young children are of moderate concern. Anemia is moderate among non-pregnant women at 25 percent, milder among children aged 5-9 and adolescent girls, but still affects over 30 percent of children in certain regions.

[8] In terms of the primary product

Vitamin A deficiency is moderate in young children, and folate deficiency is significantly high among adolescent girls and non-pregnant women. These findings highlight the need for targeted nutritional interventions, especially for vulnerable groups and regions with higher prevalence rates (UNICEF, 2022).

According to the UNICEF report (2021), although water, sanitation and hygiene (WASH) coverage is generally high, access to safe drinking water remains a major challenge, especially in rural areas. There is still a lack of adequate toilets in schools, especially for adolescent girls. In addition, waterborne diseases remain widespread. The UNICEF report indicates that 93% of the population has access to basic drinking water services, 98% to basic sanitation, and 96% to basic hygiene. However, these figures show significant disparities, especially between urban and rural areas. Urban areas have almost full access to drinking water: in Bishkek, this figure is 100 percent, while in Osh city it is 98.8 percent. In contrast, only 89 percent of the rural population has access to basic water services, and in Batken region, this figure has dropped to 72 percent. In addition, almost a third of villages (595 out of 1805, or 32.9 percent) do not have a centralized water supply.

**The State Irrigation Development Program of the Kyrgyz Republic for 2017–2026** outlines plan to build irrigation infrastructure aimed at expanding irrigated lands for rural communities. The program's execution is expected to create 66,500 hectares of new irrigated land, enhance water supply to 51,080 hectares, transition 9,500 hectares from machine to gravity irrigation, and improve land reclamation on 50,000 hectares[9].

### II.C.1.2.3. Economic availability

According to **the Food Security and Nutrition Program in the Kyrgyz Republic for 2019-2023** data, economic availability of food is defined as the share of total household expenditures spent on food. In 2023, this share was 44%, showing an increase compared to 2019, when it was 41% (NSC KR, 2024).

In 2023, compared to 2022, consumer goods and services prices in the republic increased by 7.3 percent, whereas in 2022 in comparison with 2021, these prices had risen by 14.7 percent (NSC KR, 2024). At the same time, prices for food products and non-alcoholic beverages in 2023 (compared to 2022) in the republic increased by 3.4 percent (by 15.8 percent over the same period in 2022 in comparison with 2021).

The indicator of differentiation of food expenditures across social groups (the ratio of food costs between the fifth and first quintile groups) in 2019 was 2.05, and in 2022 it was 2.07 (NSC KR, 2024).

The main sources of monetary income for the population were earnings from labor activities, which accounted for 73.2% of the income structure; income from social transfers – 13.4%, and income from the sale of agricultural products produced in personal subsidiary farms – 10.0% (NSC KR, 2024). Based on the official exchange rate

[9]https://www.water.gov.kg/index.php?option=com_k2&view=item&id=408:pravitelstvo-utverdilo-gosudarstvennuyu-programmu-razvitiya-irrigatsii-kyrgyzskoj-respubliki-na-2017-2026-gody&Itemid=1437&lang=ru

set by the National Bank of the Kyrgyz Republic, the average monthly nominal accrued wage of one worker in January-December 2023 was 378.5 US dollars (NSC KR, 2024).

In 2022, the share of consumer expenditures in the overall structure of household expenses amounted to 83.7 percent, while the share of tax expenditures was 8.9 percent. The structure of consumer expenditures includes spending on food, non-food items, and services intended for the personal consumption of household members (NSC KR, 2023b).

Spending on food items, which includes both groceries and dining out, increased from 48.9 percent in 2018 to 51.2 percent in 2022. The share of expenditures on food purchases, which makes up a significant part of consumer expenses, reached 47.3 percent in 2022, an increase of 2.4 percentage points compared to 2018 (NSC KR, 2023b).

Figure 5 presents the annual consumer price index (CPI) as a percentage of the previous year from 2019 to 2023. It shows a consistent increase in the CPI over the five-year period. The CPI grew modestly by 1.1% in 2019, then saw a more significant rise of 6.3% in 2020. The upward trend continued with a 11.9% increase in 2021, the highest among the years listed. In 2022, the CPI increased by 13.9%, but the growth slightly slowed to 10.8% in 2023. Overall, the data indicates a steady rise in consumer prices each year.

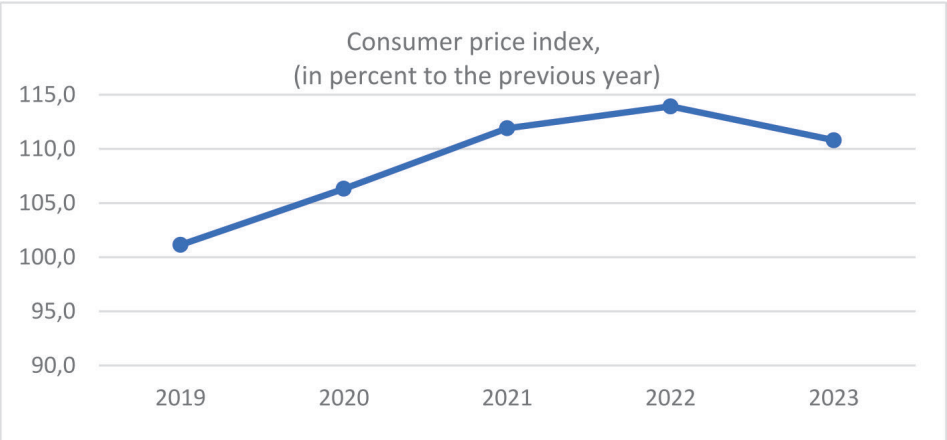


***Figure II.C.5. Consumer Price Index***

Source: https://stat.gov.kg/en/opendata/category/127/

Overall, Kyrgyzstan experienced high inflationary pressure during 2021 – 2022 years that led to the growth of prices, especially on food items.

### II.C.1.2.4 Functionality of food value chains and safety systems

According to the WFP report (2022), the agricultural sector remains fragmented and inefficient. The share of agriculture in GDP has decreased from 37 percent in 2000

to 15 percent in 2021, despite employing about 20 percent of the workforce. Small farmers produce over 60 percent of agricultural products. Although grain production is reportedly on track to meet SDG targets, food production faces threats from trade flow issues, rising agricultural input prices, and the country's high vulnerability to climate change, which affects crop production.

Although employment in the agricultural sector has declined, it still involves over 700,000 rural households. However, much of this employment is informal, leaving many farmers without access to agricultural knowledge, extension services, public or private insurance schemes, or social protection in emergencies (FAO, 2019).

In recent years, Kyrgyzstan has worked to strengthen its food safety regulations and practices to protect public health and facilitate trade. As of Legal Framework, Kyrgyzstan has several laws and regulations related to food safety, including the Law on Consumer Rights Protection and the Technical Regulation " Hygiene of processing of foodstuffs ".

Besides, the country is also aligning its food safety regulations with the standards of the Eurasian Economic Union (EAEU) which it joined in 2015:

1. **TR TS 021/2011** "On the Safety of Food Products"
2. **TR TS 022/2011** "Food Products in Terms of Their Labeling"
3. **TR TS 023/2011** "Technical Regulation on Juice Products from Fruits and Vegetables"
4. **TR TS 024/2011** "Technical Regulation on Fat-and-Oil Products"
5. **TR TS 027/2012** "On the Safety of Certain Types of Specialized Food Products, Including Dietary Therapeutic and Dietary Preventive Nutrition"
6. **TR TS 029/2012** "Safety Requirements for Food Additives, Flavorings, and Technological Aids"
7. **TR TS 033/2013** "Technical Regulation on the Safety of Milk and Dairy Products"
8. **TR TS 034/2013** "Technical Regulation on the Safety of Meat and Meat Products"
9. **TR TS 040/2016** "On the Safety of Fish and Fish Products"
10. **TR EAEU 044/2017** "On the Safety of Packaged Drinking Water, Including Natural Mineral Water"
11. **TR EAEU 051/2021** "On the Safety of Grain"

These regulations set the requirements for the safety, quality, and labeling of food products, as well as the conditions for their production, storage, and transportation.

Kyrgyzstan highlights the importance of international food safety standards set by the Codex Alimentarius Commission. Thus, in 2017, the country held a workshop to raise awareness among officials about Codex standards and how they can support national food safety programs (WHO, 2018).

FAO is supporting Kyrgyzstan in strengthening food safety management capacities in the fruit and vegetable sector by initiating a project entitled "Strengthening Food Safety Management Capacities in the Fruit and Vegetable Sector of Kyrgyzstan in 2020". Efforts to improve food safety in Kyrgyzstan are aimed at raising awareness of producers and consumers on its importance, introducing quality and safety control systems such as GAP, GMP, GHP and HACCP at all stages of production and marketing, and training industry specialists in modern methods and technologies for safe food production. (FAO, 2024).

### II.C.1.2.5. Country Road Maps on agricultural development

Kyrgyzstan's legislative framework on food security is based on the **Law of the Kyrgyz Republic on "Food Security**" (Law # 183, August 4, 2008). This law establishes major areas for ensuring food security in the country and outlines key measures to achieve it. The law emphasizes the importance of food security as an integral component of national and economic security, closely related to the overall social and economic development of the country.[10]

In 2015, the Government of the Kyrgyz Republic issued Decree # 618 on September 4, 2015, which approved the **Food Security and Nutrition Program in the Kyrgyz Republic for 2015-2017**[11], which was developed to ensure food security and rapid response to internal and external threats to the food market stability in the Kyrgyz Republic.

In order to implement the strategic priorities of sustainable development, ensure the country's food security, and respond promptly to internal and external threats to the stability of the food market in the Kyrgyz Republic, the Government of the Kyrgyz Republic approved the **Food Security and Nutrition Program in the Kyrgyz Republic for 2019-2023**[12] by Resolution No. 320 on June 27, 2019. The 2019-2023 Food Security and Nutrition Programme in Kyrgyzstan aims to increase domestic production and stability of food supplies, ensuring food security and rapid response to internal and external threats. The programme integrates food security with health, education, and economic sectors, considering it a national security priority and aligning with the National Development Strategy for 2018-2040. It is implemented and monitored by relevant government agencies and the Council of Food Security and Nutrition, with the goal of ensuring food independence and quality nutrition for the Kyrgyz population. The 2019-2023 Food Security and Nutrition Programme in Kyrgyzstan aims to boost domestic production and stabilize food supplies. To achieve this, the programme focuses on two key priorities: (1) stimulating domestic production of basic foodstuffs and (2) improving state reserve management to stabilize the domestic market. Additionally, the programme aims to create socio-economic conditions ensuring stable access to food for the population, prioritizing socially vulnerable groups. To achieve this, the programme focuses on (1) improving food accessibility for the population, particularly for vulnerable groups, and (2) establishing a system for providing food assistance during food shocks.

The latest Food Security and Nutrition Program for 2019 – 2023 does not include the Country Road Map. At the same time, the existing **National Development Program of the Kyrgyz Republic until 2026**[13] is focused on improving the well-being of citizens, and it was developed within the framework of the National Development Strategy of the Kyrgyz Republic until 2040, maintaining the principle of continuity based on long-term strategic development goals of the country with a focus on people and emphasizing the fundamental commitment of 'leaving no one behind' in the Sustainable Development Goals.

[10] Ministry of Agriculture, https://agro.gov.kg/bfd_download/
[11] FAO, https://faolex.fao.org/docs/pdf/kyr161181E.pdf
[12] FAO, https://faolex.fao.org/docs/pdf/kyr195970.pdf
[13] The Cabinet of Ministers, https://www.gov.kg/storage/2021/10/files/program/16/natsionalnaya_programma_razvitiya_kyrgyzskoy_respubliki_do_2026_goda.pdf

The Program mentions agriculture and processing among the priorities for economic development. One of the main characteristics of agriculture is its low productivity and small scale of production, which hinders its ability to compete effectively in both domestic and international markets. Key initiatives of the Program include stimulating the development of medium and large processing complexes and logistics centers to expand export opportunities. Efforts are also aimed at creating favorable conditions for agricultural clusters in regions with individual development plans and methodologies. Legislative reforms are planned to develop and implement a new Land Code to optimize land management and property rights. Technological advances, such as the introduction of digital tools in agriculture, are aimed at increasing productivity, ensuring quality standards and improving farmers' access to markets. To support agricultural needs, specialized service centers will be established in all districts as part of infrastructure improvements. Environmental sustainability is emphasized through legislative support for organic farming and compliance with international certification standards. Market diversification efforts are aimed at developing the halal product market and promoting exports to consumer countries.

The Program suggests implementation of the following agricultural projects:

1. Introducing a commodity and raw material exchange program for the agricultural sector.
2. Reviewing the 'Agricultural Financing' program to support clustering and large-scale producers.
3. Implementing an organic production development program.
4. To ensure economic sustainability, the water transportation service tariff system must be revised.
5. Reconstructing the irrigation systems of the Kyrgyz Republic (2018-2022) and Sarymsak (2018-2022).
6. Developing irrigated agriculture in the Issyk-Kul and Naryn regions (2021-2024).
7. Enhancing irrigated agriculture in the Chui region with the Chui Canal-2 project.
8. Launching the 'Aquaculture' development project.
9. Implementing a national traceability system for agricultural products.
10. Establishing a unified production and marketing chain, agromarketing centers, and e-commerce.
11. Creating the **AgroSmart** database to enhance agricultural data management and analysis.

As of the existing agricultural Road Maps, in 2021, the Ministries of Agriculture of the Kyrgyz Republic and Republic of Uzbekistan signed a cooperation **Roadmap** during President Sadyr Japarov's state visit to Uzbekistan on March 11-12. The agreement covers the supply of agricultural products, the testing and approval of new crop varieties, student animal husbandry training, and collaboration between research institutes. Uzbekistan will provide Kyrgyzstan with fruit tree seedlings, winter wheat seeds, and Sultan cotton seeds. Thus, the Uzbek side expressed its readiness to provide the Kyrgyz Republic with 10,000 fruit and berry tree seedlings, 1,000 tons of winter wheat seeds, and 500 tons of Sultan cotton seeds. They also discussed building a greenhouse, exporting meat and

live animals, and attracting investments in meat processing. An agreement was made with JSC "Uzkimesanoat" for the daily supply of 800-1,000 tons of mineral fertilizers to Kyrgyzstan (The Cabinet of Ministers of the KR, 2021).

In 2024, the range of additional agreements in agriculture were signed (Ministry of Water Resources, Agriculture and Processing Industry, 2024):

1. Contract between Alayku Organics LLC and the Uzbek company "New Effective Way" for $500,000 for the supply of juice products to Uzbekistan and a Memorandum for further cooperation in the amount of $1.5 million;
2. Contract between Turan Group LLC and the Uzbek company "BNB Export Group" for the supply of PPU panels for refrigeration chambers for a logistics center in the amount of $4.46 million and a contract for joint production of sandwich panels of any complexity in the Kyrgyz Republic;
3. Memorandum between Bay Dyykan LLC and the Uzbek company Uzkhimyoimpex LLC for the supply of mineral fertilizers to the Kyrgyz Republic;
4. Contract between Belaya Reka LLC and the Uzbek company "VODIY – FOOD" for the supply of dairy products in the amount of $16 million.

### II.C.1.3. Review of domestic agri-food production

#### II.C.1.3.1. Land reforms provided

After the Soviet Union's collapse in 1991, Kyrgyzstan experienced land reforms in several phases. Mogilesvkii et al. (2017) noted that Kyrgyzstan's initial phase of agricultural reform, from 1991 to 1994, was characterized by inconsistent approaches to farm restructuring. This period began with an effort to transition from collective to private ownership, with approximately 2000 individual farmers receiving around 5% of arable land by 1991.

The **second phase** of land reform in Kyrgyzstan began in 1994 with a presidential decree that outlined procedures for the final phase of the reform and restructuring program for collective farms. This phase covered 262 state farms and 190 collective farms, with most transferable land shares being distributed to individual farmers. By 1995, 68% of livestock had been privatized, but only 16% of tractors and buildings were in private hands. The remaining 25% of arable land was allocated to the Land Redistribution Fund (LRF) and left in state ownership for future distribution. The LRF land was managed by local authorities, but in areas with limited arable land, it was also transferred to private owners. The state also attempted to reform the irrigation system by decentralizing it and creating Water Users Associations (WUAs) to manage and maintain irrigation systems, though the WUAs faced challenges. The growth in private land ownership led to an increase in the number of peasant farms and a decrease in average farm size, with the total arable land for individual use stabilizing at around 920,000 ha.

The **third phase** of agrarian reforms in Kyrgyzstan, starting in 2004, focused on developing agricultural extension services and infrastructure. The government

prioritized the development of cooperatives, peasant farms, and agribusinesses, as well as improving water and pasture management and social development in rural areas. The Rural Advisory Service (RAS) received significant support from donor organizations but appears unsustainable, with private sector and rural clients contributing only 3% of its revenue by 2010. Pasture reform began in 2009, transferring pasture management to communities and creating 454 pasture user unions.

The current **National Development Program of the Kyrgyz Republic until 2026** indicates the necessity of conducting land reforms because "*the degree of land degradation has reached a critical level, and considering the consequences of climate change, there is practically no time left to change the situation*" (The Cabinet of Ministries, 2023), and the following of projects are listed:

1) Development of hillside and foothill lands;
2) Update of the land cadastre, inventory of state lands with the formation of a digital map of agricultural and other designated lands;
3) Land exchange, an online platform for transactions with agricultural lands;
4) Development and implementation of the Concept for the development of agricultural lands in the Kyrgyz Republic for 2022-2026;
5) Adoption of a new Land Code of the Kyrgyz Republic.

### II.C.1.3.2. The structure of input supply and the effect of growing fertilizer prices

The MWRAPI reports that Uzbekistan is Kyrgyzstan's primary fertilizer supplier, with Russia and Kazakhstan accounting for 30–35% of all fertilizer imports.

Overall, annually, 30 thousand tons of mineral fertilizers are imported into Kyrgyzstan for spring fieldwork, with a strategic reserve requirement of 45-50 thousand tons. Despite this, a fertilizer shortage arises in the southern regions due to re-exports to other countries, particularly Tajikistan, but this trade ceased in 2022 (Tilekeyev, 2024).

Hereby, the Cabinet of Ministers has imposed a six-month ban on exporting mineral fertilizers from Kyrgyzstan beyond the customs territory of the Eurasian Economic Union in 2023 (that has been further prolonged in 2024). This ban excludes international transit and humanitarian aid provided by the Cabinet.

As of March 13, 2024, 33.5 thousand tons of mineral fertilizers have been imported into Kyrgyzstan, according to the press service of the MWRAPI (IA 'Economist.kg', 2024). This includes:

Nitrogen fertilizers: 23 thousand tons
Phosphorus fertilizers: 9.4 thousand tons
Potassium fertilizers: 1 thousand tons
The prices of mineral fertilizers in 2024 are:

Ammonium nitrate: 22-30 Soms[14] per 1 kg
Urea: 31-38 Soms per 1 kg

[14] The average exchange rate for May 2024 is 88.4 KGS per 1 USD, according to the National Bank of the KR

Interestingly, compared to 2023, the prices of fertilizers have decreased: ammonium nitrate by 13-15 soms per 1 kg, and urea by 14-15 soms per 1 kg (IA 'Economist.kg, 2024). However, it is worth noting that in 2021, the prices of mineral fertilizers imported into the country were 3-5 Soms/KG higher than in 2020 because of the increase in factory prices of manufacturing plants. The MWRAPI of the Kyrgyz Republic and private fertilizer supply companies held sales of fertilizers at cost price on a regular basis (Ministry of Water Resources, Agriculture, and Processing Industry, 2021). This was done so that farmers could afford mineral fertilizers and get high-quality, abundant crop yields.

The main collection, unloading, and storage points for mineral fertilizers are located along the railroad in the cities of Bishkek, Kara-Balta, Shopokov, Osh, and Kyzyl-Kiya, according to the MWRAPI. The supply of mineral fertilizers is also facilitated through border trade (in the Talas, Chuy, and southern regions). Currently, there are more than 75 points of sale for mineral fertilizers throughout the republic (MWRAPI, 2021).

In May 2023, during President Sadyr Japarov's state visit to China, several bilateral documents were signed, including an investment agreement between the MWRAPI of the Kyrgyz Republic and Hebei's "Bai Dou Jia" LLC for the implementation of a project to construct a fertilizer plant worth $260 million. In particular, the Nookat district of the Osh region has signed a contract for the construction of a mineral fertilizer production plant (IA '24.kg', 2024). The successful launch of the plant might reduce Kyrgyzstan's dependency on fertilizers' imports and, moreover, become its exporter in the future.

### II.C.1.3.3. Farmers access to internal markets

The MWRAPI, as the authorized state body in the field of agriculture, in accordance with the Law of the Kyrgyz Republic "On Commodity Warehouses and Warehouse Certificates" dated April 17, 2018 No. 40, and the Regulation on the Procedure for Maintaining the Unified State Register of Commodity Warehouses, approved by the Government Resolution of the Kyrgyz Republic "**On Measures to Implement the Law of the Kyrgyz Republic 'On Commodity Warehouses and Warehouse Certificates'**" dated July 30, 2019 No. 377, registers warehouses in the Unified State Register based on an application submitted on behalf of the warehouse and the relevant documents.

To date, the MWRAPI of the Kyrgyz Republic has included 7 commodity warehouses for storing agricultural products in the Unified State Register:

- Chuy Region – 2: LLC "Ecoproduct Asia", LLC "Agroproduct Asia"
- Bishkek – 3: LLC "Bai Elim Company", LLC "Intars", LLC "ViG"
- Naryn Region – 1: LLC "Seed Potato"
- Talas Region – 1: Agricultural Cooperative "Dosbai-Ata"

All details, as well the list of warehouses, are available on the website: www.sklads.kg

### II.C.1.3.4. State support policy towards farmers, including extension services

On February 12, 2024, the Cabinet of Ministers of the Kyrgyz Republic adopted a resolution approving the Government Action Plan to curb the growth rate of prices for socially significant food products for 2024. The Plan was developed in order to curb the growth of prices for socially significant goods, implement comprehensive measures to ensure stability and supply in the domestic market, as well as state support for domestic production of socially significant goods in 2024..

The markets for socially significant goods are competitive and prices are determined by market mechanisms. However, price volatility is primarily caused by the Kyrgyz Republic's reliance on imports from Kazakhstan, Belarus, and Russia, combined with price increases and exchange rate fluctuations in these countries. That is why measures are being taken to stabilize prices, including the elimination of VAT on vegetable oil, flour, and wheat, as well as the introduction of export restrictions on certain goods (feed, onions, mineral fertilizers, etc.) (Ministry of Economy, 2024). Additionally, tools are being used to conclude agreements with market operators (producers, importers, and trading entities) to curb prices in the sugar and flour markets.

To effectively curb the rate of price growth for socially significant goods, measures should be implemented to create an enterprise or an agro-industrial cluster that manages the entire process from raw material production to finished product sales, according to the Action Plan. The Ministry of Economy (2024) also says that putting in place a single operator to coordinate and control supplies will help the export of these goods grow, standardize the export process, set uniform trading terms, and make sure that prices and volumes are always the same.

According to the Water Resources Service under the MWRAPI of the Kyrgyz Republic, as of 2022, in Kyrgyzstan, 8 subsidies and 3 economic measures have been identified in the agricultural sector:

- Subsidies for chemical control of locusts and plant protection
- State grants to seed farms
- Subsidies to breeding farms
- Implementation of anti-epizootic measures
- Subsidizing interest rates on credit funds (Agricultural Financing Program or 'Financing of Agriculture)
- Subsidizing tariffs for water supply services from state water management systems
- Land tax exemptions and benefits
- Income tax benefits
- Profit tax benefits
- Sales tax benefits
- Value-added tax (VAT) benefits

In details, the Government of the Kyrgyz Republic has implemented the '**Financing of agriculture'** Project since 2013. Its goal is to provide state support to entrepreneurs and individuals of the Kyrgyz Republic in timely conducting agricultural field work and

further developing livestock and crop production through accessible and preferential credit funds. The national budget of the Kyrgyz Republic for the respective years, as well as funds from commercial banks, are sources of financing. Throughout the project year, commercial banks provide financial resources to economic entities for livestock and crop farming development at preferential interest rates, adhering to Islamic banking and financing principles and meeting the requirements of the National Bank of the Kyrgyz Republic. The Cabinet of Ministers will use the Republican Budget funds to fund commercial banks' charter capital for the coming years. These banks will be able to offer loans and financing, including those that follow Islamic principles, at lower interest rates equal to the difference between the project interest rate and the weighted average interest rate for agriculture from the National Bank of the Kyrgyz Republic for the first 10 months of that year.

The original schedule for the project's completion was 2024. However, in response to requests from farmers, the Cabinet of Ministers of the Kyrgyz Republic adopted the "Financing of Agriculture - 12" project on January 26, 2024, initially with a 12% annual interest rate. Subsequently, amendments were made reducing the annual interest rate to 10%, with financing amounting to 5 billion soms. Currently, loans are issued through the joint-stock companies "Ayyl Bank" and "RSK Bank". Under this project, funding is provided to individual farmers up to 500,000 soms at a 10% annual interest rate (MWRAPI, 2024).

In addition to the above-mentioned project, farmers receive subsidies on diesel fuel for conducting spring fieldwork. The average market price in 2024 is 71.5 soms per liter. Farmers can purchase diesel fuel at a reduced price—only 63.5 soms per liter—through the State Material Reserves Fund (Akchabar, 2024).

### II.C.1.3.5. Progresses over climate-smart and digital agriculture

According to FAO's definition, climate-smart agriculture (CSA) is the strategy for reshaping and redirecting agricultural development in response to the new realities of climate change and food security (FAO, 2013). As of digital agriculture, such digital technologies as the Internet, mobile devices, data analytics, artificial intelligence, and digitally delivered services and apps are transforming agriculture and the food system (OECD, 2018).

As of digital agriculture, on April 5, 2024, the C**oncept of Digital Transformation of the Kyrgyz Republic for 2024-2028**[15] was accepted. As for agriculture, the Concept admits that AI can be used to develop new medical technologies, automate production processes in industry and agriculture.

In addition, the separate section of the Concept is dedicated to digital agriculture. Thus, the digitization of agriculture focuses on creating a comprehensive data system for the agricultural sector, enhancing productivity, resource efficiency, and product quality. Key initiatives include developing digital agricultural maps and registers for optimal land use, employing drones and satellite systems for precise field monitoring, and establishing

[15] https://cbd.minjust.gov.kg/30-164/edition/6414/ru

a unified system for tracking agricultural animals and products to ensure food safety and quality. Additionally, efforts encompass creating an accreditation information system to boost consumer trust, developing a halal product traceability system integrated with QR code technology, and implementing an irrigation monitoring system. Promoting public-private partnerships for digital services, training farmers in digital tools, and enacting supportive legal frameworks are also vital components aimed at improving rural economies and food security.

Regarding climate-smart agriculture, not so many activities have been realized yet. Nevertheless, some activities and agreements are accepted. Thus, the World Bank's Board of Executive Directors approved a $30 million financing for the Resilient Agri-food Clusters Development Project in the Kyrgyz Republic. This will be supplemented by a $5 million grant from the Global Agriculture and Food Security Program (GAFSP), making a total of $35 million. The project aims to improve the productivity and climate resilience of the country's dairy and horticulture agri-food clusters. The Resilient Agri-food Clusters Development Project in the Kyrgyz Republic aims to improve production quality, volumes, and market access for producers and processors by providing investment loans, training, and capacity building. It will also enhance seed systems, livestock breeding, and information management while promoting climate adaptation and mitigation through advanced technologies and practices. The project will use digital technologies for market information and climate-smart solutions.

The project will directly benefit 8,000 individuals, including farmers, producer groups, and small and medium processors, and indirectly benefit 20,000 people, including farming communities and broader rural populations. It is funded by the International Development Association (IDA) with a zero-interest loan to be repaid over 12 years, including a six-year grace period. Implementation will be managed by the MWRAPI and the Ministry of Finance, adhering to strict international standards and anti-corruption guidelines until 2029.[16]

The **Resilient Agri-food Clusters Development Project** in the Kyrgyz Republic aims to enhance productivity and climate resilience in selected agri-food clusters and provide effective crisis response. It comprises four components: investment in agri-food clusters through loans and partnerships, strengthening institutions and systems with a focus on training, seed improvement, and livestock breeding, supporting operational management and compliance, and a zero-dollar emergency response component to reallocate funds during crises. The project is designed to improve production quality, market access, and climate resilience while ensuring prompt responses to emergencies. The main implementation agencies are the MWRAPI and the Ministry of Finance.[17]

As of the private sector, it makes trainings for farmers providing information on how and which digital tools could be used in agriculture. They inform that digital advancements now allow comprehensive monitoring of plant cultivation and animal husbandry through smart devices that track soil conditions, vegetation growth, and microclimate. Mobile

[16]https://www.worldbank.org/en/news/press-release/2024/04/08/kyrgyz-republic-to-boost-productivity-and-climate-resilience-in-agriculture-with-world-bank-support

[17] https://projects.worldbank.org/en/projects-operations/project-detail/P178120

and online applications further assist farmers in optimizing planting and harvesting times, calculating fertilizer schemes, and predicting future yields.[18]

**The "Pasture Monitoring"**[19] mobile app is a valuable tool for pasture committees and forestry agencies. This program allows staff to observe and assess changes in land conditions in the spring before grazing and in the fall after livestock grazing. The online service enables users to create their own database of pastures and share it with specialists. To use the service, users are required to register, which makes their information publicly accessible. For unregistered users, the data is saved only on their smartphones. The app features a user-friendly interface, offers three language options (Kyrgyz, Russian, and English), and provides tools for precise monitoring and assessment. Users need to collect data on the vegetation cover and yield of the monitored area and mark its location on the map;

**The "Birlik"**[20] mobile app was developed by the Rural Development Fund (RDF) as part of the "Support for Green Agriculture by Local Communities – Go Green" project. Through this initiative, RDF assisted 16 farming communities across the country in cultivating and processing medicinal plants. The "Birlik" app, which functions as a marketplace, includes sections such as "El Bazaar" (a trading platform), "On the Map" (geolocation of communities), and "Communities" (information about farming communities). In the "Forum" section, farmers can share experiences, ask questions about growing and processing medicinal crops, and learn more about the Go Green project. The app also provides news and useful information, and it supports English, Russian, and Kyrgyz languages;

The UNDP supported the development of Kyrgyzstan's first mobile app for beekeepers, titled **"Beekeeping: Information at Your Fingertips"**[21] The app aims to increase beekeepers' awareness of the life and significance of bees, expand knowledge among the younger generation about honey products and processing procedures, and provide information on the key stages of the honey production and harvesting process. Now, beekeepers can access information on bee colony biology, breeds, the start of egg-laying, bee wintering, honey extraction, and other essential data for their work;

**"Tabiyat kenchi"**[22] mobile app helps to look into the "Treasure Trove of Nature" of Kyrgyzstan, realize its rich biodiversity, study more than 1000 species of animals and 3500 thousand plants, and find out which of them are protected under the "Red Book";

**"Aquatic organisms"**[23] mobile app is designed to collect information on water quality and study various organisms (macroinvertebrates), which are indicators of pollution levels in local rivers and lakes. The functions of the application allow you to record the location of organisms on a map, take photographs, include and save information,

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[18] https://isoc.kg/news/online-webinar-digital-agriculture/

[19] https://www.camp.kg/news/mobilnoe-prilozhenie-dlya-monitoringa-i-ocenki-sostoyaniya-pastbisch

[20] https://rdf.kg/directions/agriculture/tpost/kn6n17vol1-prilozhenie-birlik-v-podderzhku-fermeram

[21] https://24.kg/obschestvo/185822_vkyirgyizstane_razrabotali_prilojenie_dlya_pchelovodov/

[22] https://camp.kg/mobilnye-prilozheniya

[23] https://camp.kg/mobilnye-prilozheniya

and determine which group and (sub-)species the object in question belongs to. The app offers a detailed classification of living organisms found in local water bodies. The collected data is sent for storage to an online database that is available to all users of the app. The app makes it possible to analyze water quality by counting the number and species of organisms found in the water;

**"Plant Phenology"**[24] mobile app can be used to monitor the seasonal phases of plant development (phenophases), e.g. bud swelling and opening, flowering, and fruit ripening. Plants commonly observed are: poplar, birch, sea buckthorn, currant, rose hips and raspberries. A detailed description of each phenophase and plant can be found in the "Field Guide" section. Regular observation of the phenophases will help to track the dynamics of plant development depending on the climatic conditions in each region.

## SECTION II.C.2 AGRI-FOOD TRADE PROFILE

### II.C.2.1. Review of agri-food export-import (trade) policy in each country

#### II.C.2.1.1. Competitiveness of main agri-food products produced

According to WTO trade statistics, in 2022 the top exported and imported products were the following:

**Table II.C.12. Top Kyrgyzstan's exported and imported products**

| HS Code | Product Name | Export Value (Million US$) | Import Value (Million US$) |
|---|---|---|---|
| HS0713 | Dried leguminous vegetables | 87 | 51 |
| HS0104 | Live sheep and goats | 48 | |
| HS5201 | Cotton, not carded or combed | 37 | |
| HS0813 | Other fruit, dried | 33 | |
| HS1905 | Bread, pastry, other bakers' wares | 25 | |
| HS1701 | Cane or beet sugar | | 79 |
| HS2202 | Waters containing added sugar | | 77 |
| HS2005 | Other vegetables not frozen | | 71 |
| HS1001 | Wheat and meslin | | 58 |

Source:https://www.wto.org/english/res_e/statis_e/daily_update_e/trade_ profiles/KG_e.pdf

The data shows that dried leguminous vegetables (HS0713) have the highest export value at $87 million, while imports in this category are lower at $51 million. Live sheep

[24] https://camp.kg/mobilnye-prilozheniya

and goats (HS0104) and cotton (HS5201) are important export products, with values of $48 million and $37 million, respectively, and no corresponding import values listed, indicating a strong export market. Other fruit, dried (HS0813) and bread, pastry, and other bakers' wares (HS1905) also contribute notably to exports with $33 million and $25 million, respectively.

Cane or beet sugar (HS1701) tops the list with an import value of $79 million, followed closely by waters containing added sugar (HS2202) at $77 million, and other vegetables not frozen (HS2005) at $71 million. Wheat and meslin (HS1001) also represent a significant import category with a value of $58 million. The table highlights a contrast between the export and import profiles, with certain products, like dried leguminous vegetables, showing a competitive advantage in exports, while others, such as cane or beet sugar, indicate a dependence on imports.

If we look at trade statistics with each country separately, we can see that Kyrgyzstan has different trade relations with China, Russia, and Turkic countries.

**Table II.C.13. Export from Kyrgyzstan to Russia, thousand USD**

| HS | Name | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|
| 1 | Live animals | 137 | 116 | 161 | 30 | 93 |
| 2 | Meat & offal | 6 | 0 | 0 | 551 | 161 |
| 3 | Fish | 2485 | 5786 | 15307 | 17601 | 24874 |
| 4 | Dairy, eggs, honey | 27779 | 21097 | 23603 | 25086 | 5884 |
| 5 | Animal products | 0 | 0 | 0 | 375 | 0 |
| 6 | Trees | 114 | 111 | 43 | 19 | 23 |
| 7 | Vegetables | 14660 | 18774 | 20913 | 44808 | 20409 |
| 8 | Fruits | 25088 | 27506 | 59586 | 52778 | 50149 |
| 9 | Coffee, Tea | 215 | 31 | 20 | 352 | 594 |
| 10 | Cereals | 232 | 334 | 443 | 461 | 132 |
| 11 | Prod. of milling | 1 | 0 | 0 | 0 | 0 |
| 12 | Oil seeds | 63 | 104 | 225 | 396 | 803 |
| 13 | Lac., gums, … | 0 | 0 | 0 | 2 | 0 |
| 14 | Veg. plant. mat. | 1 | 2 | 10 | 8 | 0 |
| 15 | Fats & oils | 1 | 19 | 94 | 201 | 60 |
| 16 | Meat preparate. | 3 | 0 | 297 | 1610 | 3107 |
| 17 | Sugars, confect. | 45 | 82 | 68 | 136 | 1791 |
| 18 | Cocoa | 36 | 49 | 0 | 66 | 146 |
| 19 | Prep., pastry | 340 | 3425 | 6708 | 6246 | 5777 |
| 20 | Prep. of vegetab. | 935 | 1192 | 3672 | 2760 | 4048 |
| 21 | Miscellaneous | 1563 | 1601 | 832 | 427 | 347 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 22 | Beverages | 149 | 106 | 105 | 465 | 842 |
| 23 | Residues of foods | 0 | 88 | 1 | 10 | 362 |
| 24 | Tobacco | 488 | 247 | 382 | 482 | 699 |
| | **Total** | **74341** | **80670** | **132470** | **154870** | **120301** |

Source: TradeMap database

The data in Table 13 on Kyrgyzstan's exports to **Russia** from 2019 to 2023 reveals a dynamic and evolving trade relationship, with notable fluctuations across various product categories. Total exports increased significantly from **$74.34 million** in 2019 to a peak of **$154.87 million** in 2022, before dropping to **$120.30 million** in 2023

A standout category is fish exports, which experienced a remarkable surge over the five-year period. Starting at $2.5 million in 2019, fish exports grew consistently, reaching an impressive $24.9 million by 2023. Vegetables and fruits also played a significant role in Kyrgyzstan's export portfolio. Both categories saw substantial increases, particularly in 2022, with vegetable exports peaking at $44.8 million and fruit exports at $52.8 million. However, in 2023, both categories saw a decline. The dairy, eggs, and honey category showed strong performance up until 2022, but it faced a sharp drop in 2023, with exports falling to $5.9 million from $25.1 million the previous year. Meat and offal exports saw a dramatic increase in 2021 and 2022, following negligible exports in previous years. This category jumped from zero in 2020 to $551,000 in 2021 and $161,000 in 202. Another noteworthy trend is the sharp rise in sugar and confectionery exports, which jumped from $136,000 in 2022 to $1.8 million in 2023. In contrast, several smaller categories, such as cereals, oil seeds, and prepared vegetables, showed mixed trends. While some categories experienced growth, others remained stagnant or even declined, reflecting the varied demand and competitive landscape in these sectors.

**Table II.C.14. Kyrgyzstan's import from Russia, thousand. USD**

| HS | Name | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|
| 1 | Live animals | 374 | 4239 | 9417 | 2243 | 6301 |
| 2 | Meat & offal | 12502 | 7740 | 26527 | 16451 | 13671 |
| 3 | Fish | 4349 | 2090 | 1611 | 1996 | 3951 |
| 4 | Dairy, eggs, honey | 4900 | 6585 | 9151 | 17241 | 14643 |
| 5 | Animal products | 61 | 11 | 70 | 28 | 160 |
| 6 | Trees | 74 | 9 | 117 | 82 | 180 |
| 7 | Vegetables | 2212 | 11251 | 30684 | 27202 | 13963 |
| 8 | Fruits | 5868 | 2418 | 5613 | 5084 | 4394 |
| 9 | Coffee, Tea | 6017 | 6514 | 6894 | 7305 | 7581 |
| 10 | Cereals | 6419 | 21691 | 32997 | 82702 | 73590 |
| 11 | Prod. of milling | 5963 | 7711 | 8138 | 13740 | 9035 |
| 12 | Oil seeds | 747 | 678 | 773 | 9650 | 22588 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 13 | Lac., gums, … | 71 | 101 | 117 | 250 | 100 |
| 14 | Veg. plant. mat. | 0 | 2 | 2 | 19 | 6 |
| 15 | Fats & oils | 29061 | 33231 | 45465 | 78337 | 49871 |
| 16 | Meat preparate. | 4466 | 3014 | 3986 | 7203 | 7695 |
| 17 | Sugars, confect. | 8329 | 10044 | 15880 | 15212 | 35625 |
| 18 | Cocoa | 30764 | 22774 | 30991 | 33122 | 41694 |
| 19 | Prep., pastry | 36575 | 35044 | 39611 | 52037 | 52037 |
| 20 | Prep. of vegetab. | 7715 | 7337 | 10090 | 93088 | 19101 |
| 21 | Miscellaneous | 17393 | 17373 | 25576 | 25981 | 31650 |
| 22 | Beverages | 21378 | 17855 | 27407 | 37411 | 22660 |
| 23 | Residues of foods | 3793 | 2812 | 3434 | 11124 | 14650 |
| 24 | Tobacco | 9299 | 7101 | 10423 | 9500 | 14588 |
| | **Total** | **218330** | **227625** | **344974** | **547008** | **459734** |

Source: TradeMap database

Kyrgyzstan's agri-food imports from Russia have seen significant fluctuations in recent years. In 2023, Kyrgyzstan imported a total of $459.7million worth of agri-food goods from Russia, a decrease from the previous year's $547,0 million.

Cereals remained the largest import category, despite a decrease from $82.7 million in 2022 to $73.6 million in 2023. Cocoa imports increased from $33.1 million in 2022 to $41.7 million in 2023. Prepared foods, beverages, and tobacco products saw a slight decrease from $94.4 million in 2022 to $91 million in 2023. Fats and oils decreased from $78.3 million in 2022 to $49.9 million in 2023. Sugars and confectionery increased from $15.2 million in 2022 to $35.6 million in 2023.

The overall decrease in imports from Russia in 2023 can be attributed to various economic factors, including changes in trade policies, exchange rates, and global market conditions. However, Russia remains a significant agri-food trading partner for Kyrgyzstan.

**Table II.C.15. Kyrgyzstan's exports to China, thousand USD**

| | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Live animals | 805 | 125 | 0 | 200 | 177 |
| Meat & offal | 0 | 0 | 0 | 0 | 0 |
| Fish | 0 | 0 | 0 | 0 | 0 |
| Dairy, eggs, honey | 614 | 278 | 3 | 104 | 438 |
| Animal products | 281 | 9 | 258 | 179 | 193 |
| Trees | 0 | 0 | 0 | 0 | 1 |
| Vegetables | 0 | 38 | 0 | 0 | 0 |
| Fruits | 1472 | 1061 | 79 | 95 | 331 |

| | | | | | |
|---|---|---|---|---|---|
| Coffee, Tea | 1 | 1 | 0 | 0 | 0 |
| Cereals | 0 | 0 | 0 | 0 | 6 |
| Prod. of milling | 0 | 13 | 0 | 0 | 0 |
| Oil seeds | 422 | 73 | 191 | 77 | 61 |
| Lac., gums, … | 0 | 0 | 0 | 0 | 0 |
| Veg. plant. mat. | 0 | 1 | 0 | 0 | 0 |
| Fats & oils | 3 | 38 | 0 | 0 | 0 |
| Meat preparate. | 16 | 93 | 89 | 194 | 74 |
| Sugars, confect. | 31 | 58 | 42 | 0 | 49 |
| Cocoa | 69 | 36 | 9 | 0 | 59 |
| Prep., pastry | 224 | 121 | 30 | 0 | 160 |
| Prep. of vegetab. | 48 | 3 | 0 | 0 | 1 |
| Miscellaneous | 0 | 90 | 1 | 0 | 0 |
| Beverages | 421 | 164 | 196 | 116 | 1159 |
| Residues of foods | 40 | 0 | 0 | 0 | 0 |
| Tobacco | 21311 | 11682 | 16478 | 854 | 276 |
| **Total** | **25758** | **13884** | **17376** | **1819** | **2985** |

Source: TradeMap database

Kyrgyzstan's agricultural exports to China have shown varied trends from 2019 to 2023. In 2023, the total agricultural exports to China amounted to approximately $2.9 million, reflecting a notable increase from $1.8 million in 2022. However, in 2019 the export value to China was much bigger – $25.8 million. The highest proportion of exports consisted of tobacco.

**Table II.C.16. Kyrgyzstan's import from China, thousand USD**

| | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Live animals | 0 | 0 | 0 | 0 | 0 |
| Meat & offal | 3056 | 1080 | 474 | 3525 | 12911 |
| Fish | 266 | 63 | 68 | 555 | 92 |
| Dairy, eggs, honey | 1 | 0 | 1 | 0 | 19 |
| Animal products | 0 | 0 | 0 | 75 | 0 |
| Trees | 18 | 0 | 1 | 3 | 68 |
| Vegetables | 2434 | 483 | 1910 | 1655 | 3597 |
| Fruits | 29610 | 9927 | 18353 | 27597 | 70236 |
| Coffee, Tea | 1171 | 1229 | 1915 | 1084 | 1499 |
| Cereals | 224 | 179 | 86 | 162 | 273 |
| Prod. of milling | 377 | 282 | 1259 | 289 | 87 |

| | | | | | |
|---|---|---|---|---|---|
| Oil seeds | 935 | 663 | 830 | 1306 | 2434 |
| Lac., gums, … | 9 | 88 | 23 | 125 | 56 |
| Veg. plant. mat. | 1 | 11 | 0 | 8 | 23 |
| Fats & oils | 13 | 10 | 236 | 143 | 215 |
| Meat preparate. | 212 | 82 | 0 | 142 | 122 |
| Sugars, confect. | 314 | 143 | 369 | 899 | 1879 |
| Cocoa | 189 | 135 | 124 | 196 | 648 |
| Prep., pastry | 134 | 34 | 197 | 284 | 377 |
| Prep. of vegetab. | 1284 | 1348 | 802 | 2088 | 4504 |
| Miscellaneous | 3218 | 1798 | 3699 | 4058 | 3680 |
| Beverages | 155 | 101 | 135 | 277 | 162 |
| Residues of foods | 135 | 36 | 22 | 623 | 205 |
| Tobacco | 2868 | 1905 | 573 | 1325 | 4589 |
| **Total** | **46624** | **19597** | **31077** | **46419** | **107676** |

Source: TradeMap database

Imports of agri-food from China prevail over exports to China. The overall dynamics show that Kyrgyzstan is importing more values from China. If import in 2019 was equivalent to $46.6 million USD, then in 2023 it was $107.7 million USD. Overall, Kyrgyzstan's imports of agri-food products from China have shown substantial growth, particularly in fruits, vegetables, and meat & offal. Vegetable imports showed substantial growth from $2.4 million in 2019 to $3.6 million in 2023, indicating a steady increase in demand. Fruit imports also grew significantly, from $29.6 million in 2019 to a substantial $70.2 in 2023, demonstrating a marked increase in the demand for Chinese fruits.

If comparing Kyrgyzstan's trade with Turkish countries in 2023, one can see the following:

**Table II.C.17. Kyrgyzstan's export to OTS**

| | Export to Kazakhstan | Export to Azerbaijan | Export to Turkiye | Export to Uzbekistan |
|---|---|---|---|---|
| Live animals | 1724 | 0 | 2 | 52098 |
| Meat & offal | 895 | 0 | 0 | 0 |
| Fish | 629 | 0 | 0 | 43 |
| Dairy, eggs, honey | 22606 | 90 | 0 | 2616 |
| Animal products | 119 | 0 | 1021 | 0 |
| Trees | 492 | 16 | 0 | 91 |

| | | | | |
|---|---|---|---|---|
| Vegetables | 5578 | 601 | 19458 | 6304 |
| Fruits | 5565 | 846 | 640 | 3768 |
| Coffee, Tea | 798 | 13 | 0 | 63 |
| Cereals | 503 | 0 | 0 | 2422 |
| Prod. of milling | 0 | 0 | 0 | 572 |
| Oil seeds | 64 | 181 | 125 | 112 |
| Lac., gums, … | 3 | 0 | 10 | 0 |
| Veg. plant. mat. | 0 | 0 | 0 | 0 |
| Fats & oils | 101 | 0 | 0 | 189 |
| Meat preparate. | 990 | 9 | 135 | 19 |
| Sugars, confect. | 617 | 1 | 0 | 16 |
| Cocoa | 221 | 5 | 0 | 592 |
| Prep., pastry | 26801 | 185 | 13 | 1540 |
| Prep. of vegetab. | 2893 | 0 | 64 | 1762 |
| Miscellaneous | 7074 | 0 | 84 | 109 |
| Beverages | 8679 | 0 | 0 | 2347 |
| Residues of foods | 580 | 0 | 57 | 41 |
| Tobacco | 1 | 0 | 0 | 6 |
| **Total** | **86933** | **1947** | **21609** | **74710** |

Source: TradeMap database

Kyrgyzstan's total agri-food exports are highest to Kazakhstan ($86.9 million), followed by Uzbekistan ($74.7 million), Turkiye ($21.6 million), and Azerbaijan ($1.9 million). This indicates Kazakhstan and Uzbekistan are the primary markets for Kyrgyzstan's agri-food exports. Kyrgyzstan exports a significant amount of live animals to Uzbekistan ($52.1 million), with much smaller amounts to Kazakhstan ($1.7 million) and minimal exports to Turkiye ($2,000) and Azerbaijan ($0). Vegetable exports are highest to Türkiye ($19.5 million), followed by Kazakhstan ($5.6 million) and Uzbekistan ($6.3 million). Fruit exports are highest to Kazakhstan ($5.6 million) and lowest to Türkiye ($640,000). Cereal exports are primarily to Uzbekistan ($2.4 million), with minimal amounts to other countries. Beverage exports are highest to Kazakhstan ($8.7 million) and Türkiye ($2.3 million). Preparations and pastries are most exported to Kazakhstan ($26.8 million), with significant amounts also going to Uzbekistan ($1.5 million).

**Table II.C.18. Kyrgyzstan's import from OTS countries, thousand USD**

| | Import from Azerbaijan | Import from Kazakhstan | Import from Türkiye | Import from Uzbekistan |
|---|---|---|---|---|
| Live animals | 10 | 837814 | 1 | 530 |
| Meat & offal | 0 | 1427 | 163 | 0 |
| Fish | 0 | 15531 | 0 | 0 |
| Dairy, eggs, honey | 27 | 48 | 442 | 502 |
| Animal products | 0 | 12769 | 13 | 166 |
| Trees | 56 | 0 | 399 | 440 |
| Vegetables | 0 | 327 | 195 | 15977 |
| Fruits | 9 | 5689 | 5215 | 27010 |
| Coffee, Tea | 0 | 4035 | 227 | 666 |
| Cereals | 0 | 3457 | 3371 | 106 |
| Prod. of milling | 0 | 8413 | 21 | 35 |
| Oil seeds | 24 | 25269 | 150 | 556 |
| Lac., gums, … | 0 | 11955 | 1 | 0 |
| Veg. plant. mat. | 0 | 132 | 0 | 0 |
| Fats & oils | 666 | 8 | 246 | 654 |
| Meat preparate. | 26 | 17994 | 15 | 28 |
| Sugars, confect. | 1880 | 763 | 2362 | 945 |
| Cocoa | 278 | 4635 | 923 | 1441 |
| Prep., pastry | 0 | 10066 | 1438 | 5349 |
| Prep. of vegetab. | 1 | 13306 | 1641 | 1734 |
| Miscellaneous | 0 | 8157 | 3248 | 1947 |
| Beverages | 0 | 21916 | 307 | 4574 |
| Residues of foods | 44 | 69635 | 2913 | 0 |
| Tobacco | 0 | 6684 | 157 | 2913 |
| **Total** | **3021** | **43005** | **23448** | **65573** |

Source: TradeMap database

Kyrgyzstan's total agri-food imports are highest from Uzbekistan ($65.6 million), followed by Turkiye ($23.4 million), Kazakhstan ($43.0 million), and Azerbaijan ($3.0 million). This distribution indicates that Uzbekistan is the leading supplier of agri-food products to Kyrgyzstan, with Türkiye and Kazakhstan also being important sources. Uzbekistan dominates vegetable imports, accounting for $16.0 million, while Kazakhstan ($327,000) and Türkiye ($195,000) make smaller contributions. For fruits, Uzbekistan again is the leading supplier ($27.0 million), followed by Turkiye ($5.2 million) and Kazakhstan ($5.7 million). This indicates a strong dependence on Uzbekistan for both vegetables and fruits. Kyrgyzstan's agri-food imports are heavily reliant on Uzbekistan for vegetables and fruits, while Kazakhstan is a major supplier of live animals, fish, and certain other products. Turkiye plays a significant role in supplying dairy products, cereals, and fats & oils, whereas Azerbaijan's contributions are relatively minor across the categories.

According to the tables, among OTS countries, Kyrgyzstan has the strongest agri-food trade relations with its neighbors, Kazakhstan and Uzbekistan, with Russia remaining an important trade partner for the regions as well.

### II.C.2.1.2. Export promotion policy, diversification of export geography

Kyrgyzstan is leveraging its membership in the WTO and Eurasian Economic Union to access larger regional markets in China, Russia, Kazakhstan, Belarus and Armenia, with a combined population of 180 million.

Under the EU's GSP+ program, Kyrgyzstan can export 6,200 product lines duty-free to the EU market, providing an opportunity to diversify its export destinations.

Kyrgyzstan also tries to establish trade exports to China. The main agricultural exports from Kyrgyzstan to China include wheat flour, fruits like cherries, melons and grapes, soybeans, and livestock products like dairy, meat, hides and honey.

As of trade with Turkey, trade turnover between two countries increased by 30% compared to 2022, and amounted to about 1.34 billion U.S. dollars, according to the Ambassador of the Kyrgyz Republic in Turkey Ruslan Kazakbaev.[25]

Initiatives like USAID's Agro Trade project aim to increase cross-border trade, particularly between southern Kyrgyzstan and the Ferghana Valley (Uzbekistan), to connect enterprises to growing regional consumer demand[26].

### II.C.2.1.3. Import promotion or restriction measures

On June 5, 2024, Kyrgyzstan introduced a temporary six-month ban on the import (except for re-export, transit of eggs through the Kyrgyz Republic, and movement from one EAEU member state to another within its territory) into the Kyrgyz Republic of fresh chicken eggs (classified under codes 0407, 0408 of the Eurasian Economic Union's HS codes) (Ministry of Justice, 2024).

[25] https://orasam.manas.edu.kg/index.php/en/kirgizistan-2/7615-trade-between-kyrgyzstan-and-turki-ye-grows-by-30-i-n-2023#

[26] https://www.usaid.gov/ru/kyrgyz-republic/fact-sheets/usaid-agrotrade-project#

### II.C.2.1.4. Dependence on external markets.

According to OCHA data, the Kyrgyz Republic relies heavily on imports for its agricultural needs: 30 percent for wheat, 84 percent for vegetable oil, and 37 percent for sugar. Of these imported goods, 95 percent of wheat, 81 percent of vegetable oil, and 99 percent of sugar are sourced from the Russian Federation (ReliefWeb, 2022). This makes Kyrgyzstan vulnerable to global food price fluctuations and supply chain disruptions, as seen during the Ukraine-Russia war.

Kyrgyzstan is heavily dependent on imports of key agri-food products from neighboring Kazakhstan. Kyrgyzstan imports around 60% of its wheat, a significant portion of its sugar, and 90% of its meat from Kazakhstan, Belarus, Russia and Ukraine. The country also relies on Kazakhstan for a large share of its vegetable oil and dairy product imports.

### II.C.2.1.5. Certification procedures in each country.

When exporting, in general, the company should obtain the following certificates:

1) Obtain phytosanitary certificate from the regional office of Department of Chemicalization, Protection and Quarantine of Plants;
2) Obtain certificate of origin from the Chamber of Commerce and Industry;
3) Obtain registered conformity declaration from Bishkek Center for Testing, Certification and Metrology;
4) In case of exporting veterinary products, the company should obtain veterinary certificate from the regional office of Veterinary Service

A major information support is provided by the Info Trade Central Asia Gateway (Central Asia Gateway)[27] portal which offers direct access to comprehensive step-by-step guides on licenses, pre-clearances, permits and customs clearance procedures for most traded goods within, to and from Central Asia. It automatically extracts data from the national trade facilitation portals of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, displaying detailed information on export, import and transit procedures for various modes of transport, including road, rail, sea and air. For each procedure, it provides users with key information such as contact persons, required documents, forms, associated costs, legal justifications and avenues for addressing issues..

### II.C.2.1.6. Impact of WTO rules over agri-food trade

As a WTO member since 1998, Kyrgyzstan is required to align its sanitary and phytosanitary (SPS) measures with international standards to facilitate agricultural trade. However, Kyrgyz food processors and farmers have faced major challenges in adopting

[27] https://info.trade.kg/?l=ru

modern risk-based food safety management systems like HACCP to meet WTO/EAEU SPS requirements.

Additionally, WTO membership has provided Kyrgyzstan with opportunities to access larger regional markets like the Eurasian Economic Union and the EU through preferential trade agreements.

Overall, WTO membership has provided Kyrgyzstan with opportunities to expand its agricultural trade.

### II.C.2.1.7. Disruptions in supply chains and cross-border trade between Turkic countries

The Kyrgyzstan Cabinet of Ministers has imposed a temporary three-month ban on the export of certain types of onions starting January 31, 2023, to ensure food security and control prices of socially significant food products. The affected products include **bulb onions, shallots, leeks, and other fresh or chilled bulb vegetables**. This decision follows a proposal by the MWRAPI due to significant price increases attributed to exports to Uzbekistan and crop losses from frost (IA 'Tazabek', 2023).

The Cabinet of Ministers of Kyrgyzstan has issued a resolution imposing a temporary six-month ban on the export of certain agricultural products to ensure food security and stabilize market prices. The ban, effective from September 22, 2023, applies to wheat and meslin (HS 1001), and wheat flour (HS 1101 00). Exceptions to the ban include re-exports, transit, and humanitarian aid provided by the Cabinet of Ministers (The Cabinet of Ministers, 2023).

According to the MWRAPI on September 5, 2023 (IA 'Tazabek', 2023b), introduced the temporary export ban, lasting six months (with exceptions for re-export, transit, and humanitarian aid provided by the Cabinet of Ministers of the Kyrgyz Republic), applied to the following goods:

1. Feeds (hay, straw, compound feed, bran, and grain feed) - HS codes 1214 90 900 0, 2302
2. Barley - HS code 1003 10 000 0
3. Rice - HS code 1006 10 100 0
4. Oats - HS code 1004 10 000 0

Various factors, including changes in customs regulations, economic policies, and security concerns, periodically impose transport restrictions between Kyrgyzstan and Kazakhstan. These restrictions disrupt the flow of goods and people, impacting trade and logistics.

Fortunately, considering the consultations held and the exchange of relevant letters, the parties agreed to implement a set of adopted measures without introducing restrictions and bans on the circulation of products accompanied by unified conformity assessment documents issued by the conformity assessment bodies of Kazakhstan and Kyrgyzstan (IA '24.kg', 2024).

## SECTION II.C.3 SDGS PROGRESS

### II.C.3.1. The contribution of food production and food security to fulfilling the SDG' targets.

#### II.C.3.1.1. Overall review of SDGs related to food security

The government has integrated the SDGs into national policies, such as the National Development Strategy 2040 and the National Development Programme 2026. Significant advancements have been made in areas such as poverty reduction, education, climate change, green economy promotion, food security, human rights, and gender equality. The country's first Voluntary National Review in 2020 and the establishment of a National SDG Coordinating Committee demonstrate a structured approach to SDG implementation. Moreover, the UN in Kyrgyzstan continues to support these efforts, emphasizing a collaborative approach involving civil society, the private sector, and development partners.

To oversee and track the implementation of the SDGs in Kyrgyzstan, the former Coordination Committee for the Achievement of the MDGs has been restructured into the Coordination Committee for Adaptation, Implementation, and Monitoring of SDGs until 2030. This committee comprises members from the Parliament (Jogorku Kenesh), government, ministries, academia, UN agencies, and NGOs, operating directly under the Prime Minister. The Government Office of the Kyrgyz Republic serves as the committee's secretariat.

The KR Ministry of Economy and Commerce is tasked with policy coordination, while the National Statistics Committee is responsible for organizing the compilation of SDG indicators and establishing the National Reporting Platform (NRP) to disseminate these indicators. In 2018, the United Nations Statistics Division (UNSD) collaborated with the National Statistical Committee of Kyrgyzstan to evaluate the country's capacity to monitor SDG indicators. This assessment identified 39 indicators as immediately available, with an additional 56 as feasible to produce. Consequently, Kyrgyzstan was deemed ready to provide 95 global SDG indicators, covering 46% of all applicable indicators. The primary aim of this assessment was to guide the development of an indicator framework for tracking SDG progress in Kyrgyzstan.

Kyrgyzstan presented its first Voluntary National Review (VNR) at the High-Level Political Forum in New York in July 2020. In preparation for this, the government established five working groups in 2019, comprising experts from state ministries and agencies, civil society organizations (CSOs), the private sector, and the United Nations system. These groups focused on the three pillars of sustainable development—economic, social, and environmental—as well as two cross-cutting issues: monitoring and evaluation, and governance and security. The Vice President of Kyrgyzstan led the Coordination Commission in overseeing the VNR process.

According to the Sustainable Development Report 2023, the Kyrgyz Republic ranked 48th out of 166 countries studied, with a score of 74.19 in the Sustainable Development Goals indicators[28]. The Statistical Performance Index is equivalent to 81.5 (out of 100).

Here is the detailed analysis of each SDG related to agriculture, where data are retrieved from the https://dashboards.sdgindex.org/ website[29].

### SDG 1: No Poverty

| Indicator | Value | Status |
|---|---|---|
| Poverty headcount ratio at $2.15/day (2017 PPP, %) | 1.1 | SDG achieved |
| Poverty headcount ratio at $3.65/day (2017 PPP, %) | 7.8 | Score moderately improving, insufficient to attain goal |

The commitment to SDG 1 in Kyrgyzstan reflects a broader goal of improving living conditions and reducing poverty through targeted interventions and inclusive economic policies.

### SDG 2: Zero Hunger

| Indicator | Value | Status |
|---|---|---|
| Prevalence of Undernourishment (%) | 4.8% | SDG achieved |
| Prevalence of Stunting in Children Under 5 Years of Age (%) | 11.8% | Significant challenges remain |
| Prevalence of Wasting in Children Under 5 Years of Age (%) | 2.0% | SDG achieved |
| Prevalence of Obesity (BMI ≥ 30 % of Adult Population) | 26.6% | Major challenges remain |
| Human Trophic Level (Best 2–3, Worst) | 2.3 | Score stagnating or increasing at less than 50% of required rate |
| Cereal Yield (Tons per Hectare of Harvested Land) | 3.2 | SDG achieved |
| Sustainable Nitrogen Management Index (Best 0–1.41 Worst) | 0.7 | Major challenges remain |
| Exports of Hazardous Pesticides (Tons per Million Population) | 0.2 | SDG achieved |

[28] https://dashboards.sdgindex.org/rankings
[29] https://dashboards.sdgindex.org/static/profiles/pdfs/SDR-2024-kyrgyz-republic.pdf

Overall, the major challenges of SDG 2 remain: the score either stagnates or increases at less than 50% of the required rate.

While Kyrgyzstan has made progress in reducing hunger and improving food security, challenges remain in addressing malnutrition, both undernutrition and overnutrition. Promoting sustainable agriculture, supporting small-scale farmers, and ensuring equal access to land, technology, and markets can help further progress towards SDG 2.

### SDG 5: Gender Equality

| Indicator | Value | Status |
|---|---|---|
| Demand for Family Planning Satisfied by Modern Methods (% of Females Aged 15 to 49) | 67.5% | Significant challenges remain |
| Ratio of Female-to-Male Mean Years of Education Received (%) | 98.6% | SDG achieved |
| Ratio of Female-to-Male Labor Force Participation Rate (%) | 67.7% | Challenges remain<br>Score decreasing |
| Seats Held by Women in National Parliament (%) | 21.1% | Significant challenges remain<br>Score decreasing |

Overall, SDG 5: Significant challenges remain - score stagnating or increasing at less than 50% of required rate.

Although Kyrgyzstan has made progress in advancing gender equality, challenges remain in ensuring equal access to reproductive health services, reducing the gender gap in economic participation, and increasing women's representation in political leadership. Addressing these challenges requires a comprehensive approach that includes policy reforms, targeted interventions, and changing social norms.

### SDG 6: Clean Water and Sanitation

| Indicator | Value | Status |
|---|---|---|
| Population Using at Least Basic Drinking Water Services (%) | 90.8% | Score moderately improving, insufficient to attain goal |
| Population Using at Least Basic Sanitation Services (%) | 97.9% | SDG achieved |
| Freshwater Withdrawal (% of Available Freshwater Resources) | 50.0% | Score stagnating or increasing at less than 50% of required rate |
| Anthropogenic Wastewater That Receives Treatment (%) | 8.6% | Major challenges remain |
| Scarce Water Consumption Embodied in Imports ($m^3$ H2O eq/capita) | 255.3 | SDG achieved |

Overall, SDG 6: Significant challenges remain: score stagnating or increasing at less than 50% of required rate

Kyrgyzstan has made progress in providing access to clean water and sanitation. However, challenges in sustainable water management and wastewater treatment remain. Addressing these issues will require investments in infrastructure, improved water governance, and policies that promote efficient water use.

### SDG 10: Reduced Inequalities

| Indicator | Value | Status |
|---|---|---|
| Gini Coefficient | 29.0 | SDG achieved |
| Palma Ratio | 1.1 | Challenges remain<br>Score moderately improving, insufficient to attain goal |

While Kyrgyzstan has made significant progress in reducing inequalities, as evidenced by the low Gini coefficient and Palma ratio, challenges remain in ensuring equal access to opportunities and resources for all segments of the population.

### SDG 12: Responsible Consumption and Production

| Indicator | Value | Status |
|---|---|---|
| Municipal Solid Waste (kg/capita/day) | 0.5 | N/A; |
| Electronic Waste (kg/capita) | 1.5 | N/A; |
| Production-Based Air Pollution (DALYs per 1,000 Population) | 3.6 | Challenges remain;<br>Score moderately improving, insufficient to attain goal; |
| Air Pollution Associated with Imports (DALYs per 1,000 Population) | 1.8 | SDG achieved;<br>Score stagnating or increasing at less than 50% of required rate; |
| Production-Based Nitrogen Emissions (kg/capita) | 17.7 | SDG achieved; |
| Nitrogen Emissions Associated with Imports (kg/capita) | 5.1 | SDG achieved;<br>Score stagnating or increasing at less than 50% of required rate; |
| Exports of Plastic Waste (kg/capita) | 0.3 | SDG achieved;<br>Score stagnating or increasing at less than 50% of required rate; |

Overall, SDG 12: Challenges remain: score stagnating or increasing at less than 50% of required rate

Kyrgyzstan faces challenges in managing waste, air pollution, and nitrogen emissions, which affect environmental sustainability and public health. There is an opportunity to improve waste management systems, promote recycling, and implement sustainable production practices.

### SDG 14: Life Below Water

Not applicable

### SDG 15: Life on Land

| Indicator | Value | Status |
|---|---|---|
| Mean Area That Is Protected in Terrestrial Sites Important to Biodiversity (%); | 23.6% | Major challenges remain; Score stagnating or increasing at less than 50% of required rate |
| Mean Area That Is Protected in Freshwater Sites Important to Biodiversity (%); | 35.4% | Major challenges remain; Score stagnating or increasing at less than 50% of required rate |
| Red List Index of Species Survival (Worst 0–1, Best); | 0.89 | Challenges remain; Score stagnating or increasing at less than 50% of required rate |
| Permanent Deforestation (% of Forest Area, 3-Year Average); | 0.0% | SDG achieved; On track or maintaining SDG achievement |
| Imported Deforestation ($m^2$/capita); | 0.3 | SDG achieved; On track or maintaining SDG achievement |

Overall, SDG 15: Major challenges remain: score stagnating or increasing at less than 50% of required rate

Kyrgyzstan faces challenges in enhancing biodiversity and protecting ecosystems, as evidenced by low estimates of protected area coverage. There are opportunities to strengthen conservation policy, increase the area of protected areas and promote sustainable land management practices.

Based on the data presented in the tables, Kyrgyzstan has made progress in several areas related to the Sustainable Development Goals, but challenges remain in achieving the 2030 goals. The country has relatively low poverty, high levels of education and equitable income distribution, as evidenced by the Gini coefficient and Palm coefficient for SDG 1 and SDG 10. However, issues persist in addressing malnutrition, both undernutrition and overnutrition, as well as ensuring equal access to economic opportunities for women under SDG 2 and SDG 5. Kyrgyzstan has achieved high coverage of basic drinking water and sanitation services, but sustainable water management and wastewater treatment remain a concern under SDG 6. While the country has low levels of municipal solid waste generation and plastic waste exports, there are challenges in managing air pollution, nitrogen emissions and e-waste under SDG 12. Biodiversity conservation also requires attention: protected areas need to be expanded and the survival rate of species in protected areas needs to be increased.

### II.C.3.1.2. Countries' resilience towards challenges (Climate Change Convention indicators)

Kyrgyzstan is vulnerable to climate change.. The country heavily relies on melting glaciers for water, which is used in farming and energy. Natural resources play a crucial role in the livelihoods of rural communities. However, there is no data showing that the country has implemented CCC indicators.

Global climate indicators include a variety of parameters that comprehensively reflect climate change beyond temperature. They include basic data on such critical aspects as temperature and energy dynamics, atmospheric composition, ocean state, water systems and the cryosphere.

This year, an unprecedented number of mudflows descended in Kyrgyzstan, the highest number in the country's history. The main reasons for this increase are related to the effects of climate change, which has led to more frequent and intense precipitation, as well as problems in the country's irrigation systems. Poor water management and crumbling infrastructure have exacerbated the situation, making the land more susceptible to erosion and sudden debris flows. All these factors have combined to create a challenging environment for both rural and urban areas, increasing the risk of environmental disasters across the country.

Thus, frequent climate disasters will push the Kyrgyz government to take an active role in addressing climate change.

### II.C.3.1.3. Collaboration of Turkic countries with the Organization of Turkic States in achieving related targets in Turkic World Vision-2040

The collaboration of Kyrgyzstan with the Organization of Turkic States (OTS) within the framework of the Turkic World Vision-2040 offers significant opportunities for advancing the country's development objectives.

This strategic partnership aims to improve Kyrgyzstan's economic prospects by facilitating increased trade and investment flows in the region. Through joint initiatives and projects, Kyrgyzstan can benefit from improved infrastructure, diversification of its economy, and support for small and medium-sized enterprises (SMEs).

In addition, the OTC promotes cultural and educational exchanges that can strengthen mutual understanding and preserve common heritage among member states. For Kyrgyzstan, this cooperation means closer academic and cultural partnerships that can enrich its educational landscape and foster deeper cultural ties.

Politically, the OTC serves as a platform for Kyrgyzstan to engage in regional diplomacy and address common challenges, thereby enhancing its influence and contributing to regional stability. The organization's support for policy reforms and cooperation strategies can help Kyrgyzstan effectively navigate complex regional dynamics.

Technological and scientific cooperation within the OTC can also contribute to the

development of Kyrgyzstan's innovative capabilities. By engaging in joint research and development projects, Kyrgyzstan can use shared expertise to address local challenges and accelerate technological progress.In addition, the focus on developing tourism and connections between Turkic countries provides opportunities for Kyrgyzstan to attract more tourists and improve regional transport links. This can contribute to economic growth and strengthen cultural ties in the region.

The Turkic World Vision 2040 advocates the promotion of sustainable agriculture, self-sufficiency and food security in the Organization of Turkic States region. It also aims to strengthen agricultural cooperation through capacity building initiatives and technology transfer programs with a special focus on environmentally friendly, sustainable and organic farming practices. In addition, the Vision encourages effective cooperation with international organizations in the agricultural sector.In addition, Kyrgyzstan engages various stakeholders, including public and private institutions, academia, civil society organizations, and farmers' associations, in efforts to promote sustainable agriculture. The country also actively promotes organic farming as a method of producing food using natural substances and processes.

Kyrgyzstan has established organic certification systems and supports farmers in adopting organic farming practices. However, the monitoring and enforcement system is still evolving and could be further strengthened. Kyrgyzstan is working to align its rural development programs with sustainable practices. This includes promoting modern agricultural practices and innovative technologies to increase productivity while minimizing environmental impacts. This is done through Kyrgyzstan's active cooperation with international organizations such as the Food and Agriculture Organization (FAO), the International Fund for Agricultural Development (IFAD), and the United Nations Development Programme (UNDP). This cooperation helps Kyrgyzstan implement projects that promote sustainable agricultural practices and rural development.

Overall, Kyrgyzstan's agricultural policy is aligned with the Turkic World Vision 2040, allowing the country to leverage regional cooperation to achieve its development goals while contributing to the broader vision of a united and prosperous Turkic world.

## SECTION II.C.4. EXTERNAL FACTORS

### II.C.4.1. External factors with impact potential on food security

#### II.C.4.1.1. Impact of the Trans-Caspian International Transport Route (Middle-Corridor) on regional food security;

Kyrgyzstan's railroad consists of two sections: the **northern section** is 323.4 km, from Balykchy to Turksib (Kazakhstan) and the **southern section** is 101.2 km, providing access from Kyrgyzstan to the railway networks of neighboring states Kazakhstan and Uzbekistan.

The first proposal for the construction of this road appeared in 1997. Negotiations on the construction of the China-Kyrgyzstan-Uzbekistan railroad began around 2012-2013. The project gained momentum under China's Belt and Road Initiative (BRI), which was officially launched in 2013. The initiative aims to expand trade routes and economic ties between China and various regions, including Central Asia. Initial discussions focused on feasibility studies, route planning, and the geopolitical and economic implications of the railroad.

A tripartite intergovernmental agreement on cooperation in jointly promoting the China-Kyrgyzstan-Uzbekistan railway project was signed on **June 6, 2024** in Beijing.On June 20, 2024 Kyrgyzstan's government ratified the agreement. The main route selected during negotiations was Kashi (China)–Torugart–Arpa Valley–Makmal–Jalal-Abad–Kara-Suu–Andijan (Uzbekistan).

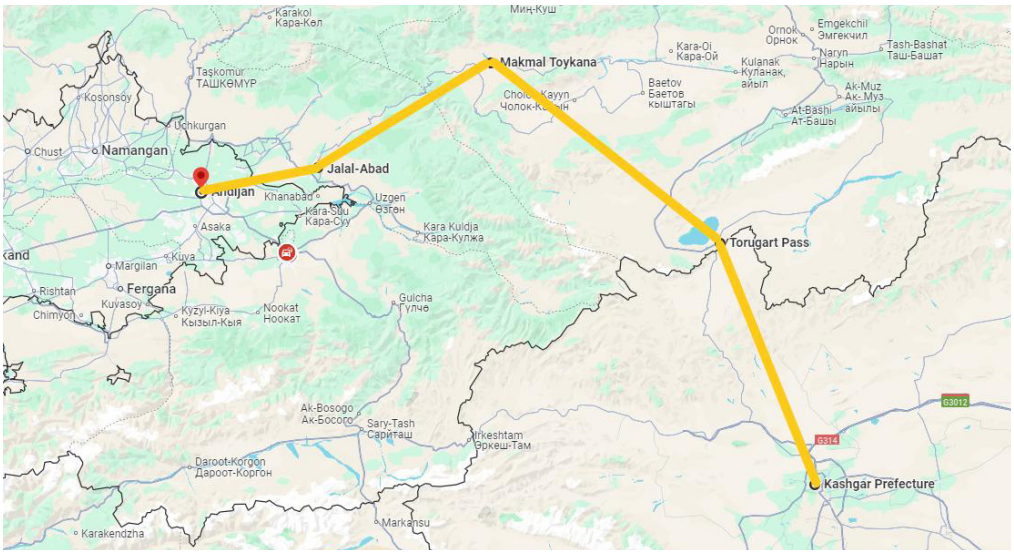


***Figure II.C.6. An approximate route of was Kashgar (China)–Torugart–Arpa Valley–Makmal–Jalal-Abad–Kara-Suu–Andijan (Uzbekistan) railroad***

Source: KaktusMedia. The outlined route is approximate

The **track gauge** from Torugart to Makmal was agreed to be **1,435 mm** - a narrow gauge by Chinese standards. And in the Makmal area, there will be a break-of-gauge station for changing bogies and handling goods and containers (as well as for other operations such as weighing goods, making up and breaking up trains, changing locomotives, sorting containers, etc.), from which the track gauge will be **1,520 mm**.

China holds a controlling stake in the project, covering 51 percent of the construction costs. Kyrgyzstan and Uzbekistan contribute 24.5 percent each. Chinese companies are tasked with building the railroad in Kyrgyzstan, where Kyrgyzstan has granted China certain privileges, including visa and tax exemptions for Chinese workers and equipment

involved in the project (EurasiaNet, 2024).

Overall, the project faces a number of challenges, including difficult mountainous terrain, high construction costs, and the need for coordination among the three participating countries. In addition, geopolitical factors and environmental concerns may affect the progress of the project..

Kyrgyzstan is not directly related to the Middle Corridor, as the route does not pass through the territory of the republic. However, Kyrgyzstan is interested in its development as the Middle Corridor affects the country slightly through its connection to Almaty, which is part of the corridor. Kyrgyzstan imports goods, including agro-food products, from Kazakhstan and thus benefits from the corridor.


***Figure II.C.7. Kyrgyzstan's participation in TRACECA***

Source: TRACECA website

### II.C.4.1.2. Impact of Russia-Ukraine conflict on regional food security

The Russia-Ukraine conflict led to an increase in prices worldwide. Energy resources and food became more expensive. In the post-Soviet states, a shortage of goods and inflation occured. Kyrgyzstan was not an exception.

The restrictions on the sale of grain, introduced by Russia in 2022, have affected Kyrgyzstan the most - the average prices for bread in the country have increased from 20 to 27-30 soms (NSC KR, 2022). In this regard, the price of a kilogram of first grade flour has increased from 41 to 49 soms since the beginning of the year. By the end of March 2022, Russia banned the export of sunflower seeds and imposed quota restrictions on

fodder and vegetable oil. As a result, vegetable oil prices reached 200 soms per liter. Overall, prices in Kyrgyzstan increased by 51.8% from 2018 to 2023. The consumer price index, which characterizes the inflation rate, in December 2022 amounted to 101.1 % in relation to the previous month and 114.7 % in relation to December of the previous, 2021. At present, the slowdown in the growth rate of prices for food products continues against the background of high statistical base of the previous year. Nevertheless, food prices in Kyrgyzstan remain high.

According to the World Bank report (2022), the countries of Central Asia, including Kyrgyzstan, are dependent on Russia for a handful of product groups in particular: sugar and confectionary, as well as fats and oils (including sunflower seeds and sunflower oil). In addition, Central Asian countries import a wide range of agrifood products from Russia, but there is a noticeable dependency of the region on sunflower-seed oil (WB, 2022).

To make sure there is enough food for everyone, the Cabinet of Ministers temporarily banned the export of some types of agricultural goods from the Kyrgyz Republic on March 17, 2022. The only things that were allowed were re-exports, transit, and humanitarian aid provided by the Cabinet of Ministers (IA "Tazabek," 2022). This measure was taken to ensure the country's food security and stabilize market prices for food products.

**List of specific types of agricultural goods for which a temporary export ban has been established from the Kyrgyz Republic beyond the customs territory of the Eurasian Economic Union**:

1. Wheat and meslin (1001);
2. Wheat flour (1101 001);
3. Vegetable oil (1512, except for 1512 11 990 1 (safflower oil));
4. Sunflower seeds (1206 00 990 0);
5. Granulated sugar (1701 99);
6. Fertilized eggs for incubation (0407 11 000 0), domestic chicken eggs (0407 21 000 0).

**List of specific types of agricultural goods for which a temporary export ban has been established from the Kyrgyz Republic beyond the territory of the Kyrgyz Republic**:

1. Fresh or chilled beef (0201);
2. Frozen beef (0202);
3. Animal feed (hay, straw, compound feed, bran, and grain feed) (1214 90 900 0, 2302);
4. Barley (1003);
5. Oats (1004).

Additionally, in May 2022, Kyrgyzstan imposed a temporary six-month ban on the export of granulated sugar and raw cane sugar to prevent mass export, ensure food security, and control price hikes. This decision was made by the Cabinet of Ministers in

response to reports of a domestic sugar shortage and significant exports to Kazakhstan. Despite these reports, Agriculture Minister Askarbek Dzhanybekov confirmed that there is no sugar shortage, with about 30,000 tons of white sugar available in the country. The State Antimonopoly Agency noted that sugar is available, but prices have risen due to increased wholesale prices (IA 'Tazabek', 2022b).

## SECTION II.C.5. RESEARCH OUTCOMES

### II.C.5.1. CONCLUSION

In conclusion, Kyrgyzstan's cooperation with other Turkic countries is developing positively, contributing to the strengthening of regional ties and joint efforts, especially within the framework of the Organization of Turkic States. However, Kyrgyzstan's strongest ties remain with its immediate neighbors, such as Kazakhstan and Uzbekistan, which play a crucial role in the country's trade and economic activities.

In addition, the influence of neighboring powers such as China and Russia is significant, where their economic and geopolitical interests overlap with Kyrgyzstan's market dynamics.

Despite the decline in agricultural employment, its modest contribution to GDP and the various challenges facing the sector, agriculture continues to be the backbone of the Kyrgyzstan's economy. It remains a vital source of livelihood for a large part of the population, underscoring the need for continued investment and reforms to ensure the sustainability and growth of the sector.

The following recommendations for decision makers can be drawn from our country review:

1. The control and enforcement system of organic production should be further strengthened;
2. The necessity of targeted nutritional interventions, especially for vulnerable groups and regions;
3. Finalization the ongoing land reform process to ensure that all arable land is privately owned and managed efficiently;
4. The rehabilitation and maintenance of irrigation systems, which are critical for agricultural productivity, should be given priority. Improved irrigation will help farmers manage water resources more effectively and increase crop yields;
5. Implementation of comprehensive rural development strategies that include building and maintaining infrastructure such as roads, storage facilities, and market access points;
6. Focus on developing domestic markets and reducing export barriers to create market opportunities for smallholder farmers. This includes improving access to inputs and establishing better output networks to connect farmers with consumers;
7. Develop and implement comprehensive policies that link food security, nutrition, and social protection;
8. Encouragement of sustainable agricultural practices to mitigate environmental

impacts, particularly in livestock production, which can lead to overgrazing and pasture degradation;

9. Implementation of measures to improve agricultural systems' resilience to climate change, such as promoting climate-smart agriculture and investing in research and development for sustainable agricultural technologies.

10. Implementation of policies that support women in agriculture by ensuring they have equal access to land, credit, and training opportunities. Promote gender-sensitive agricultural programs to empower women in rural areas.

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# Türkiye country chapter

## SECTION II.D.4. SUMMARY

### II.D.4.1. Summary of analysis

## SECTION II.D.5. REFERENCE

### II.D.5.1. Reference

## CHAPTER II.D.

## SECTION II.D.1. TÜRKIYE DOMESTIC AGRI-FOOD PROFILE

### II.D.1.1. Background and purpose of the report

**Introduction**

Overview of SDGs: An overview ofthe United Nations Sustainable Development Goals, with particular attention to SDG 2 (Zero Hunger) and SDG 12 (Responsible Consumption and Production).

Food Security Situation in Türkiye: General information on the current food security situation in Türkiye, changes in trends, and major prevailing challenges.

#### II.D.1.1.1. Conceptual framework

A conceptual framework involves key a structured approach to understanding key factors and variables and how they interplay and affect food security

#### II.D.1.1.2. Key Concepts and Theoretical Foundation

Sustainable Development Goals (SDGs).
Definition and goals of SDGs.
- Detailed focus on SDG 2 and SDG 12. Also focused on SDG

Food security.
- Definition and dimensions: availability, access, utilization, and stability.

Indicators and measurements of food security.

### II.D.1.2. Methodological Approach

- Research Design: A combination of qualitative, quantitative, and mixed-methods.
- Data Collection: Government reports, data from organizations that work in the fields of agri-food, food security and SDG.

**Variables and Their Relationships**

**Independent variables**

- Agricultural Practices: Sustainability of agricultural practices versus traditional practices in food production.
- Government Policies: Describes the role of national and local policies in food security.
- Economic determinants: Economic stability, income levels, and market access.
- Climate Change: Weather variability and extreme weather's effect on agriculture.

**Dependent variables**

- The quantity or quality of food that is available for eating.
- Food Access: Economic and physical access to food.
- Food Utilization: Nutritional quality and food safety.
- Food Security: Consistent affordability, accessibility, and safe food supply at all times.
- Intervening Variables
- Technological Innovations: The role of technology in increasing agricultural productivity.
- Social Factors: Effect of culture and education on food safety.
- Global Trade Policies: International trade arrangements and how they impact food availability and prices.

### II.E.1.2.1. Data sources

| World Trade Organization (WTO) | Euromonitor | Food and Agriculture Organization of the United Nations (FAO) | Food and Agriculture Organization of the United Nations. IFAD |
|---|---|---|---|
| Ministry of Trade | Ministry of Environment & Urbanization | Ministry of Agriculture and Forestry | UN Sustainable Development |
| International Trade Centre (ITC) | Turkish Statistical Institute (TUİK/ TURKSTAT) | Turkish Scientific and Technological Research Council (TÜBİTAK) | Organization for Economic Cooperation and Development (OECD) |
| United Nations | UN Women | Turkish Grain Board (TMO) | Turkish Water Institute (SUEN) |
| Trade Map | World Bank | Disaster & Emergency Management Authority (AFAD) | World Wildlife Fund (WWF) |

### II.D.1.3. Analysis of the current state of food security in Türkiye

Situated at the crossroads of the Balkans, the Caucasus, the Middle East and the Eastern Mediterranean, Türkiye is one of the largest countries in the region in terms of land area and population.

As an upper-middle-income country with a growing population of approximately 81 million, Türkiye ranks among the top 20 largest economies in the world. The country is estimated to be the 7th largest agricultural producer in the world, producing and exporting a wide range of agricultural commodities such as hazelnuts, chestnuts, apricots, cherries, figs, olives, quince, tobacco and tea.

Historically, the agricultural sector has been Türkiye's largest employer and a major contributor to the country's GDP, exports and rural development. Although agriculture's share is declining relative to the industrial and service sectors, it nonetheless continues to play a fundamental role in Turkish society, employing about a quarter of the workforce and generating the majority of rural income and employment.

On the other hand, food security remains a critical issue worldwide, including in Türkiye. The year 2023 presented some major challenges. On 6 February, two major earthquakes struck south-east Türkiye in quick succession, causing numerous casualties and severely disrupting the region's critical agricultural and food supply chains. The impact of this disaster compounded existing challenges, especially as the country sought to recover from the COVID-19 pandemic. In response to this crisis, the Food and Agriculture Organization of the United Nations (FAO), in close collaboration with the Republic of Türkiye, quickly mobilized all available resources and capacities to support the region's recovery, aimed at facilitating the continuity of agricultural production and strengthening food security. The figure below shows that Türkiye is resilient in terms of the proportion of people below the poverty line, supply adequacy, micronutrient availability, access to markets and agricultural financial services, food safety, protein quality and food security programmes.

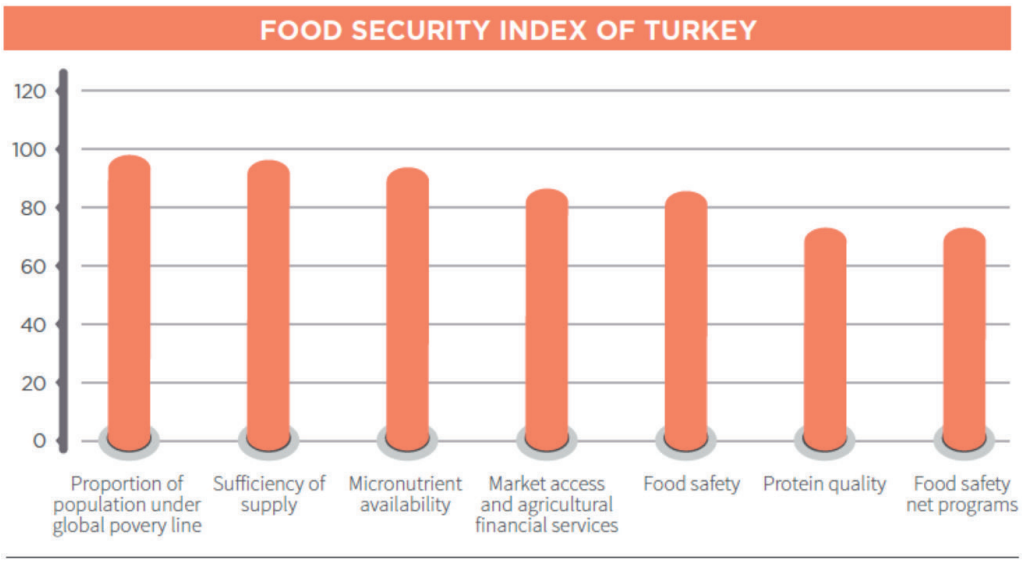



***Figure II.D.1. Food Security Index of Türkiye***

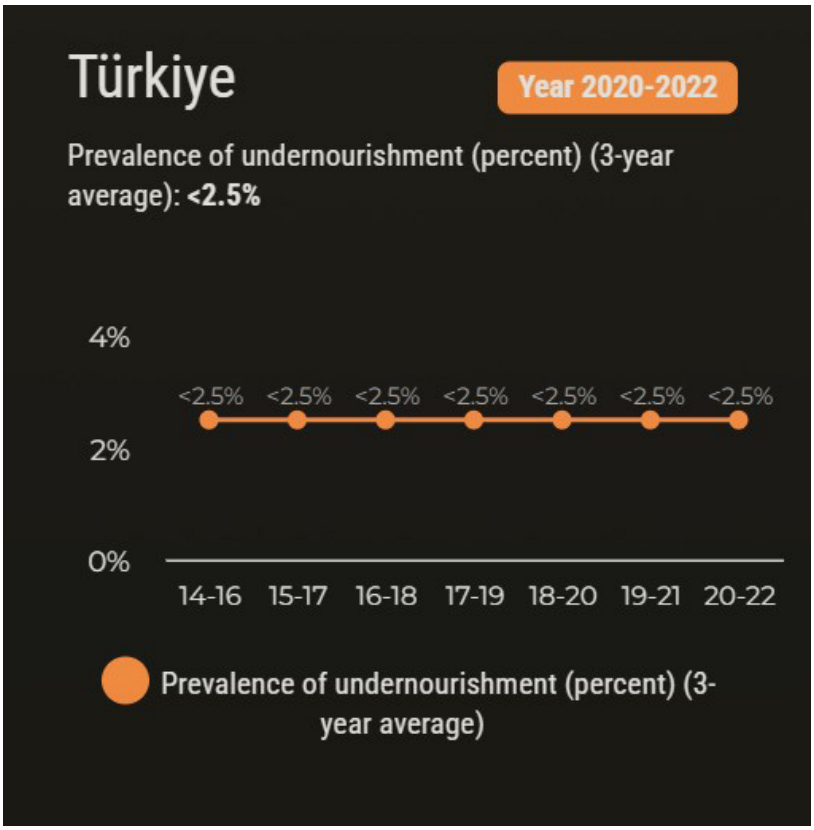
Source: Towards Sustainable Food Systems-National Pathway of Türkiye, Ministry of Agriculture and Forestry, 2021.

This chapter examines the current state of food security in Türkiye in 2024, analyzing various aspects including access to food, food quality, demographic factors, health and sanitation, and public policies and interventions.II.D.1.3.1 **Access to food in the country**

**Access to food** is a multifaceted issue, encompassing factors such as food consumption, food quality, demographic considerations, health and sanitation, and government policies and interventions.

### II.D.1.3.1.1. Food consumption (Level of undernourished groups, share of imported calories)

Access to food is a fundamental indicator of a nation's food security, and understanding patterns of **food consumption** is crucial in assessing the state of food security in Türkiye. Analyzing recent data from reputable sources such as the FAO and the Turkish Statistical Institute (TUIK) provides valuable insights into the dynamics of food consumption within the country. Türkiye has experienced notable progress in reducing the prevalence of undernourishment.



Türkiye is an upper-middle-income country. According to the State of Food Security and Nutrition in the World 2023 report[1], the average of prevalence of undernourishment in the total population (%, 2020-2022) within upper-middle income countries is <2.5% and Türkiye scores <2.5% which is the average value for upper-middle-income countries.

To understand the dynamics of food consumption in Türkiye, it is possible to look at indicators like the prevalence of stunting in children, the prevalence of overweight in children and obesity in the adult population. Türkiye slightly scores negatively for the prevalence of obesity in the adult population indicator and the prevalence of low birthweight indicators on the other hand. For further detailed data, please see Figure II.D.2 below.-

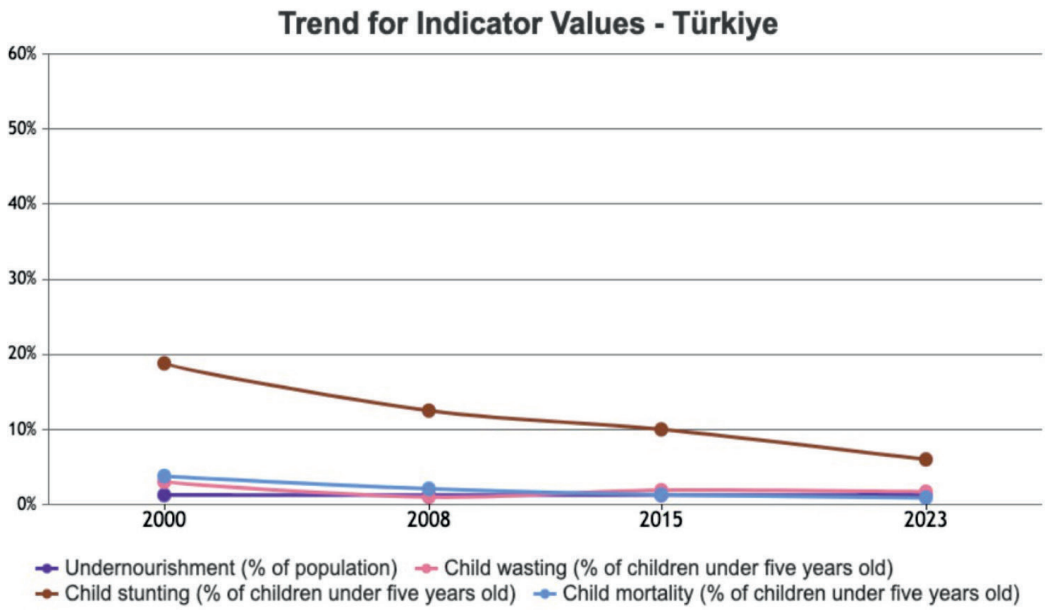



***Figure II.D.2. Prevalence of Undernourishment, Child Wasting, Child Stunning, Child Mortality***

Source: Global Hunger Index: Türkiye, 2023

Türkiye also scores positively on the cost of a healthy diet indicator. While 14.1% of people are considered to be unable to afford a healthy diet within the upper-middle income countries, the value is 6% in Türkiye which is way below the average compared to similar-income countries. For further detailed data, please see Figure II.D.3 below.

[1] 1 Note: Data for GHI scores, child stunting, and child wasting are from 1998–2002 (2000), 2006–2010 (2008), 2013–2017 (2015), and 2018–2022 (2023). Data for undernourishment are from 2000–2002 (2000), 2007–2009 (2008), 2014–2016 (2015), and 2020–2022 (2023). Data for child mortality are from 2000, 2008, 2015, and 2021 (2023).

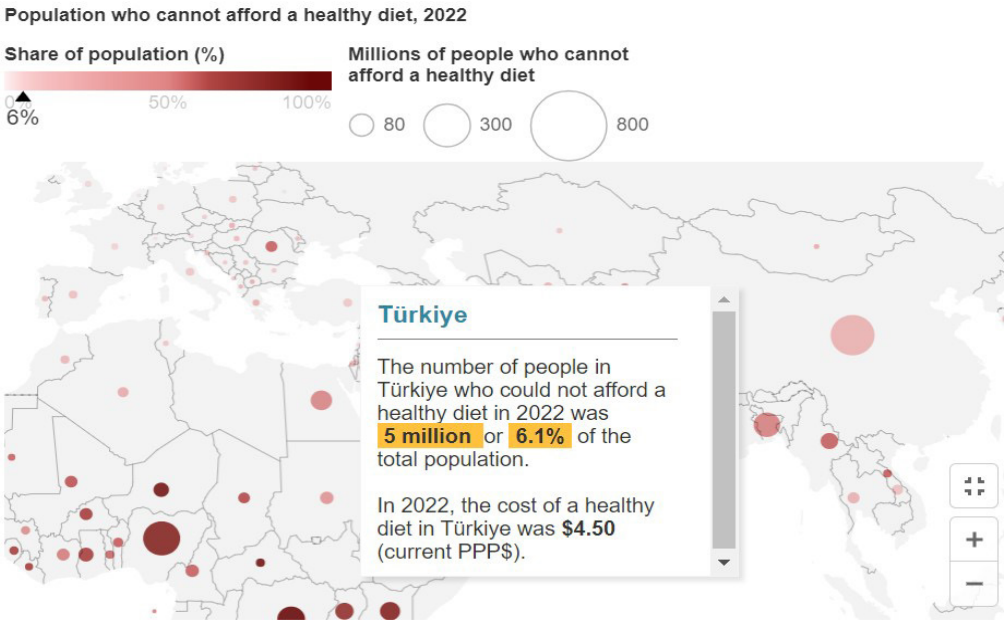
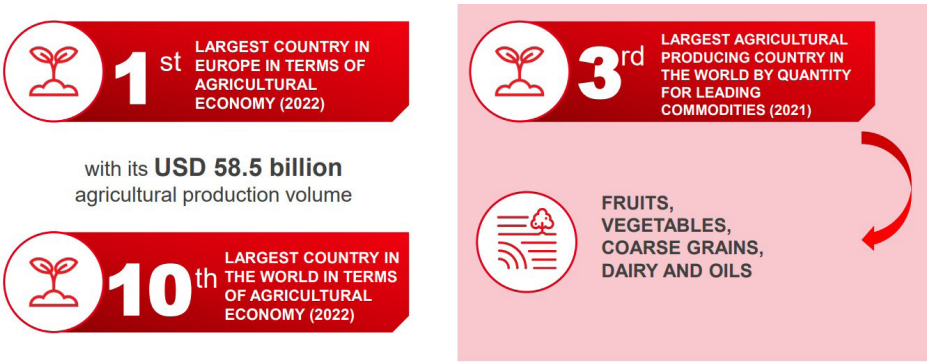



***Figure II.D.3. The Cost and Affordability of a Healthy Diet***

Source: World Bank, International Comparison Program (ICP),2023

This achievement highlights the effectiveness of various government and non-governmental initiatives aimed at improving access to food and nutritional outcomes. However, despite overall improvements, it is important to recognize that pockets of vulnerability remain, particularly among marginalized communities such as refugees and rural populations.

Examining the share of imported calories provides additional insights into food consumption patterns in Türkiye. Although Türkiye boasts a rich agricultural heritage and is largely self-sufficient in staple crops such as wheat, reliance on imports of certain commodities remains significant. This reliance is affected by factors such as fluctuations in domestic production, market dynamics, and international trade agreements. Understanding the composition of imported calories provides valuable information for policymakers and stakeholders in formulating strategies to improve the resilience of food security and reduce the risks associated with external dependency.Figure II.D.4: Food Net Trade (USD Million)




Sources: World Bank, United States Department of Agriculture

Türkiye has a positive net food turnover. A positive net food turnover indicates that a country exports more food than it imports, i.e., it is a net food exporter. Net food turnover is an important indicator for assessing a country's food trade balance, dependence on food imports, and role in global food markets. It helps analyze a country's food security, agricultural policies, and trade dynamics in the context of global food systems.

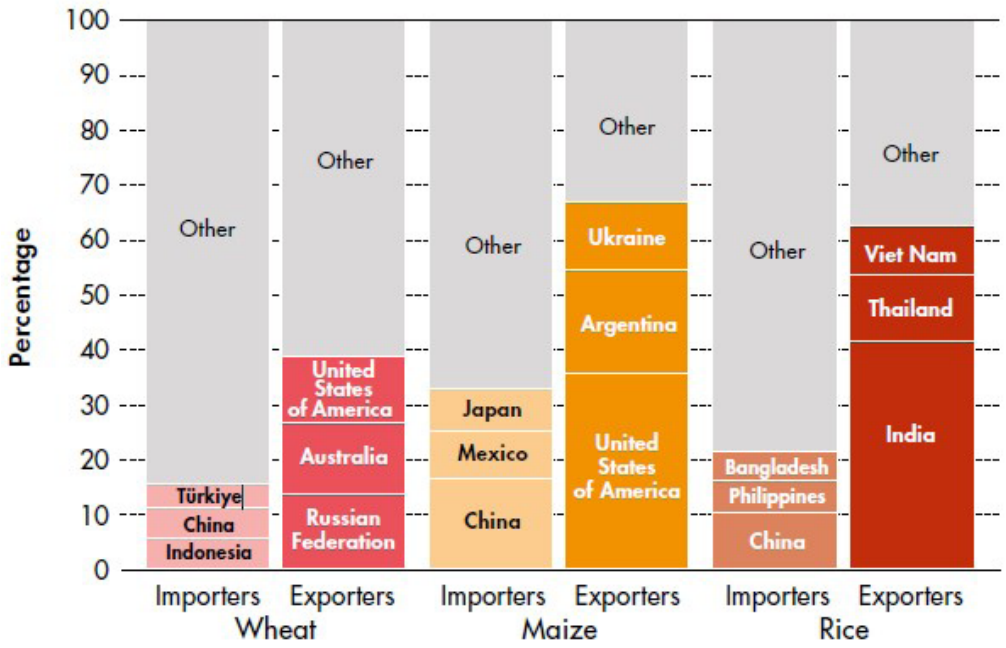
Source: FAO Statistical Yearbook, World Food and Agriculture, 2023, pg 225.


***Figure II.D.5. Cereals Imports and Exports by Main Commodities, 2022 (Thousand Tons)***

Source: The Observatory of Economic Complexity (OEC)

On the other hand, Türkiye has a negative net trade in cereals. This situation has several implications for food security. The country's dependence on cereal imports exposes it to risks such as price volatility in international markets, supply disruptions, and trade barriers imposed by exporting countries. Dependence on imported cereals makes the country vulnerable to external shocks that could disrupt global food supply chains. Events such as adverse weather conditions affecting major cereal producing

regions, geopolitical tensions, or trade disputes could lead to shortages or price spikes in imported cereals, affecting food availability and affordability for the population. Consequences such as excessive food price increases and inflation pose food security challenges. Ensuring access to affordable and nutritious cereals is important for food security as they form the basis of many diets worldwide. Addressing this imbalance requires policy measures to increase domestic cereal production, promote sustainable agricultural practices, diversify food sources and build resilience to external shocks in global food markets.




***Top Importers and Exporters (Quantities, 2021)***

According to FAO (2021), Türkiye is one of the main 3 wheat importers along with China and Indonesia.

Source: FAO Statistical Yearbook, World Food and Agriculture, 2023, pg 24.

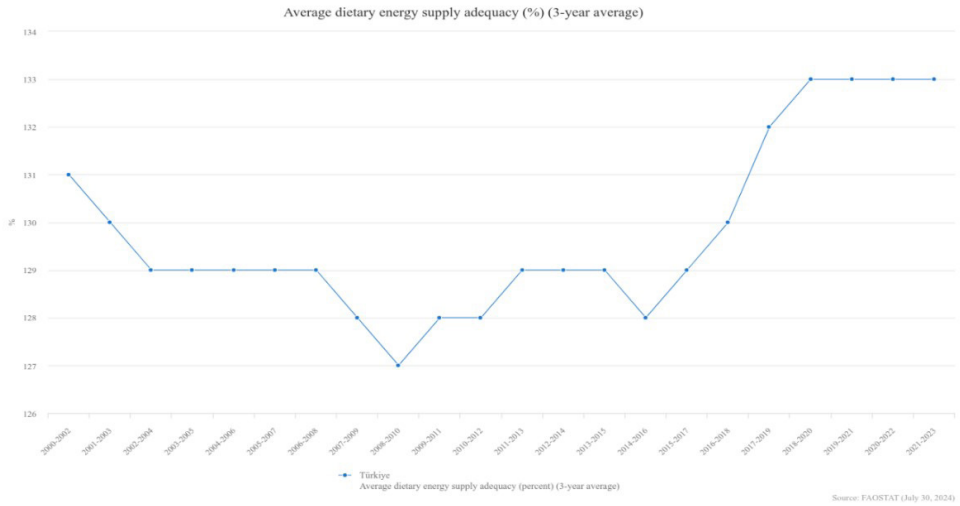



***Figure II.D.7. Average Dietary Energy Supply (KCAL per Capita per Day)***

Source: FAOStat,2023

Even though the struggles continue to ensure food security in Türkiye especially because of high food prices inflation, the average dietary energy supply still remains competitive and within the observed range in Europe.

Source: FAO Statistical Yearbook, World Food and Agriculture, 2023, pg 281.

### II.D.1.3.1.2. Income, employment and poverty

Disaggregating food consumption data by demographic characteristics such as income level, geographic location and household composition reveals differences in access to nutritious food. For example, vulnerable groups such as low-income households and rural communities may face barriers to accessing diverse and nutritious diets due to factors such as limited purchasing power, inadequate infrastructure and geographic isolation. Addressing these disparities requires targeted interventions that include social protection measures, agricultural development programmes and investments in infrastructure to improve access to markets and simplify food distribution channels. Several key data sets and indicators are important for analysing food security under the "income, employment and poverty" subheading such as:

#### Household Income Distribution:

The share of the highest quintile was 49.8% of the total income, while the first quintile received 5.9% in Türkiye, according to data released by TUIK on January 29, 2024.[2].

The figures show that most of the total income is concentrated among the richest

[2] Turkish Statistical Institute,2024.

individuals or households, indicating the level of income inequality in society. The remaining 80% of the population shares the rest of the income. The same study also states that the Gini coefficient was estimated at 0.433 in 2023, an increase of 0.018 points compared to the previous year, 2022. This increase in the Gini coefficient from 2022 to 2023 suggests that there was a slight worsening of income or wealth inequality during this period.

The average annual disposable household income was TL 167,983 in 2023, an increase of 70.7% compared to the previous year in Türkiye. The increase was 28.3% compared to the previous year in 2022, which also highlights the devastating effects of the current inflation in the country.

The ratio of wages and salaries reached its highest level at 48.5% of total equivalized disposable household income, an increase of 2.3 points compared to the previous year. Entrepreneurial income, at 22.1%, increased by 1.1 points, while social transfers, at 17.6%, decreased by 2.6 points compared to 2022.

The contribution of agricultural income to entrepreneurial income was 20.5%. Pensions and survivors' benefits accounted for 88.4% of social transfers.

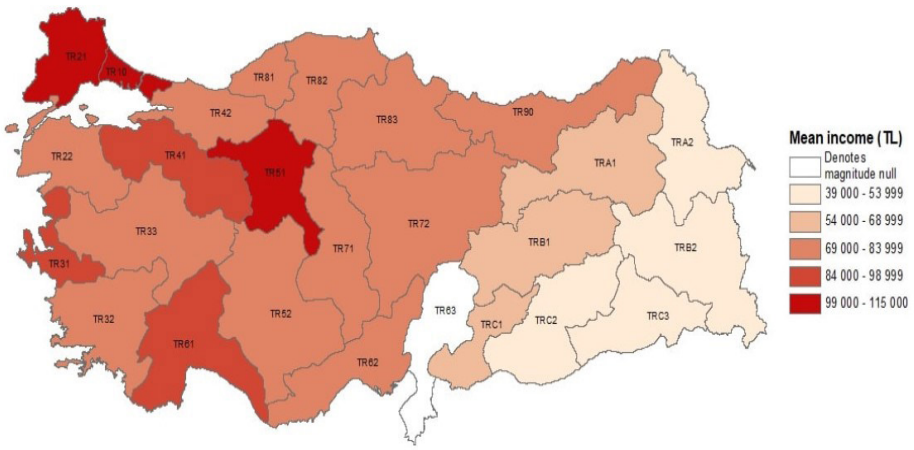



***Figure II.D.8. Mean annual equivalized household disposable income (TL), SR Level 2, 2023***

Source: Income Distribution Statistics, 2023, TUIK[3]

The region with the lowest income was TRB2 (Van, Muş, Bitlis, Hakkari).

Note: 1 TL = 0.05342 USD (European Central Bank ,2023)

**Unemployment Rate:**

According to Labor Force Statistics data released on 11th March 2024 by TUIK, seasonally adjusted unemployment rate realized as 9.1% in Türkiye.

[3] Due to the earthquake that occurred in our country, fieldwork could not be conducted in the TR63 (Hatay, Kahramanmaraş, Osmaniye) region in the 2023 study. Therefore, the regional results provided in the Statistical Regions (SR) Classification cover 25 regions.

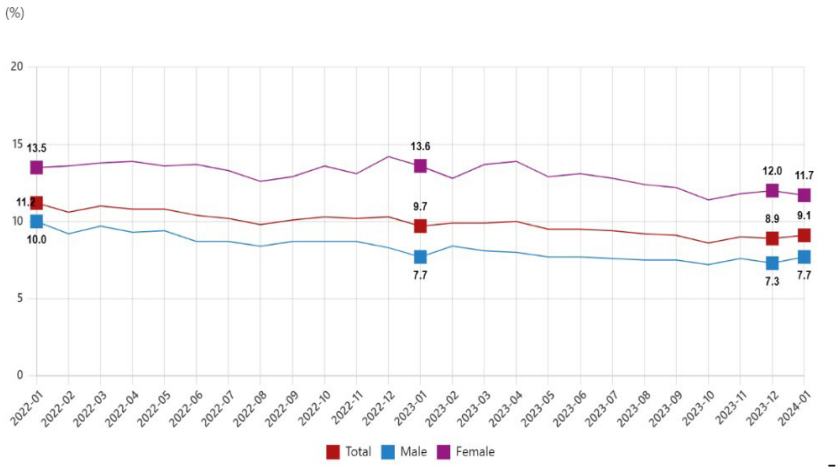



***Figure II.D.9. Seasonally adjusted unemployment rate, January 2022 - January 2024***

Source: Labour Force Statistics, January 2024, TUIK

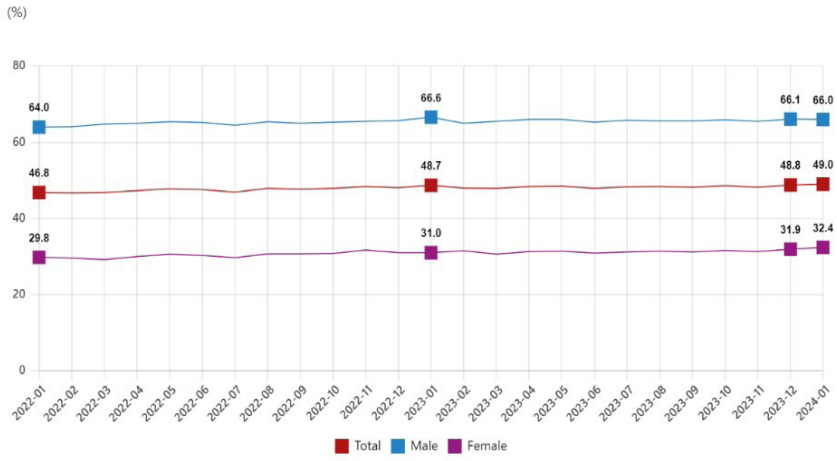



***Figure II.D.10. Seasonally adjusted employment rate, January 2022 - January 2024***

Source: Labour Force Statistics, January 2024, TUIK

While there are positive signs such as an increase in employment and labor force participation rates, the persistently high unemployment rate, gender disparities in employment, and the relatively low overall employment rate indicate ongoing challenges in the labor market.

**Poverty Rate:**

According to the Poverty and Living Conditions Statistics data released by TUIK on January 30, 2024, the relative poverty rate in Türkiye was 13.9%. The at-risk-of-poverty rate according to the poverty threshold set at 50% of the median equivalized disposable

household income was 13.9%, down 0.5 points compared to 2022. To compare the data, it is useful to look at the poverty distribution chart in OECD countries below.

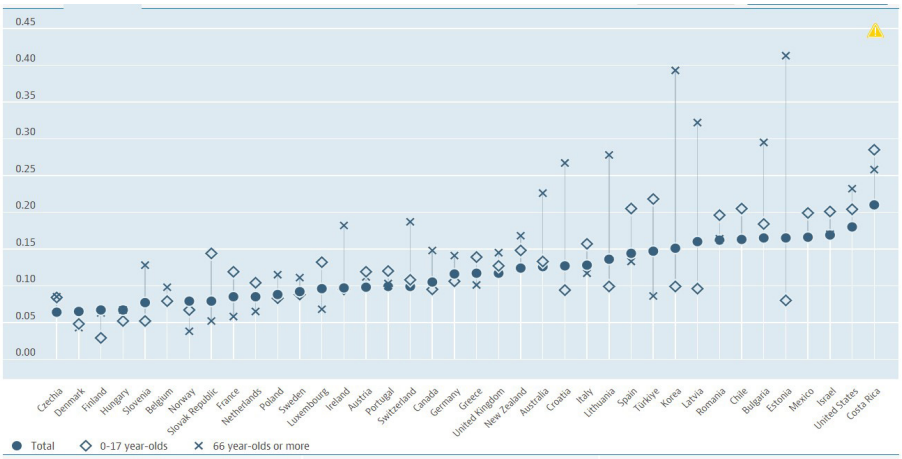



***Figure II.D.11. Poverty rate (Total / 0–17-year-olds/66-year-olds or more, Ratio, 2022 or latest available)***

Source: OECD (2024), Poverty rate (indicator). doi: 10.1787/0fe1315d-en (Accessed on 10 April 2024).

### II.D.1.3.1.3. Prices, markets and logistics infrastructure

Türkiye faces important challenges in consumer food product inflation which risks driving more people to the edge of poverty.


***Figure II.D.12. Inflation rate for food in Türkiye from July 2022 to June 2024***

Source: Statista, 2024

In recent years, the inflation rate in Türkiye has increased sharply for consumer prices, especially food prices, which have recorded very high rates. During the observed period, the highest food inflation rate in Türkiye was recorded in November 2022, with an increase of 102.6 percent. As of June 2024, food prices in the country have increased by 68.1 percent compared to the same month of the previous year. According to the TUIK Agricultural Input Price Index for December 2023, which was released on February 21, 2024, the Agricultural Input Price Index (Agricultural-IPI) increased by 41.43% on an annual basis and by 2.62% on a monthly basis. There is a significant upward trend in agricultural input prices on an annual and monthly basis. Compared with December of the previous year, the agricultural IPI increased by 41.43%, indicating significant inflationary pressure in the agricultural input market.

Monthly changes for the main groups indicate that both the costs of current agricultural production and investment in future agricultural activities experienced price increases, although at different rates.

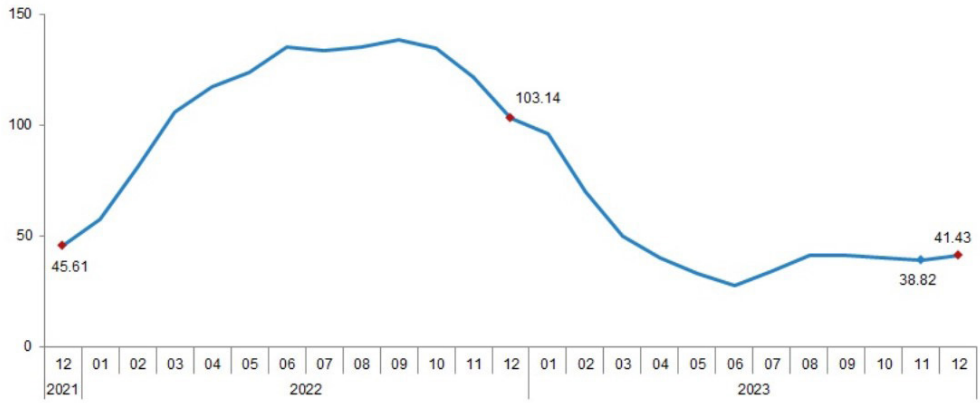



***Figure II.D.13. Annual rate of changes of Agricultural-IPI (%), December 2023***

Source: Agricultural Input Price Index, published by 21st February 2024, TUIK.

There is a significant increase in agricultural input prices, particularly in certain subgroups, such as veterinary expenses, may pose challenges for farmers and agricultural businesses.

Higher input costs could lead to reduced profitability for farmers, potentially impacting agricultural production and the overall food supply.

Policymakers may need to monitor input price inflation closely and consider implementing measures to mitigate its adverse effects on the agricultural sector, such as targeted subsidies or support programs.

| Main and sub groups | Index | Monthly change (%) | Rate of change on December of the previous year (%) | Annual change (%) | Rate of change in 12 months moving averages (%) |
|---|---|---|---|---|---|
| **Agricultural-IPI** | **799.02** | **2.62** | **41.43** | **41.43** | **43.69** |
| **Goods and services currently consumed in agriculture** | **781.46** | **2.82** | **37.64** | **37.64** | **39.51** |
| Seeds and planting stock | 532.92 | 2.24 | 44.15 | 44.15 | 62.11 |
| Energy; lubricants | 913.69 | -2.26 | 47.45 | 47.45 | 25.49 |
| Fertilizer and soil improvers | 1014.24 | -0.74 | 9.69 | 9.69 | 17.05 |
| Plant protection and pesticides | 463.61 | 1.91 | 24.75 | 24.75 | 32.39 |
| Veterinary expenses | 487.60 | 1.26 | 151.60 | 151.60 | 88.78 |
| Animal feedingstuffs | 754.76 | 5.21 | 27.21 | 27.21 | 37.57 |
| Maintenance of materials | 893.66 | 2.58 | 66.20 | 66.20 | 50.56 |
| Maintenance of buildings | 1082.40 | 1.35 | 46.10 | 46.10 | 57.56 |
| Other goods and services | 729.46 | 6.37 | 89.31 | 89.31 | 90.87 |
| **Goods and services contributing to agricultural investment** | **921.04** | **1.47** | **68.87** | **68.87** | **76.48** |
| Materials | 818.95 | 1.08 | 70.91 | 70.91 | 85.37 |
| Farm buildings (non-residential) | 1221.84 | 2.25 | 64.97 | 64.97 | 61.60 |

***Figure II.D.14. Rate of changes by main and subgroups of Agricultural-IPI (%), December 2023***

Source: Agricultural Input Price Index, published by 21st February 2024, TUIK.

### II.D.1.3.2. Food quality (safety)

Food quality and safety are critical components of public health. In Türkiye, a country with a diverse and rich culinary tradition, ensuring the safety of food products is paramount. This report examines the regulatory environment, key challenges, and recent advancements in food safety in Türkiye.

The primary body responsible for food safety in Türkiye is the Ministry of Agriculture and Forestry (MoAF). The Turkish Food Codex, which aligns with the European Union's food safety standards, governs food safety regulations. Key regulations include mandatory Hazard Analysis and Critical Control Points (HACCP) systems for food businesses and stringent import controls.

**Key Issues in Food Safety**

1. Microbial Contamination

One of the major concerns is microbial contamination, which poses foodborne illness risks. Common pathogens include Salmonella, E. coli, and Listeria monocytogenes (Giritlioglu et al., 2020).

2.Chemical Residues

Pesticide residues in fruits and vegetables and antibiotic residues in meat products are significant issues. Regular monitoring and control measures are in place, but incidents of non-compliance still occur (Küplülü, 2019).

3. Adulteration and Fraud

Food fraud, including adulteration of dairy products and olive oil, is a persistent problem. The MoAF has increased inspections and penalties to combat this issue (Tosun & Yücel, 2021).

**Recent Improvements**

Recent efforts to improve food safety in Türkiye include:

- Enhanced Inspections and Testing

The MoAF has increased the frequency and scope of inspections, utilizing modern laboratory techniques to detect contaminants more effectively (Çakmakçı, 2022).

- Public Awareness Campaigns

Educational campaigns aimed at both consumers and producers have been launched to raise awareness about food safety practices (Demir & Pala, 2021).

**Challenges**

Despite these efforts, several challenges remain:

- Resource Limitations

Limited resources for inspections and laboratory testing can hinder the effectiveness of food safety measures (Karaman et al., 2021).

- Supply Chain Complexity

The complexity of the food supply chain makes it difficult to trace and manage food safety risks effectively (Özdemir & Yetkin, 2020).

### II.D.1.3.3. Demographic considerations

All these factors within the agrifood sector make the role of the Turkish environment very much dependent on demographic parameters such as population growth, urbanization, age distribution, and migration patterns. These elements influence not only the supply and demand sides, but also the consumption of agricultural products. Understanding these demographic considerations is critical when developing agricultural policies and strategies.

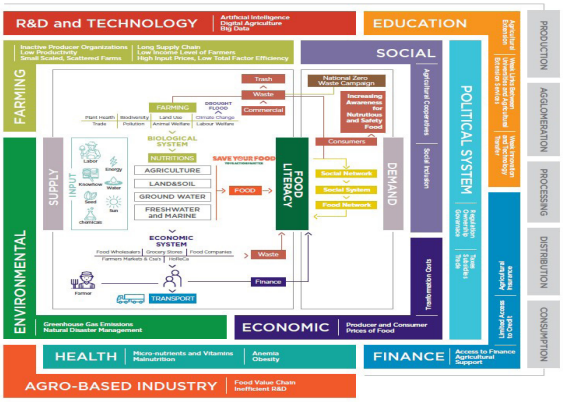



***Figure II.D.15. Food Systems in Türkiye, 2021***

Source: National Pathway of Türkiye, Ministry of Agriculture and Forestry, 2021

**Population Growth**

The population of Türkiye is steadily increasing, with the institution reporting that the population exceeded 84 million in 2020. The growing population requires more food, which leads to the need for increased agricultural productivity and efficiency. As the population continues to grow, the pressure on both land and water resources increases, making sustainable practices an important aspect of ensuring food security..

**Urbanization**

Urbanization is another crucial factor that affects the agrifood sector. The World Bank (2020) argues that the urban population was only 25% in 1960 and now is over 75% in 2020. This trend means that many people are migrating from rural to urban centers because of better employment opportunities. Of course, the result is a reduction in the amount of labor available for agricultural production in rural areas. This means that there is a need for modern farming technologies and practices to compensate for the reduced labor force in rural areas.

**Age Distribution**

In addition, the demographic age structure of the population affects the agri-food sector. Türkiye is a relatively young country with a median age of about 32 years (Turkish Statistical Institute, 2021). Young people are generally less inclined to the traditional farming system. Therefore, it becomes difficult for companies to attract and retain an efficient workforce engaged in agriculture. At the same time, this age structure provides an opportunity to introduce new methods and technologies in agriculture.

**Migration patterns**

Migration everywhere, from rural to international, leaves its mark on the agri-food sector. Migration reduces the rural and urban agricultural labor force internationally, reducing the labor surplus in the country or sometimes bringing labor surplus to other regions. For example, Syrian refugees have affected agricultural production and labor dynamics in southeastern Türkiye, leading to changes in the labor market there (Erdogan, 2019).

**Gender Dynamics**

Gender dynamics also influence the understanding of demographic components in the agri-food sector. For example, even though women are actively involved in agricultural activities, they tend to face barriers such as lack of access to land, credit and agricultural inputs (FAO, 2019). Therefore, for this trend to take place, gender inequalities need to be addressed to promote equality in the development of the sector. Overall, the

way population growth, urbanization, age distribution, migration patterns and gender dynamics play out are powerful variables that affect the agri-food sector in Türkiye. Policymakers need to consider demographic aspects not only in terms of developing appropriate and sustainable agricultural practices but also in terms of ensuring food security for the growing population.

#### II.D.1.3.4. Health and sanitation

The agri-food sector is a sensitive area for the economy of Türkiye, both in terms of employment and export revenues. It is a challenge to ensure health and sanitation.

#### II.D.1.3.4.1. Health and Sanitation Challenges

Food Safety Issues: Food safety is still a major concern in the agricultural sector in Türkiye. During the assessment, food products were found to be heavily contaminated with pathogenic organisms, mainly belonging to Salmonella or E. coli species, indicating a significant public health risk factor inTürkiye (Demirci, Yıldırım, and Kumral 2021).

Pesticide Residues: Another serious issue is the pesticide residues in the farm produce. According to Ali et al., most of the fruits and vegetables that Tiryaki and Temur (2010) looked at had residues that could be found, and a lot of them had more residues than what the international standards allow.

In the agricultural food industry, water quality is particularly important in irrigation and processing. However, the main contribution to poor quality water is weak wastewater treatment facilities, which dilute the safety of crops and, overall, public health (Karakaya, Evrendilek, & Celik, 2018).

#### II.D.1.3.4.2. Regulatory Framework

Legislation and Compliance: The Turkish Food Codex Law is included in the enactment of several pieces of legislation related to food safety and hygiene. In addition, it aims to ensure the safety and quality of food produced for human consumption at the European Union level (Ministry of Agriculture and Forestry, 2023).

Inspections and Monitoring: Regular inspections and monitoring by the Ministry of Agriculture and Forestry are becoming increasingly important to ensure compliance with standards. However, it is susceptible to problems such as greater resource constraints and inadequate training provided to inspectors. (Akbay, Yurdakul, & Jones, 2020).

#### II.D.1.3.4.3. Improvements and Innovations

Technological Advancements: The productivity of the agricultural sector can also benefit from the adoption of advanced agricultural technologies in areas such as precision farming and advanced irrigation systems (Uysal & Atış, 2010).

-Public Health Initiatives: Education and public health programs are also crucial in this regard, especially for farmers and food handlers themselves, whose targeted approaches are closer to them in promoting best practices. The promotion of hygienic practices and safe handling of agricultural commodities disseminates information on hygiene and safe handling of agricultural products, thereby reducing health risks (Yıldırım & Akyüz, 2018). Although all these health and sanitation issues exist in the Turkish agricultural food sector, ongoing regulatory efforts and advances in technology are likely to open avenues for improvement. Good infrastructure and strict adherence to food safety and sanitation regulations should best accompany continuous education and training of personnel in the agricultural food supply chain..

### II.D.1.3.5. The Government's Policies and Interventions. Country Road Maps on agricultural development

### Agricultural Policy Framework

#### II.D.1.3.5.1. National Agricultural Strategies

**10th Development Plan (2014-2018)**

- Focus: Enhancing agricultural productivity, increasing value-added production, and promoting rural development.
- Key Initiatives: Modernization of irrigation systems, support for organic farming, and rural infrastructure improvement.
- Reference: Republic of Türkiye Ministry of Development. (2014). *10th Development Plan 2014-2018. Retrieved from https://www.sbb.gov.tr/10th-development-plan/

**11th Development Plan (2019-2023)**

- Focus: Sustainable agriculture, innovation, and digital transformation in agriculture.
- Key Initiatives: Promotion of precision agriculture, support for agri-tech startups, and development of agricultural logistics.
- Reference: Republic of Türkiye Ministry of Development. (2019). *11th Development Plan 2019-2023*. Retrieved from https://www.sbb.gov.tr/11th-development-plan/

**National Agriculture Project (2017)**

- Focus: Self-sufficiency in strategic crops, reduction of production costs, and income stability for farmers.
- Key Initiatives: Regional agricultural basins model, support for livestock production, and subsidies for key crops.
- Reference: Republic of Türkiye Ministry of Agriculture and Forestry. (2017). *National Agriculture Project*. Retrieved from https://www.tarimorman.gov.tr

### II.D.1.3.5.2. Specific Government Policies and Interventions

**Subsidy Programs**

- Direct income support for farmers.
- Input subsidies for seeds, fertilizers, and pesticides.
- Fuel and livestock subsidies.
- Reference: Republic of Türkiye Ministry of Agriculture and Forestry. (2023). Subsidy Programs for Farmers. Retrieved from https://www.tarimorman.gov.tr/subsidy-programs

**Credit and Finance**

- Low-interest loans and credit facilities through the Agricultural Credit Cooperatives and Ziraat Bank.
- Special funds for young and women farmers.
-Reference: Ziraat Bank. (2023). Agricultural Loans. Retrieved from https://www.ziraatbank.com.tr/agricultural-loans

**Research and Development**

- Investment in agricultural research institutes and universities.
- Collaboration with international organizations for research on sustainable practices and climate resilience.
- Reference: Turkish Scientific and Technological Research Council (TÜBİTAK). (2023). Agricultural Research Initiatives. Retrieved from https://www.tubitak.gov.tr/en/agricultural-research

**Rural Development**

- Village Infrastructure Support Project (KÖYDES).
- Rural Development Program (IPARD) funded by the EU, focusing on improving living standards in rural areas and diversifying rural economies.
- References:
- Republic of Türkiye Ministry of Interior. (2023). KÖYDES Project. Retrieved from https://www.icisleri.gov.tr/koydes
- European Union. (2023). IPARD Program in Türkiye. Retrieved from https://ec.europa.eu/neighbourhood-enlargement/instruments/funding-by-country/Türkiye_en

### II.D.1.3.5.3. Agricultural Trade Policies

**Export Incentives**

- Support for the export of high-value crops and processed agricultural products.
- Trade agreements to open new markets for Turkish agricultural products.
- Reference: Republic of Türkiye Ministry of Trade. (2023). *Export Incentives for Agriculture*. Retrieved from https://www.trade.gov.tr/export-incentives

**Import Regulations**

- Tariffs and quotas to protect domestic producers from foreign competition.
- The phytosanitary regulations serve to ensure the safety and quality of imported agricultural goods.
- Reference: Republic of Türkiye Ministry of Trade. (2023). *Import Regulations*. Retrieved from https://www.trade.gov.tr/import-regulations

### II.D.1.3.5.4. Environmental and Climate Policies

**Sustainable Agriculture**

- Promotion of organic farming and Good Agricultural Practices (GAP).
- Programs to combat soil erosion and desertification.
- References:
- Republic of Türkiye Ministry of Agriculture and Forestry. (2023). *Organic Farming Support*. Retrieved from https://www.tarimorman.gov.tr/organic-farming
- Food and Agriculture Organization. (2023). *Sustainable Practices in Turkish Agriculture*. Retrieved from http://www.fao.org/Türkiye

**Climate Change Adaptation**

- Development of drought-resistant crop varieties.
- Water management projects aim to address irrigation efficiency and conservation.
- References:
- Republic of Türkiye Ministry of Agriculture and Forestry. (2023). *Climate Change Adaptation in Agriculture*. Retrieved from https://www.tarimorman.gov.tr/climate-change-adaptation
- Turkish Water Institute (SUEN). (2023). *Water Management Projects*. Retrieved from https://www.suen.gov.tr/en

#### II.D.1.3.5.5. Digitalization and Innovation

**Precision Agriculture**

- Use of GPS, drones, and satellite imagery for crop monitoring and management.
- Development of smart farming technologies.
- Reference: Republic of Türkiye, Ministry of Agriculture and Forestry. (2023). *Precision Agriculture Initiatives*. Retrieved from https://www.tarimorman.gov.tr/precision-agriculture

**E-Agriculture**

- Implementation of digital platforms for market information, weather forecasts, and agricultural advisory services.
- Reference: Republic of Türkiye Ministry of Agriculture and Forestry. (2023). *E-Agriculture Platforms*. Retrieved from https://www.tarimorman.gov.tr/e-agriculture

### II.D.1.4. Analysis of current state of agri-food production in the country

#### II.D.1.4.1. Crop Production

Türkiye has a highly diversified agriculture, given its varied climate and geographical features. The country produces and develops a variety of crops, including cereals, fruits, vegetables, and industrial crops. Wheat, for example, is the most widely grown cereal crop in the country, with significant production levels, followed by barley and corn. In the same year, wheat almost reached the 20 million metric ton mark, while barley and corn reached 8 million and 6 million metric tons, respectively. In global comparison, Türkiye is among the largest producers of fruits and vegetables. The main fruits are grapes, citrus fruits, apples, and cherries, while important vegetables include tomatoes, peppers, cucumbers, and melons. For example, Türkiye produced about 12 million tons of tomatoes in 2022. (TurkStat, 2023). Other industrial crops in Türkiye besides cotton include sugar beet and tobacco. In 2022, the country produced about 750,000 tons of cotton, which is an important raw material in the textile industry (TurkStat, 2023).

#### II.D.1.4.2. Livestock and animal husbandry

Rearing animals is another important activity in the country's agricultural sector. The composition of livestock in Türkiye is relatively diversified and includes cattle, sheep, goats, and poultry. There were around 18 million cattle in Türkiye in the year 2022,. Approximately 1 million tons of meat and around 9 million tons of milk were made in 2022. At the same time, in rural areas, there is traditional sheep and goat farming. The population number of sheep was around 42 million, and the goat population was approximately 11 million in 2022. All these livestock have the sole objective of meat

and milk production, and wool production in the case of sheep (TurkStat, 2023). Poultry breeding, specifically chicken breeding, is a thriving sector. In 2022, meat production from poultry was approximately 2.2 million tons, and egg production was nearly 19 billion (TurkStat, 2023).

### II.D.1.4.3. Land use and management (Results of land reforms and current state of land ownership.)

The total agricultural land area in Türkiye is approximately 38 million hectares, consisting of arable land, permanent crops, and pastures, including permanent crops. Arable lands amount to about 24 million hectares, thus making Türkiye suitable for cultivating cereals and vegetables. The entire land management system boasts a variety of methods for agricultural lands to enhance the productivity levels and natural base of the country. Practices of crop rotation and fallow are part of the tradition of soil fertility management. Permanent crops cover around 4 million hectares, including orchards and vineyards. hey are cared for using sophisticated horticultural methods to optimally utilize the fruit yield potential. Pastures and meadows occupy about 10 million hectares and support the livestock sector of the country. Integrated grazing management methods are adopted here to avoid overgrazing and land degradation in the country..

### II.D.1.4.4. Water resources

Water isan acute factor in agriculture. In Türkiye, climate is semiarid and rainfall distribution is erratic. In response to this problem, the government has implemented various measures to improve irrigation and water management. Out of the total area under irrigation, mostly surface and sprinkler irrigation systems are installed on about 6 million hectares of agricultural land. However, the GAP and several other similar schemes serve to cover the start of extensive irrigation schemes that are being introduced in the country. The GAP is a program aimed at developing irrigation infrastructure, especially in the arid southeastern regions of the country. However, the adoption of water efficient methods is encouraged to overcome the problem of water scarcity. This can be illustrated by the adoption of modern irrigation methods such as drip irrigation. These water-saving methods are aimed to increase crop production.

Diversified crops and livestock, availability of agricultural lands, as well as water management practices characterize Agri-Food production in Türkiye. This chain of investment in infrastructure and technology coupled with sustainable practices should be maintained in the future.

### II.D.1.4.5. Input use

The agri-food sector is a leading sector in the economy of Türkiye that affects food security, employment, and rural development. This report gives an overview of the input used in the agrifood field in Türkiye, focusing mainly on fertilizers, pesticides, water, and labour.

**Use of Fertilizer and Pesticide**

Fertilizers and pesticides are inputs that Türkiye uses to increase agricultural productivity. However, their misuse may cause environmental damage and human health-related issues. According to the Report of FAO 2023, Türkiye is striving for the optimal use of fertilizers with the adoption of integrated techniques of balanced fertilization as well as integrated pest management. The Ministry of Agriculture and Forestry has adopted numerous steps like the formulation of rules by enacting many regulations concerning their safe and effective use.

**Water Management**

Water is vital for agriculture, especially in drought-prone areas. Türkiye has made investments in improvement of its irrigation infrastructure, which will facilitate the efficient use of water. Modern practices in irrigation, such as drip and sprinkler systems, will be practiced to minimize wastage and increase yield from the crops (FAO, 2023). The government also focuses on policies that promote sustainable water management.

**Labor**

Labor is another primary factor in the agri-food sector. Rural population constitutes a large percentage of the Turkish agricultural workforce. Efforts are made to curb labor inadequacy compared to increasing labor productivity (FAO, 2023). These efforts include women's empowerment in agriculture, given their essential role in the sector.

**Economic and Environmental Impact**

The use of agricultural resources has a dual effect: they themselves have biological, economic and environmental impacts. Good management can lead to increased productivity and production, thereby contributing to economic growth and development, while poor management can cause potential harm to the environment. Türkiye is trying to balance these aspects through policies that take into account sustainable agricultural practices (FAO 2023). Efficient use of agricultural resources in the food chain is essential to ensure food security and sustainability in Türkiye. The government is also taking several measures in cooperation with international organizations such as FAO to vote and practice the best ways to use fertilizers, pesticides, water and labor for equitable use. Additional efforts in this regard are essential for the long-term healthy growth of Turkish agricultural systems and nature..

### II.D.1.4.6. Market access

The agri-food sector is a strategic sector for Türkiye's economy. It is fully dynamic and competitive, providing export potential. The report looks at the current market

conditions, regulatory environment, major market players, and opportunities for foreign investors.

Agriculture has always been the backbone of Türkiye's economy, contributing to GDP and employment. With its topography and good climate, a variety of agrifood products can be produced by Türkiye. This report aims to provide an overview of dynamics, trade policies, and potential opportunities in the Turkish agrifood market.

### II.D.1.4.6.1. Overview of the Market

#### Economic Context

The economy of Türkiye is quite diversified, within which a significant role belongs to agriculture. According to estimations of the Turkish Statistical Institute, TÜİK (2023), agriculture contributed to about 6% of GDP in 2022 and employed up to 18% of the workforce. It includes all edible products, from cereals, fruits, and vegetables to dairy and meat products.

#### Agrifood Production

For instance, Türkiye is one of the leading countries producing different agricultural products. For example, the country stands in the identified list of global leaders in the production of hazelnuts, apricots, cherries, figs, and the cultivation of pomegranates. Suitable diversified climatic regions in the country are leading to the cultivation of diversified crops.

### II.D.1.4.6.2. Regulatory Environment

#### Policies on Trade

Türkiye has a trade policy due to its customs union agreement with the European Union. Union allows the free movement of industrial goods while excluding agricultural products. Türkiye enjoys several bilateral and multilateral trade agreements and import regulations, tariffs, and non-tariff barriers that can influence access to the foreign agrifood market. (Ministry of Trade, 2023).

#### Food Safety and Standards

The Turkish Food Codex gives information connected with legislation and standards on questions of food safety and quality. The application of the standards determined in the specified codex is under the responsibility of the Ministry of Agriculture and Forestry for the products, whether foodstuff is of a national origin or is imported, in terms of the provision of fulfillment of set criteria on safety and quality (Ministry of Agriculture and Forestry, 2023).

**Key Market Players**

The Turkish agrifood market is a mixture of national and international companies. Companies such as Tiryaki Agro, Anadolu Etap, and Pinar are national entities that produce and process different types of agrifood products. Foreign companies include Nestlé, Unilever, and Cargill, which are also most active in the Turkish market due to local production lines and distribution channels (Euromonitor, 2023).

### II.D.1.4.6.3. Market Opportunities

**Export Potential**

Türkiye's agrifood sector contributes to national income, employment, and trade. Türkiye's diverse climate and fertile soils allow for the cultivation of a wide range of crops, including fruits, vegetables, and cereals, while its strategic geographic location provides access to key markets in Europe, the Middle East, and Asia.

**Key Drivers of Export Potential**

1. **Diverse Agricultural Production**:

Türkiye ranks among the world's leading producers of various agricultural products. It is a top producer of hazelnuts, apricots, figs, cherries, and tomatoes, among others (Erkan & Yalcin, 2022). The country also has significant livestock and fishing sectors, which add to the diversity of its agrifood exports.

2. **Strategic Location**:

Türkiye's proximity to major consumer markets, including Europe, the Middle East, and Asia, provides it with a competitive advantage in terms of logistics and transportation costs. The country's infrastructure supports rapid access to these regions, enhancing its agrifood trade potential (TÜSİAD, 2021).

3. **Rising Demand for Organic and Processed Foods**:

Global demand for organic and processed foods has increased in recent years, and Türkiye is well-positioned to capitalize on this trend. Turkish exporters have developed capabilities in organic agriculture, which appeals to health-conscious consumers in Europe and the Middle East (Ozkan & Demir, 2023).

4. **Government Support and Investment**:

The Turkish government has implemented a range of policies and incentives to support the agrifood sector. These include subsidies for farmers, research and development initiatives, and the promotion of Turkish food products in international markets. Such measures aim to increase the competitiveness of Turkish agrifood exports (Agricultural Policies Review, 2021).

5. **Challenges and Opportunities**:

While Türkiye's agrifood sector holds significant potential, it also faces challenges, including climate change, fluctuations in global commodity prices, and geopolitical uncer-

tainties. However, these challenges can be mitigated by adopting sustainable agricultural practices and enhancing trade relations with emerging markets (FAO, 2022).

Türkiye's agrifood sector is well-positioned to expand its export base due to its diverse production, strategic location, and growing demand for organic products. Continued investment in sustainable practices and infrastructure development will further enhance its global competitiveness.

**Investment Opportunities**

Government incentives include tax breaks and investment-sector subsidies for foreign investors in joint ventures, direct investment in production facilities, and local partnerships. In a big way, these government incentives will reduce the cost of investing in the growing agrifood sector in Türkiye.

### II.D.1.4.6.4. Challenges

**Barriers to market entry**

However, there are requirements that foreign companies must deal with in order to be successful in the Turkish agrifood market. These challenges include relatively strict rules, high import taxes, and strong competition from well-established Turkish companies. Again, economic fluctuations and political instability may impact market conditions (World Bank, 2023).

Türkiye's agrifood industry is dynamic, and from a foreign investor's point of view, there is a potentially highly profitable market. Strategic location, diversity in agricultural products, and the increasing consumer market in Türkiye have opened opportunities for several investments in the country's agrifood industry. However, the regulatory environment and the market challenges must be cautiously realized to make successful inroads into this market.

### II.D.1.4.7. Progresses over climate-smart and digital agriculture

Climate-smart agriculture is an approach to developing integrated measures that respond to the challenges of food security and sustainable agriculture development in a changing climate. Initiatives that Türkiye has implemented as part of climate-smart agriculture include:

1.Policy and Strategic Framework: Türkiye has developed comprehensive policies and strategies to integrate climate resilience in the country's agricultural approaches holistically. It is proactive in formulating strategies that are in line with international-based frameworks, such as the Paris Agreement.

2. Sustainable Land Management: The Turkish government developed projects against soil erosion, sound water management, and sustainable land use practices. These include making the various agricultural landscapes more resilient to climate variability.

3. Research and Innovations: Significant funding was directed towards agricultural research and innovation in the development of crop varieties and farming methods that are resilient to climate change. Collaboration with international organizations was crucial to advance these activities.

Digital agriculture implies the use of digital technologies to enhance farming practices, productivity, and sustainable agricultural development. The Turkish approaches to the practice of digital agriculture include the following:

1. Smart Farming Technologies: Technologies like the Internet of Things, drones, and concept agriculture methods have found widespread use. They have helped farmers monitor the health of crops, maximize the utilization of resources, and maximize yield (TÜBİTAK, 2022).

2. Digital Services: Digital services, like e-TARIM and applications, should be designed so that information is real-time and available at farmers' fingertips on weather forecasts, market prices, and best practices for minimizing risks and for effective decision-making by farmers.

3. Capacity Building and Education: Enhancing the digital literacy competencies of farmers through training and workshops. Among other things, these programs aim to equip farmers with the skills to use digital tools correctly.

It provides overall information on the policies and strategies, as well as the technological developments of Türkiye, in its efforts aimed at enhancing the agriculture of the country through climate-smart and digital agriculture.

### II.D.1.4.8. Government Policies and Interventions (internal support, subsidies, extension services & etc.)

Agriculture is one of the most important sectors of the Turkish economy, well integrated with policies and government interventions in line with productivity growth, sustainability and economic stability. The policies include internal support mechanisms, subsidies, and extension services, all of which are designed to stimulate growth and resilience in the agricultural sector.

**Internal Support**

The Turkish government has created many domestic structures that facilitate the growth of agricultural production. These domestic structures include: financial support, infrastructure development and research initiatives. For example, according to the Ministry of Agriculture and Forestry (2021), such investments in irrigation infrastructure and rural development projects have recorded a sharp increase in agricultural productivity and efficiency. In a growing trend, the government is also starting to support agricultural modernization by providing capital goods to make the sector competitive.

**Subsidies**

Subsidies are essential to support Turkish agricultural producers. Financial assistance aims to reduce the production costs of goods such as seeds, fertilizers and pesticides.

According to the Turkish Statistical Institute (TSI, 2020) report, some direct income support payments stabilize producers' income and promote sustainable agriculture. Moreover, through the price support element, the government sets a minimum price for some products to guarantee farmers fair market prices and protect them from market fluctuations.

**Extension Services**

The extension system is crucial to transfer knowledge and innovation to farmers. In Türkiye, the Agricultural Extension and Advisory Service trains and provides technical assistance to farmers to improve their farming skills to adopt new technologies. For example, the Food and Agriculture Organization states that these services include workshops, field demonstrations, and individual consultations with farmers to develop farmers' skills and knowledge, thereby increasing yields and sustainable supply. All these government policies and interventions in the Turkish agricultural food sector support the economic situation, expansion, and overall strengthening of the system.The agrifood production is expected to improve and develop with continued investment from Türkiye.

### II.D.2.1. Analysis of current state of agri-food trade in the country

#### II.D.2.1.1. Export of the main agri-food products

A good climate, a diverse agricultural landscape, and a strategic location have all brought Türkiye into importance in the global agri-food market. This report focuses on the critical agri-food products in Türkiye to show an overview of recent year statistics regarding their main exporting products.

**Major Agri-Food Exports**

The agri-food of the country is diversified, with a significant share of various commodities exported to the international markets. The high agri-food products in Türkiye comprise essentially fruit and vegetable products, cereals, nuts, and products of processed foods.

1. Fruits and Vegetables

- Citrus Fruits: Among others, orange, lemon, and grapefruit are the significant items of citrus fruits exported to various countries. The Mediterranean climate helps in producing high-quality citrus fruits.
- Tomatoes: Fresh and processed tomatoes are major export commodities, and many volumes are sent to European countries.
- Dried Fruits: Türkiye is one of the leading producers and exporters of dry fruits, which include dried apricots, figs, and raisins.

2. Cereals

- Wheat and Wheat Products: Türkiye is among the world's biggest exporters of wheat and wheat-based products, including flour and pasta. The milling industry in the country is also a significant contributing factor to the high export number.

- Barley: It is also one of the significant cereal exports, although this product mainly plays a role as an animal feed for importing countries.

3. Nuts

- Hazelnuts: Türkiye is the leading producer and exporter of hazelnuts. In the Black Sea region, favorable conditions provide good quality and a large supply volume.

- Pistachios: The Turkish pistachios in the Gaziantep region are famous for their taste and quality.

4. Processed Foods

- Olive Oil: Türkiye exports vast volumes of olive oil, and its high-quality extra-virgin olive oil is of great interest to many.

- Confectionery and Biscuits: The country has a strong confectionery and biscuit industry, producing many sweets, chocolates, and biscuits for export.

**Export Statistics and Trends**

This is evident from the Turkish Statistical Institute's assertion that agri-food exports from Türkiye have been increasing at a constant rate over the last decade. For the case of 2023, the total value of agri-food exports was some $23 billion, a decent share of the whole export-led economy in the country (TÜİK, 2024).

- Citrus Fruits: $1.2 billion was earned in exports in 2023, and the most significant markets were Russia, Germany, and Iraq.

- Tomatoes: The exports of fresh and processed tomatoes amounted to $750 million, with the European Union being the largest importer.

- Dried Fruits: Export earnings from dried fruits were $1.5 billion, with the major destinations being the United States and Europe.

- Hazelnuts: The overall figure for hazelnut exports was $2.3 billion, and the central importing countries were Italy and Germany.

- Olive Oil: Exports realized $600m from this product, all from the growth in sales to the U.S. and Japan.

Agri-food export is one of the main driving forces behind the Turkish economy, with its national capability and strategic export policy based on the country's agricultural heritage. Constant investment in quality improvement, marketing, and trade relations will possibly keep up and further develop its position in the world agri-food markets.

### II.D.2.1.2. Import of the main agri-food products

Türkiye is among the significant actors in the global agri-food business, as an exporter and as an importer. Despite having a relatively active agricultural sector, Türkiye still needs to import certain agri-food supplies to meet its domestic demand. The main agri-food products imported by Türkiye are the following:

**Grains and Cereals**

Wheat: Türkiye is one of the largest wheat-producing countries. However, due to extremely high domestic consumer demand for this item, it also imports massive

quantities of this item to produce bread and pasta, among others (FAO, 2021).

Corn (Maize): Primarily imported for feeding livestock, and significant amounts come from countries like Ukraine and Russia (TMO, 2022).

**Oilseeds and Vegetable Oils**

Soybeans and Soybean Oil: The products are mainly used for animal feed in the food industry. Türkiye imports the products from the USA and Brazil, among others (USDA, 2023).

Sunflower Oil: Türkiye is one of the largest sunflower oil importers. The country mainly imports sunflower oil from Ukraine and Russia due to the competitive price and proximity (ITC, 2022).

**Fruits and Nuts**

Bananas: The product is mainly imported from Ecuador and the Philippines since the level of domestic production cannot meet the high consumer demand (TUIK, 2023).

Tropical Fruits: Pineapples, mangoes, and avocados are imported according to the increasing favour of exotic fruits (TUIK, 2023).

**Animal Products**

Beef: Türkiye buys beef from countries such as Brazil, Uruguay, and the USA due to domestic production limitations in beef (FAO, 2021).

Dairy: The country imports milk powder and cheese from the EU (Germany and the Netherlands) to underpin local manufacturing (USDA, 2023).

**Seafood**

Fish: Despite the country's potential for growth in the aquaculture sector, products such as salmon and mackerel are still imported from countries like Norway and Iceland.

**Pulses**

Lentils: Türkiye imports huge volumes, mainly from Canada, to support its local production of lentils (FAO, 2021).

**Drinks**

Coffee: Major imports come from Brazil and Colombia, meeting the increasing demand for the product in the Turkish consumers' market (USDA, 2023).

### II.D.2.1.3. Level of self-sufficiency on the main agri-food products

Türkiye boasts of a diverse climate and vast agricultural lands; therefore, this makes the country have high aspirations for self-sufficiency levels in agricultural food. However, there are differences in self-sufficiency levels for different products. The following article will illustrate the self-sufficiency levels for major agri-food products in Türkiye.

**Grains and Cereals**

Wheat: Türkiye is among the world's top wheat producers, producing around 20 million metric tons annually, almost meeting domestic consumption. Yet, Türkiye also imports wheat to secure price and quality (FAO, 2021). Maize (Corn): Türkiye's local needs include maize for fodder, and while its production suffices to meet this demand, the country still maintains imports to offset any shortfall.

**Oilseeds and Vegetable Oils**

Soybeans and Soybean Oil: Türkiye is not self-sufficient with soybeans and soybean oil. Due to weak domestic production, the country is almost wholly dependent on imports from the United States and Brazil. Sunflower Seed Oil: Türkiye is one of the biggest sunflower seed producers, but at the same time, it imports large amounts of sunflower oil.

Fruits and Nuts

Bananas: Bananas are produced locally in insufficient quantity to meet the high demand for the product. In this regard, much of it is imported from Ecuador and the Philippines (TUIK, 2023). Tropical Fruits: Pineapple, mango, and avocados pose a catastrophe in the production of tropical fruits, and in effect, Türkiye relies intensely on the import of such products (TUIK, 2023).

**Animal Products**

Beef: Türkiye is not self-sufficient in beef production. The country imports beef from Brazil, Uruguay, and the USA to meet domestic consumption (FAO, 2021). Dairy: The dairy industry in Türkiye is extensively developed. The country produces a broad and deep portfolio of dairy products. However, to supplement the inadequate local production and also to ensure an unbroken supply of milk powder and cheese, it imports milk powder and cheese from the EU (USDA, 2023).

**Seafood**

Fish: Aquaculture is on the rise in Türkiye, serving as a valuable source of seafood. However, imports of some fish types to meet market demand are still in place, such as Salmon, Mackerel, and more.

**Pulses**

Lentils: Türkiye substantially produces its lentils; however, the country imports lentils, especially from Canada, when there are low domestic stocks to make up for the shortfall in demand (FAO, 2021).

**Beverages**

Coffee: Türkiye is not self-sufficient in the production of coffee and relies entirely on imports made by major coffee-producing countries like Brazil and Colombia to meet domestic consumption (USDA, 2023).

### II.D.2.1.4 . The balance of agri-food trade with member countries of the Organization of Turkic States (OTS). Disruptions in supply chains and cross-border trade between Turkic countries

Trade in agri-food between Türkiye and each of these member countries represents an essential element of economic integration and agri-food security in the region. This paper aims to research the agri-food trade balance and supply chain disruption across the borders of Türkiye and other OTS members.

**Trade Balance**

**Türkiye and Azerbaijan:** Türkiye supplies Azerbaijan with agri-food products such as cereals, dairy products, and processed foodstuffs while importing fresh fruits, vegetables, and nuts from this country. On the whole, the balance of trade is generally in favor of Türkiye, the reason being its relatively more extensive and more diversified agriculture sector (TUIK, 2023). Kazakhstan ranks first in terms of delivering grains to Türkiye; in turn, Türkiye supplies vegetables, fruits, and products from their process manufacture to Kazakhstan. This type of trading partner is complementary, and overall, trade is balanced.

**Türkiye and Kyrgyzstan:** Türkiye exports processed foods, dairy products, and drinks to Kyrgyzstan, whereas major exports from Kyrgyzstan to Türkiye are fresh fruits, vegetables, and products made off meat. The trade balance is generally in favor of Türkiye because the number of industries in food processing is higher than in Kyrgyzstan (USDA, 2023).

**Türkiye and Uzbekistan:** Export from Türkiye agri-food products to Uzbekistan include, among others, cereals, dairy, and processed foods. Fresh fruits, fresh vegetables, and nuts are among the top-selling fresh products that Uzbekistan exports to Türkiye. Generally, the balance of trade is in favor of Türkiye as a result of advanced food processing abilities in the country (ITC, 2022).

**Supply chain and trade disruptions**

**Failure-Cause Factors**

1. Geopolitical Instability: Any political conflict within the region could translate into border disruptions on cross-border trade; that is, for example, border closures or increased security measures that can delay shipments, in turn increasing costs.

2. Transportation Infrastructure: Inadequate or poorly maintained, it will block adequate transportation infrastructure for the goods' dispersion. This refers, in fact, to road, rail, and port facilities, which are of importance for operatively and economically friendly trade (OECD, 2022).

3. Customs and Trade Regulations: Procedures in customs are detailed, and such non-tariff barriers to trade slow down the process while increasing transaction costs by a considerable amount. Harmonizing standards and making customs procedures easier are therefore becoming more and more important for more and smoother trade flows (ITC, 2022).

4. Pandemic Effect: The COVID-19 pandemic has only revealed the vulnerability of the global supply chain, including the supply chains in the OTS. Lockdowns, labor shortages, and transportation restrictions have disrupted production and distribution channels (FAO, 2021).

**Specific Interruptions**

Kazakhstan and Kyrgyzstan: Periodic tensions at borders have led to border closures, impacting the movement of agri-food products. More developed diplomatic relations and trade agreements would be needed to overcome these shortcomings. Azerbaijan and Türkiye: Strong trading relations, but from time to time, temporary political disagreements result in nontariff barriers, including stepped-up inspections or suspension of trade, as would be the case temporarily (World Bank, 2022). Uzbekistan's trade policies are changing, and liberalization without clarity in policy does, at times, create a few uncertainties for exporters, manifested in the trade flow between the two countries.

### II.D.2.1.5. Certification and foreign trade procedures. Compliance with WTO standards and procedures

Türkiye, having joined the organization in 1995, applies the organization's standards along with its procedures to facilitate international trade. This report describes the conditions and procedures required for certification and exchange of foreign currency in Türkiye, in accordance the WTO standards. **Certification Procedures**

1. Sanitary and Phytosanitary (SPS) Measures: SPS measures in Türkiye are applied to protect humans, animals, and plant life. These measures conform to the SPS Agreement of the WTO, which provides that the measures are scientifically based and not arbitrary or unjustifiable (WTO, 2022).

2. Technical Barriers to Trade (TBT): Technical regulations and standards for Türkiye and conformity assessment procedures comply with the TBT Agreement. They have a minimal trade impact and are consistently applied (WTO, 2022).

3. Food Safety and Quality Standards: The Food Turkish Codex sets the standards for the safety and quality of foods harmonized with the guidelines by the Codex Alimentarius Commission. These regulations establish standards to ensure food products meet the safety requirements at both the domestic and international levels.

**Foreign Trade Operations**

1. Import and Export Licensing: Licensing in Türkiye is a measure for imports and exports, mainly on products that may affect national security, public health, or the protection of the environment. The procedures are transparent and have been put under the licensing agreement of the World Trade Organization (Ministry of Trade, 2023).

2. Customs Procedures: Turkish customs procedures are developed in a manner to ease the process of trade as well as to keep the country's laws and international agreements. It has also signed such measures in the WTO Trade Facilitation Agreement to ensure efficiency in customs by simplifying the processes and reducing times for clearance to ensure transparency (World Bank, 2022).

3. Tariff and Non-Tariff Measures: Türkiye imposes tariffs and non-tariff measures in alignment with its WTO commitments. The tariff structure is public and developed to protect domestic industries consistent with the rules of the WTO (WTO, 2022).

**Complies with WTO Standards**

1. Transparency: Türkiye is transparent in its regulations and procedures of trade by informing the WTO of any changes and providing good information to the partners in trading. It also publishes every regulation and procedure on the official websites of the government (WTO, 2022).

2. Dispute Resolution: Türkiye *actively employs* the dispute resolution mechanism of the WTO to deal with trade disputes. This ensures that the conflicts that arise in trade are handled fairly and legally (WTO, 2022).

3. Trade Policy Reviews: The WTO sometimes holds trade policy reviews within Türkiye to monitor the nation. This is one of the benefits for Türkiye towards multilateral trading principles and the global market standard that it ascribes to as an entity (WTO, 2022).

**Challenges and Areas for Improvement**

1. Harmonization of standards: Türkiye continues to make efforts to align its national standards with international standards in an attempt to further reduce technical barriers and facilitate trade (OECD, 2022).

2. Capacity Building: Building the capacity of Turkish institutions to actually implement and enforce WTO-compliant procedures remains a critical area. This will include training for both customs and other regulatory agents (World Bank, 2022).

3. Infrastructure Development: There is a need for providing a robust setup of infrastructures, including trade-related infrastructures such as ports and logistics networks, which in its path support adequate trade flow and meet international standards (OECD, 2022).

### II.D.2.1.6. Impact of Middle corridor on country's food security

The Middle Corridor, consisting of the Trans-Caspian International Transport Route, assumes extreme importance, given its direct and indirect impact on Türkiye's potential to ensure a stable and secure food supply.

**Growth in Trade and Import Exposure**

The Middle Corridor allows better trade between Türkiye and transit countries. Enhanced link, therefore, will enable Türkiye to import much-needed food products more effectively . Time and cost savings on transportation ensure that Türkiye can source different food products and can, therefore, mitigate the risks related to domestic agricultural deficits (Büyükbay, 2020).

**Agricultural Export Growth**

For Türkiye, being at the crossroads of the Middle Corridor, the benefits of exporting agricultural products to Central Asian countries and beyond are cumulative. Thus, it not only benefits the government in terms of agriculture but also helps it build sustainable economic stability to reinvest in food security programs. There is also pressure for greater demand for Turkish agricultural products, hence the use of high-tech agricultural technologies and techniques in the country to improve productivity and sustainability.

Resilient Supply Chain

The Middle Corridor diversifies supply routes. It provides greater resilience to the food supply chain as a whole against geopolitical tensions that may arise and disrupt flows that are closely related to food imports and exports. This is closely related to geopolitical tensions and any other disruptions that significantly affect supplies. This is critical to ensuring the stability of food supplies in times of global crisis. According to Demir (2022), the resilience of food supplies is related to this.

Technological and Infrastructure Achievements

Investments as a source along the Middle Corridor have contributed to technological development and infrastructure improvements in Türkiye. Thus, modern transport and logistics infrastructure improves trade as well as the functionality of domestic food distribution networks in a more efficient manner than before. Improved storage, transportation and logistics technologies and systems generally increase the shelf life of food products while providing a more reliable connection to consumers.

### Regional Cooperation and Stability

The Middle Corridor provides regional cooperation and economic stability for a safe food environment. In this regard, Türkiye's cooperation with its neighboring countries is also likely to bring common practices in agriculture as well as joint R&D projects. Regional stability will create a favorable environment for agricultural growth and food security.

In conclusion, the Middle Corridor significantly improves Türkiye's food security through greater trade opportunities, increased agricultural exports, a more resilient supply chain, technological improvement and regional cooperation. In this regard, as Türkiye continues to explore the strategic trade route, it will contribute to improving the food security structure and thus ensuring stability and sufficiency of food supplies for the population..

### II.D.2.1.7. Impact of Russia-Ukraine conflict on Country' food Security

In 2022, a war broke out between Ukraine and Russia. Ukraine is the world's leading exporter of wheat, corn, and sunflower oil production. Russia and Ukraine are two of the most significant forces in the sphere of agri-food. Both are sellers of primary products, such as wheat and sunflower oil, to market. This report covers the impact of the war between Russian and Ukraine on Türkiye's food security.

#### Wheat Supply and Prices

Wheat Import Disruption:

Wheat is a crop that is widely produced and consumed. Türkiye is a major wheat importer; during the war, its "wheat import" supply was disrupted. The war disrupted Russia's and Ukraine's ability to export wheat. Both countries have suffered from the war (FAO, 2022).

Wheat price volatility: As a result of reduced wheat exports from war-torn countries, global wheat prices have risen sharply. Türkiye imports wheat to increase its domestic production. Imports are held down by the cost of the commodity at the expense of consumers and the food industry as a whole (World Bank, 2022).**Sunflower Oil and Corn**

Sunflower Oil Shortages: Türkiye ranks Ukraine as one of the primary exporters of sunflower oil. Sunflower oil is widely used by Turkish families and the food industry. Massive destruction in the war has severely disrupted several supply chains, leading to acute scarcity and high prices of sunflower oil in Türkiye (ITC, 2022).

Corn Supply Issues: Corn is a major staple, especially in animal feed input and, thus, in food product production. About 80% of it is used. Corn supply in Türkiye has been short since they imported it from Russia and Ukraine. «Russia and Ukraine are key suppliers, so the conflict has constrained supply and driven up prices, which has had knock-on effects on livestock feed prices and, in turn, meat and dairy prices» (FAO, 2022).

**Trade and Transport Problems**

Transport and Logistics Disruptions: War has interfered with the Black Sea shipping routes, which are still the main channel of transportation of grains and oilseeds to Türkiye. This has resulted in more delays and additional transport expenses than ever before, worsening the already challenging supply chain. Alternatively, countries in South America and the United States have been sourcing the same commodities from Türkiye, following their ruined trade routes; however, the USDA (2023) notes that new trade routes could take time and may be more expensive.

**High Food Prices**

Rising Food Prices: The aggregate impact of this supply chain disruption, added to the increasing world commodity prices, has evidenced itself through the effects of rising prices for food in Türkiye. Inflationary pressure, meanwhile, has touched upon the accessibility of food to the Turkish consumer, keeping in mind necessary food items (TUIK, 2023).

Effects on the Vulnerable: High food prices place the heaviest burden on people experiencing poverty and further inflame food insecurity among vulnerable people in Türkiye (World Bank, 2022).

**Government Response**

Subsidies and Price Controls: To control the skyrocketing prices, the Turkish government has since decided to formulate a policy for food subsidies and price controls in addition to controlling the market, these measures also aim to safeguard consumer interests from extreme price volatility (Ministry of Trade, 2023).

Strategic Reserves: In this case, the strategic reserves held by various commodities, mainly wheat and sunflower oil, have been effected by ensuring that these two commodities are shielded from any shock in supply, thus securing stabilization for the same in the country (FAO, 2022).

The war between Russia and Ukraine has significantly undermined Türkiye's food security. Secondly, it has disrupted the supply of essential goods, causing food prices and inflation to rise and fall. These would be important steps that Türkiye must take to stabilize the market and ensure the availability of other sources. However, a long-term solution to the problems will depend on stable geopolitical developments in global supply chains.

### II.D.2.1.8. Digital tools used in agri-food trade

Digital tools have started to play a more prominent role in agri-food trading by making the supply chain more productive, transparent, and connected. Here is a list of the most noticeable digital tools used in agri-food trading in Türkiye nowadays.

1. E-Commodity Bazaar:

It is an online platform that enables buyers and sellers of agricultural products to come together to transact business and provide market information.

- Ministry of Agriculture and Forestry. (n.d.). E-Commodity Bazaar. Retrieved from [https://www.tarimorman.gov.tr] (https://www.tarimorman.gov.tr)

2. Turkish Electronic Commodity Exchange (TÜRİB):

It is this that enables the ability to engage in electronic trading in agricultural commodities; therefore, it assists in easy market interaction and also makes prices transparent.

- Turkish Electronic Commodity Exchange. (n.d.). Retrieved from [https://www.turib.com.tr] (https://www.turib.com.tr)

3. Agricultural Market Information System (TARBİL):

TARBİL is an integrated system that provides real-time information regarding market prices, weather conditions, and agricultural statistics applicable in decision-making.

- TARBİL. (n.d.). Retrieved from [https://www.tarbil.gov.tr] (https://www.tarbil.gov.tr)

4. e-Auction Systems:

Online-based auction systems provide farmers with opportunities to sell their agricultural products, which may help them increase their reach and obtain better prices.

- Demirbaş, N., & Yıldırım, İ. (2018). The effect of e-auction systems on agricultural commodity prices in Türkiye. *Journal of Agricultural Informatics, 9*(2), 45-57.

5. Traceability Systems:

This presents a Traceability System Based on Blockchain technology, by which it would identify the source and follow the products from the food sector during their flow in the chain, both providing the information with transparency and safety.

- Ergen, E., & Koc, A. (2020). Blockchain applications in Turkish agri-food supply chain. *Journal of Food Quality, 2020*, 1-12. https://doi.org/10.1155/2020/7354206

6. Farm Management Software:

This represents a technology that would help the farmers manage their activities on crop planning, resource allocation, and financial management.

- Tekin, B., & Duru, M. (2019). Case study for the adoption of farm management software among farmers in Türkiye: An analysis. *Agricultural Systems, 173*, 47-56. https://doi.org/10.1016/j.agsy.2019.02.004

7. Mobile Applications:

Farmers use mobile applications to access real-time information about market prices, weather conditions, pest and disease management guides, and direct linkages with buyers.

- Güler, S. (2021). The effect of mobile applications on agricultural productivity in Türkiye. *Turkish Journal of Agriculture and Forestry, 45*(3), 301-310. https://doi.org/10.3906/tar-2009-86

Through the incorporation of these digital tools, Türkiye seeks to modernize its agri-food trade while at the same time rendering it much more efficient, transparent, and competitive in the global market.

### II.D.2.1.9. Government Policies and Interventions. Relevance to the Turkic World Vision-2040.

Türkiye's agri-food sector is a vital component of its economy and a key focus area for the Turkic World Vision 2040. This vision aims to strengthen cooperation among Turkic states in various fields, including agriculture and food security, to promote regional stability and development (Turkic Council, 2021). This report examines Türkiye's public policies and interventions in the agri-food sector and their alignment with the Turkic World Vision 2040.

#### II.D.2.1.9.1. Agricultural Development Policies

**Modernization and Mechanization**

Türkiye's agricultural policy prioritizes the modernization and mechanization of farming methods. The government has implemented initiatives to provide farmers with access to modern machinery, advanced farming techniques, and training programs. These efforts aim to increase agricultural productivity and efficiency, which are necessary to achieve the economic and food security goals outlined in the Turkic World Vision 2040 (Ministry of Agriculture and Forestry, 2023).**Research and Development**

Investment in agricultural research and development (R&D) is a cornerstone of Türkiye's agrifood policy. The government supports R&D initiatives focusing on crop improvement, pest control, and sustainable farming practices. Collaborative research projects with Turkic states enhance knowledge sharing and innovation, contributing to the overall agricultural development of the region (TÜBİTAK, 2022).

#### II.D.2.1.9.2. Food Security Policies

**Subsidies and Support Programs**

Türkiye has established various subsidies and support programs to ensure food security. These programs provide financial assistance to farmers, stabilize food prices, and promote the production of essential crops. By ensuring a stable and sufficient food supply, Türkiye contributes to the food security objectives of the Turkic World Vision-2040 (Ministry of Agriculture and Forestry, 2023).

**Emergency Response and Resilience**

The Turkish government has developed policies to enhance the resilience of its agrifood sector against natural disasters and economic shocks. These policies include the creation of strategic food reserves, disaster response plans, and insurance schemes for farmers. Such measures are critical for maintaining food security and stability in the Turkic region (AFAD, 2023).

### Sustainable Agricultural Practices

#### Environmental Sustainability

Environmental sustainability is a key focus of Türkiye's agricultural policies. The government promotes practices such as organic farming, conservation agriculture, and efficient water management. These practices not only protect natural resources but also align with the sustainable development goals of the Turkic World Vision-2040 (Ministry of Environment and Urbanization, 2022).

#### Climate Change Adaptation

Türkiye's agrifood policies include strategies for adapting to climate change. These strategies involve the development of drought-resistant crop varieties, improved irrigation systems, and climate-smart agriculture techniques. By addressing the impacts of climate change, Türkiye supports the long-term sustainability and resilience of the agrifood sector in the Turkic region (Ministry of Agriculture and Forestry, 2023).

### Trade and Economic Integration

#### Export Promotion

Türkiye has implemented policies to promote the export of agricultural products. These policies include trade agreements, export subsidies, and the establishment of international trade fairs. By increasing agricultural exports, Türkiye strengthens its economic ties with other Turkic states, supporting the economic integration goals of the Turkic World Vision-2040 (Ministry of Trade, 2023).

#### Regional Cooperation

Regional cooperation in the agricultural sector is a priority for Türkiye. The government is actively involved in regional initiatives and organizations aimed at expanding agricultural trade, research cooperation, and policy harmonization among the Turkic states. Such cooperation is vital to achieving the collective development goals of the Turkic World Vision 2040 (Turkic Council, 2021). The Turkish government's policies and interventions in the agri-food sector are critical to achieving the goals of the Turkic World Vision 2040. By focusing on agricultural development, food security, sustainability, and trade, Türkiye not only strengthens its agricultural sector, but also makes a significant contribution to the collective aspirations of the Turkic region. Continued cooperation and policy harmonization will be essential to realizing the sustainable and integrated future envisioned in the Turkic World Vision 2040.

## SECTION II.D.3. SDGS PROGRESS

### II.D.3.1. Role of agri-food systems in relative SDGs' targets achievement

Food security remains a pressing concern globally and in Türkiye. According to the Food and Agriculture Organization (FAO, 2022), ensuring access to adequate and nutritious food for all is vital for sustainable development. The Sustainable Development Goals (SDGs), adopted by the United Nations in 2015, set a comprehensive framework for addressing global challenges, including food security. This report delves into the relationship between the SDGs and food security in Türkiye, emphasizing the interlinkages between the achievement of SDG 2 (zero hunger) with other goals and the unique context of Türkiye.

#### II.D.3.1.1. Food Security and Nutrition (SDG 2)

2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.

2.2 By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons.

2.3 By 2030, aim to double the agricultural productivity and incomes of small-scale food producers, particularly women, indigenous peoples, family farmers, pastoralists, and fishers. This can be achieved by ensuring secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets, and opportunities for value addition and non-farm employment.

2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, help maintain ecosystems, strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and progressively improve land and soil quality.

2.5 By 2020, keep the genetic diversity of seeds, cultivated plants, animals (both farm and domesticated) and their related wild species high. One way to do this is to have well-run, diverse seed and plant banks at the national, regional, and international levels. Also, make sure that everyone has access to genetic resources and the benefits that come from using them, as agreed upon by everyone in the world.

2.A Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development, and plant and livestock gene banks to enhance agricultural productive capacity in developing countries, particularly the least developed ones.

2.B Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round.

2.C Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility.

*Source: UN Sustainable Development*

### II.D.3.1.2. Poverty Reduction (SDG 1)

Poverty reduction is a huge part of sustainable development, so it is considered a goal in the agri-food sector of countries with a huge rural population, such as Türkiye. The first of the 17 Sustainable Development Goals developed by the United Nations sets the goal of eradicating poverty worldwide by 2030. This article examines the efforts and struggles related to poverty reduction in the Turkish agri-food sector and identifies initiatives, policies and results achieved in this area. Historically, agriculture in Türkiye has been a dynamic part of the economy and an occupation for most people, especially in rural areas. However, rural poverty remains a big problem. Indeed, according to TUIK, poverty rates are much higher than those in urban areas, making agri-food an area of need that requires targeted interventions to reduce poverty.

**Key Programs and Policies**

Several programs and policies have been adopted to reduce poverty in the agri-food sector in Türkiye: Subsidies and financial support: The Turkish government provides farmers with various subsidies and financial support, including direct income support, fuel subsidies, and fertilizer subsidies. These measures aim to increase productivity and income in agriculture (Ministry of Agriculture and Forestry, 2020).

Agricultural Reform Implementation Project (ARIP): Launched in the early 2000s, ARIP aimed to restructure and modernize Turkish agriculture by promoting market-oriented production and increasing the competitiveness of Turkish farmers. The project included components such as land consolidation, rural infrastructure development, and financial support (World Bank, 2013).

Rural development programs: Programs such as the Instrument for Pre-Accession Rural Development (IPARD) provide financing for rural development projects, focusing on improving infrastructure, diversifying the rural economy, and making agricultural practices more sustainable. (European Commission, 2020).

**Challenges**

Despite this, some efforts are being made to alleviate poverty in the agricultural sector: Fragmentation and small farm sizes: Farm sizes in the sector are small and fragmented among farmers. The nature of these farms often prevents the achievement of high levels of productivity and economies of scale, which would contribute to lower production and income levels. Land consolidation has not been successful due to certain cultural and legal barriers (OECD, 2016).

Climate change: The rate of climate change in Türkiye is steadily increasing. Climate change directly affects agriculture through changes in precipitation patterns, increased frequency of extreme weather events, and water shortages (Turkish State Meteorological Service, 2021).

Market access and infrastructure: Market access continues to limit smallholder farmers in marketing their produce at competitive, reasonable prices, and in accessing the necessary inputs and services. Such financial and infrastructure efforts to reduce poverty in the Turkish agricultural sector are infused with policy reforms that have been very successful so far. Such current success stories, ranging from addressing structural issues to adapting to climate change, are key to sustainable poverty reduction. These efforts and innovations in policy and practice must continue to achieve SDG 1 in 2030.

### II.D.3.1.3. Health and Well-being (SDG 3)

Ensuring healthy lives and promoting the well-being of everyone at all ages. The Turkish agrifood sector is  a big factor in the general public's health. The impacts of agrifood on health and well-being in Türkiye are listed below, as well as the challenges and key initiatives that contribute towards realizing SDG 3.

#### Implications for Agrifood on Health and Well-being

The agri-food sector is, in general, at the center of the national agenda of Türkiye in matters relating to food security, nutrition, and public health. Some obstacles to its achievement under SDG 3 are as follows:

1. Nutritional Deficiencies: Malnutrition persists in rural areas due to factors such as progress, uninhabitable land, displacement, and a lack of diverse and nutrient-rich food options (World Health Organization [WHO]).

2. Food Safety: Food-borne diseases can critically affect health incidence. This danger multiplies manifolds as food safety standards are of supreme importance in preventing diseases (Food and Agriculture Organization [FAO], 2019).

3. Pesticides Use: Over-usage of pesticides in the agricultural fields imposes health hazards among consumers and agricultural workers. Therefore, it needs to make strict regulations with alternative practices (Turkish Ministry of Agriculture and Forestry, 2020).

#### Government Programs and Policies

These shortcomings have lately been obvious in the way the Turkish government has driven many initiatives to resolve them and enhance the health and well-being of the agrifood sector:

1. National Nutrition Strategy: Preached through balanced diet advocacy whose aim is to try and correct the micronutrient deficiencies in the country.

2. Food Safety Programs: The Food and Agriculture Organization has enacted improved regulatory frameworks and monitoring systems to ensure the meals produced are safe and high-quality (FAO, 2019).

3. Sustainable Agriculture Practices: Encouragement of programs promoting organic farming and reduced pesticide application to protect the surroundings and public health (Turkish Ministry of Agriculture and Forestry, 2020).

**The Role of International Organizations**

International organization assistance has been beneficial in enabling Türkiye to achieve SDG 3 in the agrifood sector:

1. Collaboration with WHO: WHO offers technical support services to nutrition programs and some funding and in matters of health education campaigns (WHO, 2018).

2. FAO Initiatives: FAO promotes sustainable agriculture and food safety programs; these must be accompanied by training and capacity-building initiatives.

The realization of SDG 3 in the agrifood sectors of Türkiye will work out in different ways—government initiatives, international support, and community engagement. Türkiye could improve its people's health and well-being by reducing nutritional deficiencies, making sure food is safe, and encouraging practices in the sustainable agricultural spectrum. This would help the country reach sustainable development, which is one of the most important things that can be done to affect global change.

### II.D.3.1.4. Gender Equality (SDG 5)

Gender equality is a key element of sustainable development and is therefore also included in one of the 17 Sustainable Development Goals. Goal 5 aims to achieve gender equality and empower all women and girls. Gender equality is a social justice issue in the Turkish agricultural sector and a prerequisite for improving agricultural productivity and food security. This article assesses the situation, challenges and actions to be taken to advance women in the Turkish agricultural sector in order to achieve gender equality.

**Current Situation in Türkiye with Regard to Gender Equality in Agrifood**

Women have a crucial role in the agri-food sector of Türkiye, performing activities right from cultivation to processing and marketing. The typical problem is that their contribution is often underrecognized and undervalued. FAO (2021) reports that women account for about 45% of all agricultural labor in Türkiye. Females show a high level of involvement, but they face systemic and structural constraints.

**Challenges faced by women in the agrifood sector**

1. Access to Resources and Land Ownership: The lowest access to resources, land, credit, and agricultural inputs is the biggest challenge that women experience in the

agri-food sector. In most scenarios, cultural beliefs and legal restrictions prohibit women from owning land. At the same time, owning land is the primary driver of loans and agricultural investments by all definitions (FAO, 2021).

2. Education and Training: The level of education for females in rural areas is low compared to the male population, which limits their access to training and extension services that would add value to their farm production and income. The absence of specialized training programs makes them even more incapacitated.

3. Workload and Time Poverty: A woman generally has to play multiple roles like household activities, care, and agricultural work, which limit their available time. This heavy workload limits their labor input to the point of being unable to participate in gainful income and community decision-making processes (UN Women, 2018).

4. Gender-based Violence and Discrimination: Gender-based violence and discrimination are prevalent issues that affect women's participation in the agrifood sector. This relates to physical, psychological, and economic violence against women, which undermines their self-esteem and opportunities to become upwardly mobile.

**Gender Equality Initiatives and Policies**

On the other hand, there have been numerous policies and programs initiating gender-related promotions in the agrifood sector in Türkiye:

1. Government Programs: The Turkish government has initiated programs to support women farmers through financial and technical guidance. One such program is the "Women Farmers Agricultural Extension Project" to enhance women's skills and knowledge in agriculture. 2. International Cooperation: Numerous international organizations, including FAO and UN Women, have collaborated with the Turkish government and local NGOs to implement various projects to empower women in agriculture. These projects mainly focus on capacity building, access to resources, and gender-sensitive policies (FAO, 2021). 3. Grassroots Movements: Local women's organizations and cooperatives form bulwarks in advocating for women's rights and provide support networks. They also facilitate women's access to markets, resources, and training to improve their economic and social status. A gender-equal agricultural and food sector in Türkiye is essential to achieving sustainable development and food security. Some progress has been made, but there are so many challenges. Addressing this situation will require multiple approaches, including policy reforms, capacity building, promoting gender-sensitive practices, empowering women and considering the full participation of these empowered women in the agricultural sector to increase agricultural productivity, improve livelihoods and bring Türkiye closer to achieving SDG 5.

### II.D.3.1.5. Climate Action (SDG 13)

Türkiye is located at the crossing point between Europe and Asia, with severe challenges and the potential for climate change. It is labeled under Sustainable

Development Goal 13-Climate Action, which assures the food security of Türkiye's agrifood sector by resilience enhancement and taking greenhouse gas-emission-curbing measures. Therefore, this review outlines the current situation, challenges, and strategic steps of the thematic area of SDG 13 about the agrifood sector in Türkiye.

State of Climate Action in Türkiye's Agrifood Sector- Agriculture is responsible for some 13 % of Turkish GHG emissions, mainly due to the livestock population, rice cultivation, and synthetic fertilizers. Imperiled crop yields and a decrease in livestock productivity are highlighted features of the effects of climate change in manifestations such as increases in temperature, deviations in precipitation patterns, and extent of extremes.

**Challenges**

Climate change exacerbates the severe problems water-scarce Türkiye faces with irrigation and water availability for agriculture (TSI, 2022).

Soil Degradation: Over-application of fertilizers and pesticides decreases the earth's fertility, thus weakening food security.

Loss of biodiversity: The loss of biodiversity has extended to agricultural lands characterized by associated monoculture, which has resulted in valued biodiversity losses due to its association with ecosystem services and resilience to climate change impacts (World Bank, 2020).

Strategic Initiatives and Solutions: This is why the government of Türkiye encourages practices of agriculture that will ensure sustainability, reduce emissions, and enhance resilience in farming, for example, by encouraging organic farming, conservation agriculture, and agroforestry.

Spur agricultural operations in their renewable energy farm activities, such as solar-powered irrigation systems, leading to reduced dependency on fossil fuel. (International Renewable Energy Agency, 2022)

Effective water management practices involve drip irrigation, rainwater harvesting, etc. to reduce scanty water levels and increase efficiency (Turkish Water Institute, 2022).

Climate-Resilient Crops: Much effort has lasted in the breeding climate-resilient crop varieties that can tolerate extreme weather conditions and pests.

Policies and Governance: The strengthening of policies and governance structures that will promote climate action through incentivization based on subsidizing sustainable practices and penalties for failure to comply with the set environmental regulations.

***Conclusion***: The Certificate addressing climate change in the agri-food sector of Türkiye is very fundamental in achieving SDG 13, ensuring food security and long-term sustainability in agriculture. Several challenges enforce this. On that count, strategic initiatives toward sustainable practices, renewable energies, efficient water management, climate-resilient crops, and a robust policy framework are being taken. This signals that steps toward the resiliency and sustainability of the agri-food sector in

Türkiye may yield positive results.

### II.D.3.1.6. Sustainable Consumption and Production (SDG 12)

Ensure sustainable consumption and production patterns. Applied to the agrifood sector, it means resource and energy efficiency, sustainable infrastructures, and access to essential services; it is reflected in green and decent jobs and improved quality of life for everybody.

Agriculture is an essential sector in Türkiye, which is considered a sector that supports employment and livelihood in the country. The government is using several methods to meet the requirements of SDG 12, which in turn improves existing sustainable consumption and production practices. These include policy frameworks, technological innovations, and community engagement programs.

**Policy Frameworks**

Türkiye has developed some policies promoting sustainability in agricultural production and food. The activity of the Turkish Ministry of Agriculture and Forestry in the intensity of policy formation and implementation includes the following key initiatives:

- National Strategy and Action Plan for Sustainable Agriculture (2019-2023): Improve management practices in agriculture for sustainable agriculture, reduce the losses in food and waste, and increase organic farming practice.

- Zero Waste Project: This project, by the Ministry of Environment and Urbanization, covers all the sectors to minimize the waste stream and optimize recycling, including agriculture. Source: Ministry of Environment and Urbanization, 2020.

**Technological Basis Innovation**

Technological improvement is a key factor in sustainable agriculture. Türkiye's latest innovations to improve resource efficiency and reduce environmental impact include:- Precision Agriculture**: This refers to using GPS, IoT, and analytics in data to increase farm optimality and thus reduce the use of resources. This, in turn, leads to an improvement in yields.

- Renewable Energy: Solar and wind energy systems can be applied on-farm to minimize the farm's reliance on fossil fuel use in farm activities.

**Community Engagement and Education**

It must raise public awareness and support for sustainable production and consumption through community work. Some of these lists where, in Türkiye, public awareness and capacity building for farmers and consumers should become the target of programs, can be seen below:

- Farmer Field Schools: This comprises training farmers on sustainable techniques in

farming and management of resources.

- Public Awareness Campaigns: Campaigns on educating consumers about sustainable consumption, such as the benefits of consuming locally produced and organic products..

**Challenges and Opportunities**

Türkiye has several challenges, preventing it from fully delivering SDG 12 in the agrifood sector:

- Resource constraints: Water and arable land are scarce, so optimising their use could address aspects of sustainable agricultural practices (OECD, 2020).

- Economic Pressures: Due to immediate financial considerations that affect the effectiveness of the current business strategy, economic pressures inevitably threaten the adoption of sustainable practices, which is always a bad sign (World Bank, 2021). But then each of these is coupled with opportunities to address the challenges posed by continuous innovation, policy support and international cooperation. Opportunities associated with this should include better access to financing mechanisms for sustainable projects and increased cooperation with global partners in supporting the country's efforts to achieve SDG 12. An example is Türkiye, which is at the forefront of promoting sustainable consumption and production in the agri-food sector. The country applies policy frameworks, technological innovation and community engagement as ways to promote the implementation of SDG 12.

### II.D.3.1.7. Biodiversity Conservation (SDG 15)

Biodiversity conservation in the agrifood sector in Türkiye is significant for realizing SDG 15, which refers to protecting terrestrial ecosystems, conserving forests, combating desertification, and stopping biodiversity loss. This will be achieved by taking into account the following primary strategies and actions:

**Sustainable Agricultural Practices**

Operationalization of sustainability in practice is very important. In respect to this, organic farming and agroecology with IPM are recommended as ways of improving soil fertility and biodiversity simultaneously through the reduction of chemical use and the full maximization of natural processes.

**Resource Stewardship Programs**

With this, Türkiye has formulated a network of protected areas for the conservation of important habitats and species, directly linked to the need for agro-biodiversity conservation through breed conservation and local variety seed supplies, hence maintaining genetic diversity.

**Policy and Legislation**

The implementation of the National Biodiversity Strategy and Action Plan (NBSAP) exemplifies Türkiye's significant efforts towards biodiversity conservation. Enforcing the Land Use Law and Forestry, as well as the related environmental regulations and other rules of this kind, will continue to contribute to even better results in this field.

**Research and Monitoring**

These will continuously add to increased local ecosystem and species knowledge, further supported by monitoring programs, whereby information obtained feeds into better and more successful conservation strategies and timely interventions that will ensure the maintenance of biodiversity and healthy ecosystems.

**Community Involvement and Education**

Another source of support is working with local communities to help them conserve their lands and educate farmers on sustainable farming. Community-based conservation ensures that the sustainable use of natural resources benefits local people while fostering support for biodiversity initiatives (United Nations Development Program, 2020).

**Sample Projects and Case Studies**

**Turkish Gene Bank**

Nevertheless, with the collection of a gene bank for plants and animals in Türkiye, its essential role in preserving traditional and local varieties remains.

**BIOFIN Initiative**

Türkiye is one of the countries in the line of engagement with the UNDP Biodiversity Finance Initiative, which aims to manage biodiversity financing better; that will, in turn, ensure biodiversity indeed gets adequate funding toward conservation.

**Anatolian Steppe Biodiversity Project**

This includes projects for the conservation of steppe ecosystems, sustainable grazing, and amelioration of degraded lands for the protection of endemic species (Republic of Türkiye Ministry of Agriculture and Forestry, 2021).

**Agroforestry Initiatives**

Overall, integrating trees and shrubs into agricultural landscapes contributes to agricultural biodiversity enhancement, improved soil health, and a good source of

income diversification for farmers.

**Challenges and Opportunities Highlights**: land degradation, climate change, and economic pressures. Overgrazing, deforestation, and unsustainable agricultural practices have resulted in immense land erosion and fertility losses. In the same way, climate change poses a threat to ecosystems and biodiversity. The central problem is squaring economic development with conservation efforts, notably in rural areas that are still heavily dependent on agriculture. SOURCES: The Ministry of Agriculture and Forestry of the Republic of Türkiye provided this information in 2021.

Opportunities for the technology and innovation of a conservation project in biodiversity include international cooperation and public awareness. It is through these advanced techniques and technologies—remote sensing, GIS, and precision agriculture—that the monitoring, control, and management of biodiversity are possible. International partnerships and funding support biodiversity conservation projects, while increased public awareness and involvement increase their support for conservation efforts (United Nations Development Program, 2020).

Only with a multidimensional approach, like that of the agrifood sector in Türkiye, can we achieve such a seemingly sustainable situation through SDG 15: sustainable practices, provided policy frameworks, community participation, and constant research and monitoring.

Addressing challenges and opportunities would ensure long-term sustainability for the rich biodiversity of Türkiye.

### II.D.3.1.8. Water and Sanitation (SDG 6)

The sixth goal in sustainable development is to make water and sanitation management available to all. Agrifood production in Türkiye is huge. Although they are key to economic and food security, water and sanitation provision is a significant challenge. Thus, the present paper will have the subsequent objectives: to assess the status, the challenges, and the initiatives undertaken to attain SDG 6 in the agri-food sector in Türkiye.

#### Current Water and Sanitation Situation in Türkiye

Türkiye is characterized as a water-stressed country where the annual renewable water resources per capita amount to about 1,519 cubic meters, under the threshold level of 1,700 cubic meters defining stress (OECD, 2019). About 74% of this volume goes to agricultural use, indicating that this sector is in dire need of well-thought-out management of water resources.

#### Barriers in the Agri-Food Industry

**1. Overuse and Scarcity of Water:** The agrifood sector is under pressure due to the fact that rain-fed and irrigated agriculture is the driver of water scarcity. climate change, and wasteful irrigation further deteriorate agriculture. Traditional flood irrigation

methods result in additional water losses (WWF,2024)

**2. Water Pollution and Sanitary Problems:** In agriculture, fertilizers and pesticides mix with water through runoff, causing pollution that negatively affects health and the overall ecological balance of life. This scenario further complicates wastewater management in agricultural practices (Ergil, 2018).

**3. Infrastructure and Technology:** Irrigation infrastructure should be upgraded and more water-efficient technologies should be adopted. Most of the infrastructure elements created are outdated and inappropriate, as they lead to water loss and low agricultural productivity (Ministry of Agriculture and Forestry, 2019).

**Efforts and Initiatives**

**1. Government Policies and Programs:** The government of Türkiye created various programs to manage agriculute The 'National Water Plan, 2019-2023' was effective in promoting efficient water usage and sustainability (Ministry of Agriculture and Forestry, 2019).

**2. Technological innovations:** Adoption of drip and sprinkler irrigation systems that will save on water use. Other technologies, including precision agriculture technologies, are also introduced in the countries for water use (FAO, 2020).

**3. International Cooperation:** Türkiye's international cooperation under the agenda of assisting practices and mechanisms in water management that will lead to optimal, sustainable use of resources while achieving SDG 6 actively collaborates with international organizations such as the World Bank and FAO. Projects focus on the increased efficiency of irrigation practices and enhanced integrated management of water resources, including the world.

Wherein the attainment of SDG 6 in Turkish agrifood is also actioned on water scarcity, pollution, and infrastructure issues. Continuous tussles within the government, technological progressions, and international collaboration do play the most terrific role in sustainable management of water and sanitation, thus ensuring long-term food security and environmental health.

### II.D.3.1.9. Decent Work and Economic Growth (SDG 8)

Promote sustained, inclusive, and sustainable economic growth; full and productive employment; and decent work for all. In this context, there are many challenges and opportunities to be realized for the tasks assigned to the agrifood sector in Türkiye.

**Economic Environment**

The agri-food sector accounts for meaningful participation in the country's economy: 6.1% of the national GDP, and 18% of employment in Türkiye (FAO, 2021). This sector is made up of agricultural activities as well as the transformation and distribution of food products. It serves as a basic interface between rural development

and urban markets.

**Employment and Labor Conditions**

What can be added to this fact is that despite the economic value attached to it, inside the agrifood sector, there are numerous challenges linked to working conditions. Informal employment prevails by considerable numbers of the workforce, who are unprotected by law and have no security in their jobs (International Labor Organization, 2020). Seasonal and migrant workers, who are the most vulnerable, often endure poor working conditions and lack access to essential services.

**Gender and Youth Employment**

Women and youth constitute a significant share of the demographic within the agrifood labor forces. Women are affected by barriers to decent work:gender-based discrimination and low access to land, credit, and training (FAO, 2021). A correct response to these challenges is critical for inclusive economic growth and to ensure that the agri-food sector's untapped potential is realized.

**Technological Development and Innovation**

Technological innovation is an opportunity for increased productivity and the creation of jobs in the agri-food sector in Türkiye. Precision farming, digital tools, and modern farming techniques are all intertwined to increase yields and improve resource management for more stable and quality jobs.

**Policy and Institutional Framework**

Although the Turkish government has several policies dedicated to sustainable agriculture and improved working conditions, the Ministry of Agriculture and Forestry (2021) has introduced several programs to support small farmers for rural development, which has led to increased productivity in the sector. Effective implementation and enforcement of labor laws remain a necessity to achieve the SDG 8 targets.

**International Collaboration and Trade**

Integration into global agri-food value chains will present both challenges and opportunities.. Market access is a window of economic opportunity and job creation. However,the commitment to adherence to international labor standards and sustainability criteria can pose a challenge to being compliant with the requirements of global markets/buyers (World Bank, 2021). nternational cooperation with organizations and trading partners will further help Türkiye meet all these global standards.

Thus, the path forward to achieving decent work and economic growth in Türkiye's agri-food sector is multidimensional: addressing working conditions, increasing gender and youth employment, achieving technological advances, and ensuring the effectiveness of policy measures. This, if sustained, will put Türkiye on a progressive path to achieving SDG 8, while ensuring globally that the agri-food economy can be

more inclusive and sustainable.

## SECTION II.D.4. SUMMARY

### II.D.4.1. Summary of analysis

Food security in Türkiye is a challenging problem, as much economic, social, and environmental logic is involved. The country has been doing remarkably well in food supply and enjoys a great place in line with the United Nations Sustainable Development Goals, particularly SDG 2, which aims to achieve zero hunger and ensure food security, improved nutrition, and sustainable agriculture.

***Food Security Key Points Regarding Türkiye***:

- Prevalence of Undernourishment:

The progress has been evident in the decreasing trend for undernourishment in Türkiye over this past decade. The undernourished population share has consistently gone down, indicating improved food availability and access in the country.

- Agricultural Production:

Türkiye is one of the great agricultural producers since the country enjoys very diversified climatic conditions and can produce a broad range of crops. This country is balanced in terms of food and is a significant agricultural exporter.

- Government Initiatives:

To ensure food security, the Turkish government has embarked on various policies and programs, which include supporting farmers through subsidies, investments in technology for agriculture, and rural development. Efforts are also made to improve the efficiency and sustainability of food production systems.

- Economic Factors:

A primary factor behind Türkiye's improving living standards and food access is its economic growth. However, further economic challenges, like inflation and unemployment, could put people's food security, especially for the vulnerable, at risk.

- Social Safety Nets:

Türkiye has implemented social networks to address food insecurity and ensure proper nutrition for the most underprivileged. Conditional cash transfer programs and food assistantships help deliver food to families living in extreme poverty.

- Sustainable Development Goals (SDGs):

Türkiye is committed to realizing SDGs, within which there is a particular emphasis on SDG 2. Efforts are being made in sustainable agriculture to enhance food security and improve nutrition; all these are part of the general schematic to be attained in sustainable development by 2030.

- Challenges:

Some new challenges related to food security remain for Türkiye, the most important of which are climate change, its essential impact on the productivity of agriculture and regional inequities in access. This is also an ongoing issue that should ensure that the entire population benefits from food security initiatives.

- International Collaboration:

Türkiye collaborates with international organizations, among them FAO, to address this issue of food security. This includes partnerships involving technical assistance, financial assistance, and support in implementing sustainable agricultural practices.

Türkiye is, evidently, one country that keeps recording an improvement in food security status and is strenuously guiding its efforts to meet the targets under the sustainable development agenda. Although the prevalence of undernourishment has declined, persistent effort is required to tackle various challenges: economic instability, climate change, and regional disparity. The government's commitment to sustainable agriculture, as well as the existence of appropriate social safety nets, will ensure food security for all citizens.

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# Uzbekistan country chapter

# SECTION II.E.1. UZBEKISTAN DOMESTIC AGRI-FOOD PROFILE

## II.E.1.1. Background and purpose of the report

### II.E.1.1.1. Background

Food security in Uzbekistan is a multifaceted issue influenced by various factors, including agricultural production, economic policies, climate change, and socio-economic conditions. Additionally, food security is a top priority for Uzbekistan, while agriculture plays a critical role in the country's economic development. Therefore, the government has urged rural populations to actively grow agricultural products in household plots. A sustainable water supply is essential for ensuring the population's food security and the economic profitability of their agriculture. According to the Global Food Security Index (GFSI), Uzbekistan rose twelve positions in the general ranking between 2019 and 2022, securing the 73rd place among 113 countries in 2022 (IE, 2023).

### II.E.1.1.2. Purpose of the report

This report presents information about the agri-food sector and the implementation of the SDGs in Uzbekistan. The main purpose of this report is to analyse the intricate and interconnected links between food security and the Global Sustainable Development Goals (SDGs) within Uzbekistan's socioeconomic context. Primarily, the framework is based on a detailed evaluation of progress and challenges in the realisation of the SDGs goals 1 (Poverty eradication), 3 (Healthcare & well-being), 5 (Gender equality), 6 (Clean water and sanitation), 8 (Decent work for economic growth), 12 (Sustainable consumption & production), 13 (Climate action). Furthermore, this report discusses three aspects of the food security scenario: the rate of people in the poverty belt, the state of agriculture in food production, and the implications of agri-food trade on the industry. A comprehensive examination of every factor that might contribute to the food security of this country is done on the issues of agricultural productivity, availability of nutritious food, and resistance to events like droughts, climate change, and economic downturns. Similarly, the report investigates socioeconomic drivers, constraints interfere to obtain food security, poverty levels, gender disparities, and environmental sustainability.

## II.E.1.2. Methodology

### II.E.1.2.1. Data sources

The methodology for this report combines both qualitative and quantitative research approaches. It includes a thorough literature review of existing analyses, reports from international organisations, widely cited datasets, and government publications on food security and sustainable development in Uzbekistan. Data visualisation techniques such as trend analysis, comparative assessments, and statistical modelling offer a comprehensive understanding of the current situation and potential future scenarios.

Primary data collection is also enriched by a variety of case studies, expert publications such as working papers, and interviews with key stakeholders focused on food security and sustainable development.

Additionally, while preparing a food security report in Uzbekistan that was aligned with the Sustainable Development Goals, an analysis was conducted using information from various secondary sources. This report relies on secondary data for several reasons. One advantage of secondary data is its accessibility; it is often available in digital formats and can be accessed remotely, making retrieval and analysis convenient.

Furthermore, secondary data provides a powerful source for analysing the food security situation on a descriptive level, especially when considering the historical time frame involving the SDGs programs. It allows for comparison and benchmarking of the national food security situation with global and regional trends, offering a clear picture that can be used as a model for intervention. Various reputable sources have been utilised to compile comprehensive information on food security and its relationship with the Sustainable Development Goals in Uzbekistan.

### II.E.1.2.2. Conceptual framework

This approach aims to bring attention to the extent to which Uzbekistan's accomplishments in establishing a food security community, whether they fulfill the SDGs or not. Moreover, the study reveals how food security is fundamental to the SDGs and demonstrates potential synergies and trade-offs that must be addressed during policy design and implementation. In line with this, policy frameworks, institutional capacities, and interventions to enhance food security and development are critically evaluated to identify gaps and opportunities for improvement. The report aims to provide recommendations for the targets for policymakers, stakeholders, and development practitioners in this comprehensive framework. These recommendations are intended to assist Uzbekistan in achieving its sustainable development goals and ensuring food security.

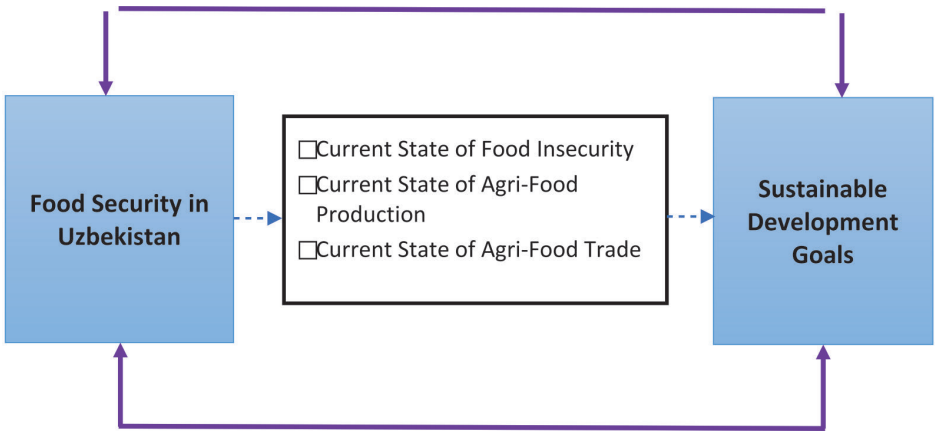



***Figure II.E.1. Conceptual Framework of the Report***

Source: Own illustration.

### II.E.1.3. Analysis of the current state of food insecurity in the country

#### II.E.1.3.1. Access to food in the country

Food security has been the main topic of discussion in all states and countries all over the globe. Having access to safe, nutritious, and sufficient food with satisfactory quality at all times is the generally accepted definition of food security (Elena Burundukova, 2023). Although authorities strive to meet the same necessities of the population regarding food security, cases differ in countries according to geographical location, economic development level, climatic and environmental conditions, and other factors. Looking at the problem of food insecurity from different perspectives, unsustainable use of food products, increasing population, unfavourable climate conditions, and inefficient use of land have remained central causes of food insecurity. In many countries, many regulatory documents, acts, and legal agreements have been signed and implemented locally and globally to achieve sustainable food security. Finally, food security is far more dependent on socio-economic, demographic, and environmental factors.

In Uzbekistan's scenario, this sector has become one of the priorities of the country's long-term industrial goals. Despite the lack of numerous legal, regulatory, and guidelines for ensuring food security and its provision, the Republic of Uzbekistan implemented the Strategy for the Development of Agriculture for 2020-2030 in 2019, making food security the primary goal for the next ten years. In this legal framework, the main focus is on improving the agriculture sector and food security locally. It includes the equal provision of food security, the creation of favourable conditions for agribusiness entities, and the reduction of government intervention in new businesses in agriculture. According to this legal framework, all nine targets to achieve by 2030 are divided into two-year goals to observe how the country is undergoing the process, try to make changes, and add new implementations if necessary. Since the primary goal of food security has been to make 6.7% of food insecure people fall to 0% by 2030, looking at the 2020-2022 snapshot, there has been a 0.8% reduction in this figure, showing 5.9% by the end of the year.

In recent history, continual measures to improve the condition of livestock and farm entities and support from the government have enhanced the production of livestock products and contributed to the food supply chain by increasing the number of livestock. In 2021, Uzbekistan accounted for 6.6% of the food production among Eurasian countries in terms of energy value. There is a considerable growth of meat products by 10.4% and potatoes by 9.9% in Uzbekistan's share. Overall, rates of export increased by 2.1% in 6 years from 2015 to 2021 (Saidova Dildora, 2023). Despite all the positive improvements in the agriculture sector, there is a massive gap between the current condition of production and economics and the new possible ways to improve efficiency and market trends. As it is a high-tech era, these milestones could be solved by implementing innovations and proper infrastructure. Another hurdle in the food system

of Uzbekistan is the high dependence on imported goods and technologies, even though the country has a self-sufficient food chain for certain types of agricultural products.

#### II.E.1.3.1.1. Food consumption (Level of undernourished groups, share of imported calories).

An extrapolation from the statistics suggests that in the near future the the hunger levels in Uzbekistan will considerably decrease due to positive improvements in the country. According to the attached table, Uzbekistan ranked 21st among nations of the world and 1st among Central Asian groups (IE, 2023). Additionally, after becoming independent of the Soviet Union, Uzbekistan experienced considerable growth. However, at the beginning of the second millennium, there was a high hunger rate due to extreme poverty and unemployment. The distinctive causes of a significant fall in hunger rates are the successful growth of economic stability, developed educational enhancement, and financial sustainability. After its independence, Uzbekistan's main focus was on producing wheat, other grains, and meat products at a maximum level to achieve food security. Since 2000, Uzbekistan has made a great effort to change the level of hunger in GHI, causing a 29% decline in this rate (BP, 2017).

**Table II.E.1. Ranking Stage of Uzbekistan in different periods**

| Country | 2000 | 2007 | 2014 | 2022 | Absolute change since 2014 | Percent change since 2014 |
|---|---|---|---|---|---|---|
| Uzbekistan | 24.2 | 15.4 | 8.3 | 5.6 | -2.7 | -32.5 |

Back in 2022, the deficiency rate of some micronutrients was a prevalent issue rather than hunger. About one in seven (15%) of children in Uzbekistan suffer from anaemia, the shortage of iron, and diseases coming from malnutrition. This mainly occurs in rural areas as these parts of the country are bound to poor dietary needs and sufficient healthy diet. Relatively low levels of employment and healthcare system might have brought about such scarcity of micronutrients in rural areas (Ministry of Health, 2022).

#### II.E.1.3.1.2. Income, employment and poverty

Uzbekistan's population's income level has risen over the past five years due to economic growth and other factors. People have become self-employed and have managed to meet their households' basic needs. The impact of rising income levels is critical for food systems. As the population's income level grows, people, especially in rural areas, start to set up their businesses and become dekhan farmers, which accounts for more than 60% of the agriculture sector.

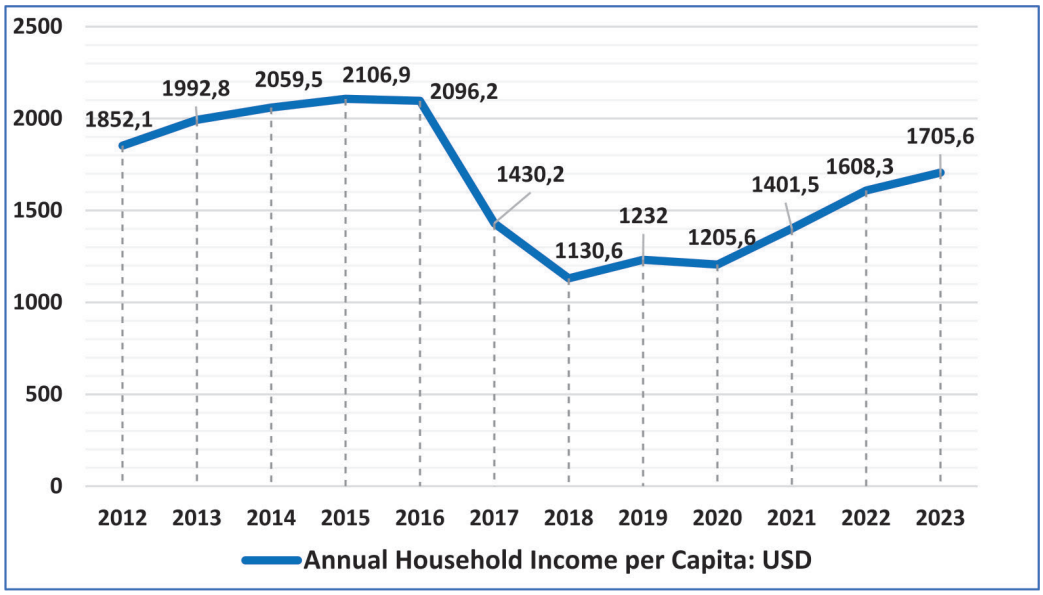



***Figure II.E.2. Uzbekistan's Household Income per Capita from 2012 to 2023.***

Source: Statistics Committee of the Republic of Uzbekistan, 2023.

This chart shows the Uzbek population's employment engagement in the agriculture sector. Due to opportunities in agriculture and subsidies allocated for agricultural development, people are more engaged in farmer entities and activities (Table II.E.2). Although agriculture constitutes a considerable portion of employment, other sectors, such as education, healthcare, and sports, have attracted more people to employment.

**Table II.E.2. Distribution of agricultural lands of Uzbekistan by land users (thousand hectares)[1]**

| Land user | Type of land | | |
|---|---|---|---|
| | Arable land | Orchard and vineyards | Hayfields and pastures |
| Farms | 3,472.9 | 296.0 | 1471.3 |
| Dekhan farms | 420.2 | 80.3 | - |
| Other farms | 142.2 | 10.3 | 19,643.1 |
| Total | 4,035.3 | 385.6 | 21,124.4 |

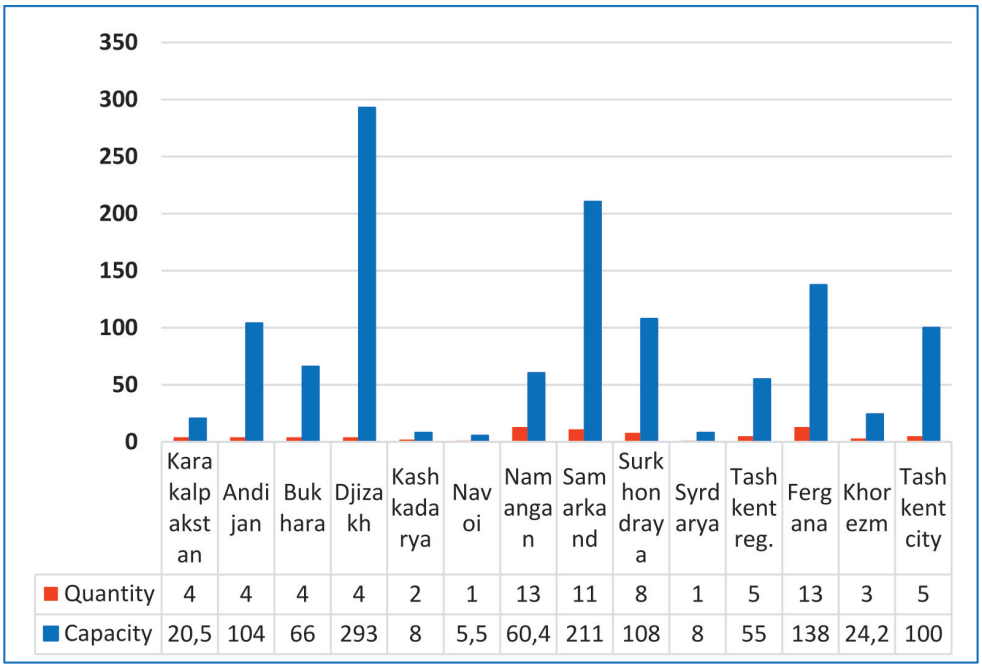
Source: Statistics Committee of the Republic of Uzbekistan, 2023.

[1] Ministry of Agriculture of the Republic of Uzbekistan.

### II.E.1.3.1.3. Prices, markets and logistics infrastructure

The annual Consumer Price Index for food products decreased slightly by 14.4 % in 2022, in comparison to 17.2 % in 2021 and 16.9 % in 2020 (UzStat, 2022). In 2021, the prices of food products for producers increased by 6.6%, a decrease from the 15.9% rise in 2020 and the 24.4% increase in 2019. The GDP prices in the agriculture, forestry, and fishing sectors comprised 16.7% of the total in 2021, compared to 12.9% in 2020 and 11.2% in 2019. The rise in prices for agriculture, forestry, and fisheries is linked to the changes in prices for inputs like fertilisers, plant protection products, seeds, and imported materials. The macroeconomic policy stimulus from 2020 to 2021 also increased prices. (UzStat, 2022).

In recent years, the construction of 12 modern agro-logistics centers worth 666 billion Uzbek soums and with a capacity of 298 thousand tons has been completed. As a result, the number of agro-logistics centers increased from 66 to 78, the capacity increased from 899 thousand tons to 1,197 thousand tons, and 326 new jobs were created (Figure II.E 3).




| | Karakalpakstan | Andijan | Bukhara | Djizakh | Kashkadarya | Navoi | Namangan | Samarkand | Surkhondraya | Syrdarya | Tashkent reg. | Fergana | Khorezm | Tashkent city |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Quantity | 4 | 4 | 4 | 4 | 2 | 1 | 13 | 11 | 8 | 1 | 5 | 13 | 3 | 5 |
| Capacity | 20,5 | 104 | 66 | 293 | 8 | 5,5 | 60,4 | 211 | 108 | 8 | 55 | 138 | 24,2 | 100 |

***Figure II.E.3. The number of agro-logistics centres across the regions[2]***

Source: Statistics Committee of the Republic of Uzbekistan, 2022.

The government has taken various measures to ensure food security, such as swiftly delivering freshly harvested agricultural products to consumers, adding value through

[2] Ministry of Agriculture of the Republic of Uzbekistan.

processing, and increasing the private sector's involvement in the industry. One of these measures is the establishment of Agro-Logistics Centers (ALMs), which facilitate the cultivation, collection, storage, processing, transportation, and sale of food products in one location. As of 2023, the number of operating ALMs in the Republic has reached 78.

#### II.E.1.3.2. Food quality (safety)

Food safety, a major component of food security is related to socioeconomic and demographic aspects of the country, and defined as the assurance that food products do not cause harm to people's health when prepared and consumed or used for any purpose (Yasmine Motarjemi and Huub Lelieveld, 2014)(Yasmine Motarjemi, 2014). The imbalance between the population of the world and the limited growth of the food production system due to different threats is the main issue of the food supply chain and food safety. In the scenario of Uzbekistan, after reaching its independence, the country has made significant changes to enhance the food safety of agricultural products and tried to reform new physical infrastructure to improve the production of crops. To meet different challenges regarding food safety, Uzbekistan joined Codex Commission Alimentarius in 2005 as the agricultural products began to increase and food safety problems started to emerge in the Uzbek market. Although aligned with Codex, Uzbekistan has not yet met all food safety requirements since the country is still following some steps taken by the Soviet Union.

In Uzbekistan, the food safety regulations are based on collaboration with three actors of government: the Department of Sanitary Epidemiological Surveillance (DSES) under the Ministry of Health, the Center of Animal Diseases and Food Safety under the State Committee for Veterinary and Livestock Development, and Uzstandard, the agency for certification of food products. There have been many implementations to ensure food safety and its traceability. Despite these reforms and their implementation, the country's food system still faces challenges in keeping food safe. There are no special companies that would control food products and check whether they contain any health hazards. Only imported food products are checked thoroughly by the Sanitary Epidemiological Laboratory, and no guidebooks for safety inspectors are created to understand the examination better. Inspectors usually have limited knowledge about international standards such as GMP, GHP, and HACCP. Two primary current certificates in Uzbekistan are given for imported goods. These certificates are called ISO 22000 and ISO 9001:2000 and are adopted and implemented in the organisations that are the main actors and participants in creating food products. (Mavlyuda Davlyatova, 2022).

#### II.E.1.3.3. Demographic considerations

Uzbekistan's population has grown significantly from 15 million to 36 million due to the optimization of the healthcare system, an increase in the standard of living and a number of other factors.(Akbar Yusupov, 2023). The rapid growth of the population and the rising need for enough food supplements were mentioned in

the Senate. It is crucial that new sustainable practices of agricultural production and modern infrastructure are implemented for the efficiency of food production. The growing population causes a decrease in food provision, also triggers water scarcity, the likelihood of poverty, the budding of new cases of diseases, and so on. There are different perspectives on demographics and the food system. The first thing about demographics is the age of the population. Nearly 24% of the population accounts for teenagers and young adults in Uzbekistan, so the need for sufficient, safe, and nutritious food will be in demand.

Finally, many people are moving into urban areas for work and a better life. As a result, the labor force in rural areas of the country is decreasing, creating limited employment opportunities. At the same time, urban dwellers' preferences may change regarding the appearance and convenience of food products. Then the food system of Uzbekistan needs to adapt while considering consumer patterns requiring innovations to modernise the system. The current population's income level is another important aspect. Food products' affordability must be appropriate for all income classes.

#### II.E.1.3.4. Health and sanitation

Uzbekistan has established its implementation strategy for clean water and sanitation in accordance with the SDG's priorities. As for food security, sanitation is directly linked with school feeding programs in Uzbekistan. Although the scope is limited, school feeding programs in Uzbekistan have been implemented more than ever since 2020. For example, the number of children receiving school feeding between 2013 and 2020 increased by around 17.5% (from 959,000 to 1,130,000). In 2023, the government of Uzbekistan launched an experimental school feeding program in the Kharezm region and Karakalpakistan Republic, financed by the state budget. According to the adopted government resolution "On measures to further improve the healthy nutrition system in educational institutions of the Republic of Karakalpakstan and Khorezm region", a system of free meals for primary school pupils (1-4 primary school classes) was launched. The main incentive of the system is to provide schoolchildren with better nutrition and education. By implementing such programs, it is possible to define a cost-effective comprehensive package of nutrition and education services.

#### II.E.1.3.5. Government Policies and Interventions. Country Road Maps on agricultural development (if any).

Government agencies have developed various strategies to enhance the country's food and agriculture system. One of them is the Strategy of New Uzbekistan for 2022-2026. This strategy is based on the intensive development of the agriculture sector annually, and it checks not only one region's contribution to agriculture but also every single region's responsibility for making annual reports. The strategy asks for at least 5% growth per year for different sub-categories of agriculture, such as fishing, poultry or livestock. Businesses can specialise in those areas by understanding which regions are

favourable for specific sectors. It can be supported by government support and expand this sector far earlier rather than waiting for the next season. According to this strategy plan, 200,000 hectares of land for grain and cotton will be allocated for the population to set up their own business. Currently, it is forecast that land for intensive gardens will be increased by three times, and this figure will be two times for greenhouses. (Ministry of Agriculture, 2022).

By 2030, in each region of Uzbekistan, agricultural knowledge and innovation will be promoted, centres for promotion will be opened, and there will be more than 100 types of agricultural activities specialised for improving different sectors of agriculture, including measures to decrease crop diseases, enhancing soil content and microflora, efficient usage of water and so on. There is also considerable demand for infrastructure in Uzbekistan. According to estimations, $826 million needs to be allocated for the optimisation of 299 pumping stations between 2022 and 2026 (UzStat, 2022). To improve food security at the country's level, the government primarily focuses on wheat production and maximising poultry and livestock capacity. Uzbekistan has the full potential to grow and expand the production of food products. Each year, in farms in Uzbekistan, the volume of fruit and vegetables reaches 20 million tonnes. Still, only 15% are processed and saved with longer shelf life, and 30% are lost because of a lack of cold storage capacity and processing. To tackle such issues, the government established a Main Directorate to develop the food system in Uzbekistan. The main tasks of this authority are to create a favourable agreement for both food processing companies and the producers of agricultural products, provide comfy buildings for distribution and logistics centres, and struggle to expand export products.

### II.E.1.4. Analysis of the current state of agri-food production in the country

#### II.E.1.4.1. Crop production

Agriculture is Uzbekistan's most important economic sector, constituting 25% of the nation's Gross Domestic Product (GDP) and accounting for 27% of the nation's total employment (Kulmatov R, Mirzaev J, Abuduwaili J, Karimov B, 2020). In 2021-2022, the total area of cultivated crops increased by 1.3% in 2021, 2.5% in 2022, and 3.9% in 2023, respectively (ITR, 2023). In 2021, the acreage of almost all crops increased, except for cereals and cotton, while the total cultivated area of grains and legumes remained virtually unchanged.

In 2020, Uzbekistan became one of the world's top eight cotton-producing countries, ranking 6th and one of the top eight cotton-consuming countries, ranking seventh. The production of raw cotton increased during 2019-2021 due to a rise in domestic prices, the removal of state regulation of raw cotton prices, and an increase in crop yield. The total production of cereals, including rice and leguminous crops, was 7.5 million tons, showing a 1.2% decrease in 2021, according to preliminary data from the State Statistics Committee. Wheat still makes up the majority of the total cereal and legume production.

The proportion of wheat has decreased by 4-5% age points over the last five years, from 84.4% in 2015 to 79.9% in 2021, while the proportion of leguminous crops has

significantly increased by 4% age points, from 0.9% in 2015 to 5.4% in 2021. The rise in corn, barley, and other cereals compensated for the decline in wheat production.

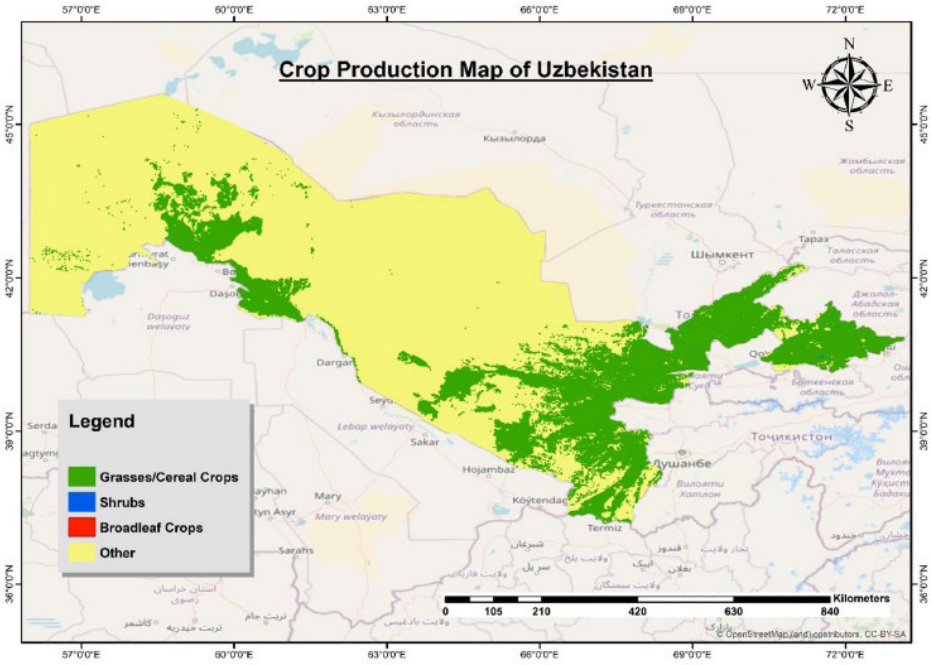



***Figure II.E.4. Crop production map of Uzbekistan***

Source: Adopted from (I.Chathuranika, 2022).

Since 2018, the cultivation area for potatoes, vegetables, and gourds has expanded. The production of potatoes, vegetables, and melons increased in 2022, with melons having the highest growth rate of 6.9% and the production of vegetables rising by 4.1% in 2022. The growth rate of potato production reached 4.7% (ISCAD, 2022). Investing in high-value, higher-yielding crops will contribute to future growth over the next three years. Traditional orchards with low productivity are gradually being replaced by higher-yielding intensive orchards. These changes are establishing a solid foundation for accelerating long-term agricultural growth.

### II.E.1.4.2. Livestock and animal husbandry

The livestock sector is crucial to Uzbekistan's agriculture, contributing 46.3% of the country's total agricultural output (FAO, 2022). Livestock in Uzbekistan consists mainly of Karakul sheep, cattle, goats, camels, and horses. In Uzbekistan, 40% of agricultural output comes from livestock production, with dairy accounting for 45%. Over the last 30 years, the land dedicated to forage and feed crops has decreased by 70%, while the cattle population has grown by 150% to reach 15 million head. This significant increase in cattle has led to a rise in greenhouse gas emissions. Since gaining independence in

1991, the agricultural area has decreased by 33%, with cotton 31% and wheat 35% being the main crops. Previously, livestock provided manure for cotton, and forages were planted after the cotton crop to help restore soil fertility. However, introducing production quotas led to wheat replacing forages, putting pressure on soil fertility in cotton fields. Separating livestock from cotton production has reduced cotton yields and a feed shortage. Currently, the area of feed crops available per livestock unit is only 32 m² and is decreasing.

Furthermore, livestock rearing is a traditional practice that forms the foundation of the smallholder farming system in Uzbekistan (USAID, 2021). However, the low productivity in the livestock sector is hindering its potential contribution to livelihoods, food security, and the export economy. The primary constraints that prompt livestock farmers to transition to crop production are as follows:

- Insufficient feed resources
- Lack of land areas and turnover
- Lack of credit resources
- Difficult access to inputs and services

It is also important to mention that most of Uzbekistan's livestock production relies on pasture grazing as the primary source of fodder. A significant portion of the livestock output is generated by smallholder (dekhkan) farmers who own an average farm size of 0.15 hectares, making it a crucial source of income and food for rural families. In Uzbekistan, the largest share of livestock products comes from Navoi (64.5%), Kashkadarya (59.3%), Jizzakh (59.1%), Khorezm (53.9%), Tashkent regions (50.6%), and the Republic of Karakalpakstan (50.5%) (Figure II.E.5).

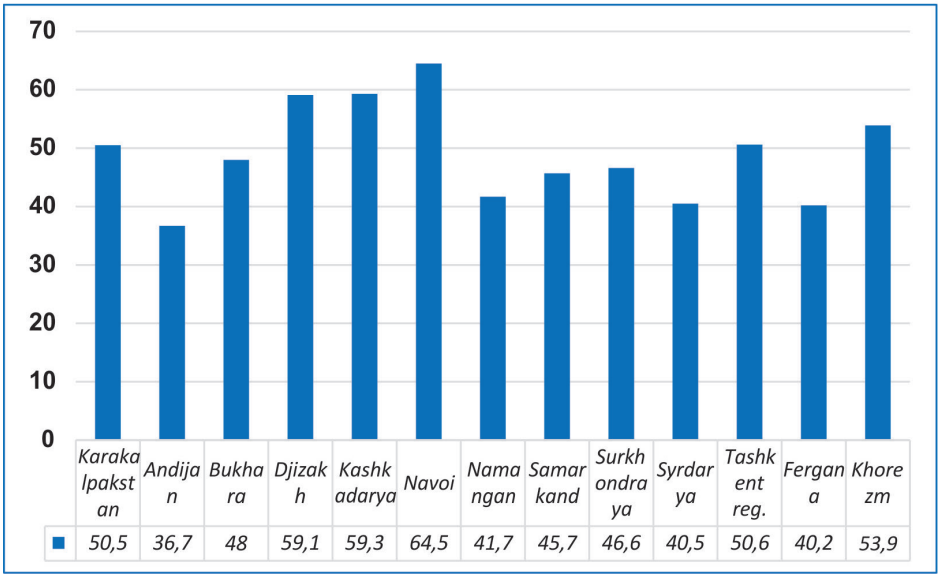



***Figure II.E.5. Distribution of livestock production volumes by regions, %***

Source: Statistics Committee of the Republic of Uzbekistan, 2023.

In 2021, gross output in livestock production almost doubled, reaching 4.1%. The government introduced several subsidies and benefits to the livestock sector, positively influencing production growth. Presidential Resolution No. PR-5017 (March 3, 2021) provided subsidised loans to livestock entities and included tax benefits such as a 50% reduction of taxes on income, property, land, and the use of water resources until 2024. In June 2021, the government began allocating subsidies to livestock, poultry, and fish farms per production unit. In addition to that, VAT exemptions were introduced for the import of cattle and small livestock, feed, and equipment. These state-supported measures significantly increased sector activity. As a result, the government has developed a Program for developing the livestock industry for 2022-2026. The program aims to boost investment, ensure food security by enhancing productivity and introduce modern production technologies.

### I.E.1.4.3. Land use and management (Results of land reforms and current state of land ownership)

After gaining independence in 1991, Uzbekistan endeavoured to achieve self-sufficiency in food grain and ensure food security while transitioning from a centrally planned to a market-oriented economy. Cotton and wheat production comprise the largest share of agricultural output. State quotas based on area and production exist, mandating compulsory sales to the state at fixed prices. Additionally, preferential credits are available for input supply, and agricultural norms are in place to regulate cropping patterns and farming practices (FAO, 2023).

Since independence in 1991, Uzbekistan has sought to achieve self-sufficiency in food grains and food security while moving from a centrally planned to a market economy. Cotton and wheat production account for the largest share of agricultural output. There are state quotas based on area and production, which mandate mandatory sales to the state at fixed prices. In addition, soft loans for inputs are available, and agricultural regulations are in place to regulate cropping patterns and farming practices. (Hasanov, S., Mirza, N. A., 2011).

Since 2008, the government has been implementing a policy of crop diversification to make more productive use of land and water, improve mechanization and infrastructure, develop agribusiness, and adopt a more market-oriented agricultural policy. In addition, the Uzbek government has taken specific actions to promote crop diversification and reduce monoculture, such as the abolition of the state order for cotton and winter wheat in 2008.

Over the past five years, the Government of Uzbekistan has implemented a number of reforms aimed at improving the country's food security and export potential through the development of a diversified farming system. Presidential Decree #2460 titled "On agricultural sector reforms and development for 2016-2020", aimed to reduce the production of raw cotton by up to 350,000 tonnes and decrease the cotton farming area while promoting high-value intensive crops on 220,000 hectares over the next five years[3].

[3] PD-2460, 2015, www.lex.uz

In early 2017, the government's reform agenda emphasised diversification, as reflected in national strategies and investment priorities. The National Development Strategy for 2017-2021 recognises the importance of diversifying cotton and cereal crops into high-value-added and labour-intensive production and processing, including horticulture, fruits, and vegetables. These efforts are expected to significantly grow land management, rural employment, food security, and export revenues[4].

Table 3 displays the distribution of agricultural land from 2014 to 2023. According to the table, in 2014, 37% of the farmland was allocated for cultivating cotton. This proportion decreased to 30% by 2023 (Table II.E.3). Although there has been a slight increase in the cultivation of alternative and high-value crops, as well as the introduction of multi-profile farming systems, the change is insignificant. In 2014, only 12% of the agricultural land was used for growing vegetables, fruits, and berries, which increased to 15% by 2023. Similarly, the cultivation of potatoes rose from 2% in 2014 to 3% in 2024 (Table II.E.3).

**Table II.E.3. Agricultural land allocation in Uzbekistan, 2014-2023**

| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| Wheat & cereals | 44 | 45 | 45 | 45 | 45 | 45 | 46 | 47 | 47 | 47 |
| Cotton | 37 | 36 | 36 | 35 | 35 | 34 | 34 | 32 | 31 | 30 |
| Potatoes | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 3 |
| Vegetables | 5 | 6 | 5 | 5 | 5 | 6 | 5 | 6 | 6 | 6 |
| Melons | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 2 |
| Fruits & berries | 7 | 5 | 7 | 7 | 7 | 8 | 8 | 8 | 9 | 9 |
| Vineyards | 3 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 |
| **Total crops** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Source: Statistical Yearbook, 2023.

### II.E.1.4.4. Water resources

According to the World Resources Institute (WRI), Uzbekistan was ranked 25th out of 164 as one of the world's most water-stressed countries (WRI, 2019). Agricultural activities in the region heavily depend on irrigation, with approximately 97% of crop production occurring on irrigated land. The total water resources amount to 50-60 cubic kilometres (km3) per year, of which only 12.2 cubic kilometres (km3) are formed inside the republic. The rest of the water comes from elsewhere - from the Tien Shan and Pamir-Altai mountains, snowmelt, and glaciers melting in summer. The annual water used for irrigation amounts to 37.9 cubic kilometres (km3). An estimated 4.2 million hectares of land are suitable for irrigation, a figure significantly more significant than

[4] PD-4947, 2017, www.lex.uz

that of the other four Central Asian republics (0.77 million hectares in Kazakhstan, 0.42 million hectares in Kyrgyzstan, 0.72 million hectares in Tajikistan, and 1.73 million hectares in Turkmenistan) (Ahmad Hamidov, 2015). The country's primary crops include cotton, winter wheat, fodder crops, and fruits and vegetables, all requiring intensive watering.

The country faces a severe water shortage, especially in regions like Karakalpakstan and Khorezm in the northwest. Water demand in Uzbekistan is rising due to population and economic growth, while supply is decreasing due to climate change. Furthermore, soil salinisation poses a significant threat to soil health and is a widespread issue for irrigated agriculture in Uzbekistan. As a result, soil salinisation currently affects more than 47% of the irrigated lands in Central Asia, resulting in decreased crop production and environmental degradation.

The Government of Uzbekistan has developed the National Water Sector Development Concept 2030 as well as the Strategy for Water Resources Management and Irrigation Sector Development 2021-2023. The concept was developed with the technical support of the Asian Development Bank (ADB). Both initiatives address critical challenges in water management and serve as a roadmap for modernising Uzbekistan's water infrastructure to make it more efficient and climate-resilient. The roadmap aims to reduce water consumption in agriculture by improving irrigation systems and expanding the use of water-saving technologies. According to this strategy, investment projects are being implemented in collaboration with international financial institutions to introduce water management units, canals, and reservoirs, as well as new technologies and public-private partnerships.

The strategy emphasises two main areas: the application of digital technologies to improve water management and the role of championing and leadership in Uzbekistan's regional water management. In addition, the strategy introduces "Smart Water" and other similar digital technologies to monitor and account for water use and consumption. New innovative forecasting systems will also be implemented to help monitor water flow in major rivers, including extremes of flood and drought. These efforts aim to meet the long-term needs of Uzbekistan's growing population and economy in the face of climate change and increased water scarcity. The strategy lays the groundwork for encouraging greater cooperation within the region and achieving sustainable water resource management in the years to come.

#### II.E.1.4.5. Input use

The primary agricultural inputs, such as fertilisers, diesel, machinery, and irrigation services, are still managed by government organisations. These inputs are distributed to farmers through state-run agencies at set prices. Farmers are restricted to specific outlets for purchasing seeds, fertilizers, fuel, and machinery services and cannot explore better or more affordable options. Priority is given to cotton and wheat producers when it comes to allocating these inputs. The use of agricultural inputs in Uzbekistan is influenced by the country's efforts to enhance farm productivity and

sustainability, especially considering its historical focus on cotton production. Key inputs include:

- Fertilizers: To increase crop yields, Uzbekistan heavily relies on chemical fertilizers, particularly nitrogen-based ones. The government is promoting a more balanced use of fertilisers, including phosphorus and potassium, to improve soil health and crop productivity.
- Irrigation is critical because Uzbekistan has an arid climate. The country depends on an extensive but ageing irrigation infrastructure, which consumes significant water resources. There are ongoing efforts to modernise irrigation systems to improve water efficiency.
- **Seeds:** The use of improved seed varieties, especially for staple crops like wheat and cotton, is encouraged to boost yields and resist pests and diseases. However, access to high-quality seeds can be inconsistent, impacting overall productivity.
- **Pesticides and Herbicides:** Farmers commonly use chemical pesticides and herbicides to protect crops from pests and weeds.
- There is a growing focus on integrated pest management (IPM) practices to reduce reliance on chemicals and promote environmental sustainability.
- **Mechanization and Technology:** Uzbekistan invests in agricultural mechanisation to enhance efficiency, particularly in cotton harvesting. The adoption of modern technologies, such as precision farming and digital tools, is still in the early stages but is gradually increasing.

Uzbekistan has made significant progress in improving agricultural inputs. However, challenges persist in ensuring sustainable and efficient use, particularly in water management and adopting environmentally friendly practices. According to the Forecasting and Macroeconomic Research report, fertiliser consumption per hectare in Uzbekistan is nearly 255 kilograms, 74% higher than the global average and 2.9 times more than the average in Europe and Central Asia. However, there is a misconception that higher fertilizer use always leads to better yields. Less than half of the world's nitrogen fertilisers contribute to plant growth; the rest merely pollutes water bodies. Consequently, the amount of anthropogenic nitrogen compounds in water, soil, and air has doubled over the past 100 years. Regular soil and soil chemistry monitoring, as well as balanced fertilizer application, are critical for ensuring sustainable agricultural growth and protecting the environment for future generations.

### II.E.1.4.6. Market Access

Uzbekistan is actively working to improve market accessibility to stimulate the country's economy. In 2022, Uzbekistan's economy saw healthy growth, with GDP reaching 888.3 trillion Soum ($80.4 billion), an increase of 5.7% in real terms. The service industry was the main contributor to this growth at 3.2%, with manufacturing at 1.3%, agriculture at 0.9%, and construction at 0.4%. Net taxes on products decreased by -0.1%. The Uzbekistani Soum depreciated by 3.5% against the U.S. dollar. The country's

international reserves increased by $0.7 billion to $35.8 billion, while public external debt rose by $2.9 billion to $29.2 billion (ITR, 2023).

**Table II.E.4. Key economic indicators of Uzbekistan, 2014-2023**

| # | Key Economic Indicators | 2021 | 2022 |
|---|---|---|---|
| 1. | Nominal GDP (billion USD) | 69.2 | 80.4 |
| 2. | Consumer price inflation (per cent) | 10.8 | 12.3 |
| 3. | Foreign Direct Investment (billion USD) | 2.3 | 2.5 |
| 4. | Current account balance (billion USD) | -4.9 | -0.6 |
| 5. | Exports (billion USD) | 16.6 | 19.3 |
| 6. | Imports (billion USD) | 25.5 | 30.7 |
| 7. | External debt, public (billion USD) | 26.3 | 29.2 |
| 8. | Gross international reserves (billion USD) | 35.1 | 35.8 |

Source: Statistical Yearbook of Uzbekistan, 2022.

It is heartening to hear about the growing external demand for food products produced in Uzbekistan and the efforts to improve the agricultural sector's productivity. These efforts create export opportunities for food preservation, processing, packaging technologies, transportation, and logistics solutions suppliers. According to Uzbekistan's official statistics, the principal trade partners are as follows:

- Russia: 18.6%
- China: 17.8%
- Kazakhstan: 9.2%

Turkey: 6.4%

- South Korea: 4.7%

### II.E.1.4.7. Progresses over climate-smart and digital agriculture

**Climate-Smart Agriculture**

Uzbekistan is already experiencing the adverse effects of climate change. Therefore, Uzbekistan has made significant progress in implementing climate-smart agricultural practices, especially in water management and crop diversification. The introduction of efficient irrigation systems such as drip and sprinkler irrigation has spread across thousands of hectares. For instance, projects supported by international bodies, including the World Bank, aim to rehabilitate irrigation infrastructure on approximately 150,000 hectares by 2025. These efforts are crucial in addressing the country's water scarcity challenges and enhancing agricultural productivity (WB, 2022).

Uzbekistan has also been pushing for crop diversification, reducing its reliance on water-intensive cotton production. By 2020, the area under cotton had declined by about 20%, with a corresponding increase in the production of fruits, vegetables, and other less water-dependent crops. (FAO, 2023). This shift conserves water resources and improves food security and economic resilience.

Implementing climate-smart practices has also reduced greenhouse gas emissions from the agricultural sector. Conservation tillage, crop rotation, and organic fertilizer use are becoming more popular, but quantifying the exact impact remains difficult.

**Digital Agriculture**

Uzbekistan is making progress in adopting digital agriculture, with a growing emphasis on precision farming and the digitization of agricultural services. Precision agriculture tools, including GPS-guided machinery and remote sensing technologies, have been implemented on approximately 10% of the country's arable land. These technologies enable farmers to optimise input use, enhance crop yields, and improve overall farm management.

The government has launched several digital platforms and mobile apps to support farmers. For example, the "*Agroplatforma"*, introduced in 2020, provides real-time market data, weather forecasts, and best practices, benefiting tens of thousands of farmers across the country. In addition, the digitalization of agricultural services has made significant progress. By 2023, about 70% of land registration processes were digitalized, streamlining operations and reducing opportunities for corruption. (Ministry of Agriculture, 2022).

**Challenges and Future Directions**

Despite these achievements, Uzbekistan faces challenges in fully realising the potential of climate-smart and digital agriculture. The availability of comprehensive data remains limited, and the adoption of these technologies among smallholder farmers is uneven, often due to resource constraints and lack of access to training.

To address these challenges, continued investment in infrastructure, capacity building and data collection is needed. Ensuring that smallholder farmers have access to modern technologies and the knowledge to use them effectively will be critical to sustaining progress and achieving the long-term goals of agricultural modernization and environmental sustainability. In addition, the government is implementing a comprehensive reform program that includes complex structural reforms in the business environment, as well as in the energy, water and agriculture sectors, as well as in various other sectors of the economy. In addition, measures are being taken to strengthen the institutional framework for managing key climate change issues. (Table II.E.5).

**Table II.E.5. Short-term action plan to mitigate climate change impact in Uzbekistan, 2014-2023**

| Priority area | Recommended action plan |
|---|---|
| Climate action | • Adopt more ambitious NDC targets and carbon-neutrality targets. |
| Green economy | • Develop a national green taxonomy and monitoring, reporting, and verification system. |
| Private sector development | • Continue and accelerate existing reform programs to improve business dynamism, enhance the investment environment, and strengthen the private sector's role in the green transition. |
| Subnational governance of climate action | • Increase the responsibilities of municipal government by empowering subnational governments, including mahallas and regional Uzhydromet offices, to support appropriate local climate policy design and implementation. |
| Water resources and irrigation management | • Increase water use efficiency in irrigation by promoting the adoption of water- and energy-efficient technologies, in combination with complementary measures and climate-aligned agriculture policies. |
| Climate-smart agriculture and land policy | • Strengthen incentives for investments in climate-smart agriculture by strengthening land tenure security and promoting land conservation investments and other |
| Landscape restoration | • Prioritize investments in adaptation, forest, and landscape restoration based on the potential for adoption of climate-smart technologies, the speed of investment recovery, and socioeconomic factors. |

Source: (WB, 2023).

### II.E.1.4.8. Government Policies and Interventions (internal support, subsidies, extension services, etc.)

Agriculture contributes to 27% of Uzbekistan's economy, benefiting from the favourable climate and fertile soil, which support the growth of crops such as cotton, wheat, rice, fruits, and vegetables. Therefore, Uzbekistan's government has undertaken significant reforms in the agricultural sector, aiming to boost productivity, ensure food security, and promote sustainable development. These policies and interventions are crucial for transforming the industry into a more market-oriented and resilient part of the economy. The following sections outline key government policies and interventions supported by recent data.

The Government of Uzbekistan has played a decisive role in transforming the agricultural sector through its policies and interventions. Significant progress has been made in crop diversification, land reform, water management and the introduction of digital technologies. However, ongoing challenges need to be addressed, particularly in water management and climate change adaptation. Continued government support,

international cooperation and engagement with the private sector will be critical to achieving the long-term goals of agricultural modernization and environmental sustainability.Uzbekistan has strategically diversified its agricultural production, reducing reliance on cotton and promoting a broader range of crops. Since 2016, Uzbekistan has reduced its cotton-growing area by approximately 30%, from 1.3 million hectares to around 900,000 hectares in 2023. This policy shift has allowed farmers to cultivate alternative crops like fruits, vegetables, and grains, which are more profitable and less water-intensive. As a result of these reforms, the production of fruits and vegetables has increased significantly. In 2023, Uzbekistan produced over 22 million tons of fruits and vegetables, a substantial increase from previous years, driven by investments in greenhouse technology and improved storage facilities.

Land reform has become a critical component of Uzbekistan's agricultural policy, focusing on increasing land tenure security and optimizing land use. Recent land redistribution efforts have allocated more than 500,000 hectares of state land to private farmers and agribusinesses. This initiative aims to increase land productivity and stimulate entrepreneurship in the agricultural sector. The government has implemented reforms to promote long-term land leasing, offering more than 70% of agricultural land through secure lease agreements by 2023. These reforms aim to encourage investment in land improvements and increase agricultural production.Effective water management remains crucial in Uzbekistan's arid climate. The government has implemented several initiatives to enhance water efficiency. Between 2017 and 2023, Uzbekistan invested over $1.5 billion in modernising its irrigation infrastructure. These investments, supported by international partners, have rehabilitated more than 200,000 hectares of irrigated land, improving water distribution and reducing losses. The adoption of drip and sprinkler irrigation systems has expanded, covering approximately 15% of irrigated land by 2023. These technologies have been particularly emphasised in regions like the Fergana Valley, where water scarcity is a pressing issue.

In order to support farmers and stimulate agricultural productivity, the government has introduced various subsidies and financial assistance programs. In 2023, the government allocated over $300 million in seeds, fertilisers, and pesticide subsidies. These subsidies are intended to reduce production costs and encourage sustainable farming practices. More than $500 million in low-interest loans were provided to farmers in 2023, focusing on purchasing modern equipment and inputs. Additionally, special credit lines for small and medium-sized agribusinesses have facilitated access to finance, boosting rural entrepreneurship.

Furthermore, the government has recognised the importance of digital technologies in modernising agriculture and improving efficiency. By 2023, over 100,000 farmers had registered on digital platforms like "Agroplatforma," which provides access to market information, weather forecasts, and agricultural best practices. These platforms aim to enhance decision-making and increase farm productivity. Precision agriculture technologies, such as GPS-guided machinery and remote sensing, have expanded to cover 12% of arable land by 2023. These technologies help optimise input use and improve yields, contributing to more efficient and sustainable farming.

In 2021, the government launched the pilot Agriculture Service Centers AKIS (National Center for Knowledge and Innovation in Agriculture). Presidential Decree sanctioned the AKIS initiative No. PD-6159 in 2021. AKIS is a one-of-a-kind platform that provides over 100 services to agricultural producers, including dekhans and private farms. The specific goals of AKIS include:

- Radical reform of the structure, focus, capacity and resourcing of the agricultural research system to support and meet the current and future needs of farmers and agribusiness.Development of a modern, functional agricultural education and vocational training system capable of meeting the technology, knowledge, skills, and information needs of farmers and agribusinesses.
- Establish a Uzbek advisory service accessible to farmers and agribusinesses to ensure the effective exchange and transfer of knowledge, information, and skills through a centrally coordinated network of certified public and private advisory service providers at regional and local levels.

## SECTION II.E.2. AGRI-FOOD TRADE PROFILE

### II.E.2.1. Analysis of the current state of agri-food trade in the country

#### II.E.2.1.1. Export and Import of the main agri-food products

Currently, the Republic of Uzbekistan has trade relations with 167 countries worldwide. The most significant trade volumes were recorded with China (15.9%), Russia (15.1%), Kazakhstan (7.5%), Turkey (5.6%), Germany (4.6%), South Korea (4.1%), and Turkmenistan (1.8%).

Considerable efforts are being made to strengthen relations with neighboring countries and expand economic, social, trade, industrial and cultural ties. In recent years, there have been significant changes in foreign trade relations with neighboring countries such as Tajikistan, Turkmenistan, Kyrgyzstan and Kazakhstan. For example, from 2021 to 2023, trade relations with Tajikistan and Kazakhstan increased by 1.2 times.

The government pays special attention to the development of agriculture and horticulture, improving the quality and volume of exported products. The main export markets for fruits and vegetables were Russia (24.8%), Pakistan (22.2%), China (16.7%), and Kazakhstan (14.1%). The export value for this period was 182.0 million US dollars, showing a growth rate of 7.5% compared to 2022. The total export volume accounted for 3.2% of the total production (ITA, 2023).

Uzbekistan exports a significant amount of finished products to the markets of OTS countries, including textiles, electrical engineering, automotive, fruit and vegetable products, and non-ferrous metals. Simultaneously, industrial enterprises in Uzbekistan import necessary products from OTS countries, such as rolled metal, aluminium, various mechanical devices, building materials, petroleum products, a majority of grain, and

other food products. By the end of 2023, Kazakhstan represented the largest share of Uzbekistan's trade turnover with OTS countries at 44.7%, Turkey at 31%, Kyrgyzstan at 10%, and Turkmenistan at 11% (CERR, 2024).

The agri-food sector has significant export potential due to the growing demand in traditional and new markets. Factors contributing to its competitiveness include low agricultural production costs, skilled labor availability, ample agricultural land, affordable energy, and improved access to local and international markets.

The share of agri-food sector exports has steadily increased since 2016, reaching 18.8% of total exports in 2021 (see Figure II.E.6). If we exclude resource-based exports such as gold, energy and oil products, and metals from the total exports, then agri-food represents over a third of the total exports.

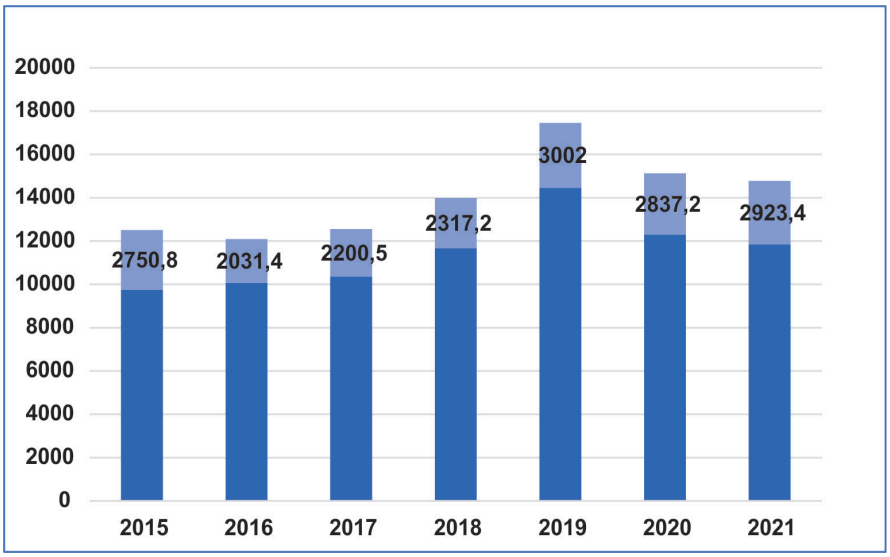



***Figure II.E.6. Exports in the agri-food sector, million USD***

Source: Statistics Committee of the Republic of Uzbekistan, 2022.

The Republic of Uzbekistan's foreign trade turnover with the countries of the Organization of Turkic States (OTS) reached $10 billion by the end of 2023. This comprised $3.6 billion in exports and $6.4 billion in imports, marking a 4.6% increase. The countries of the OTS accounted for 16.0% of Uzbekistan's total foreign trade turnover in 2023 (Figure II.E.7).

Here are the specifics for Uzbekistan's foreign trade with the member countries and observers of the OTS in 2023:

- Trade turnover with Kazakhstan was $4.5 billion, with exports totalling $1.4 billion and imports at $3.1 billion.
- Trade turnover with Turkey amounted to $3.2 billion, with exports at $1.3 billion and imports at $1.9 billion.

- Trade turnover with Kyrgyzstan stood at $968.3 million, with exports worth $634.4 million and imports worth $333.8 million.
- Trade turnover with Turkmenistan (as an observer) was $1.1 billion, showing an 18.0% increase. Exports were $171.6 million, while imports were $924.2 million.
- Trade turnover with Azerbaijan was $236.2 million, reflecting a 28.9% increase. Exports were $133.4 million, and imports were $102.8 million.

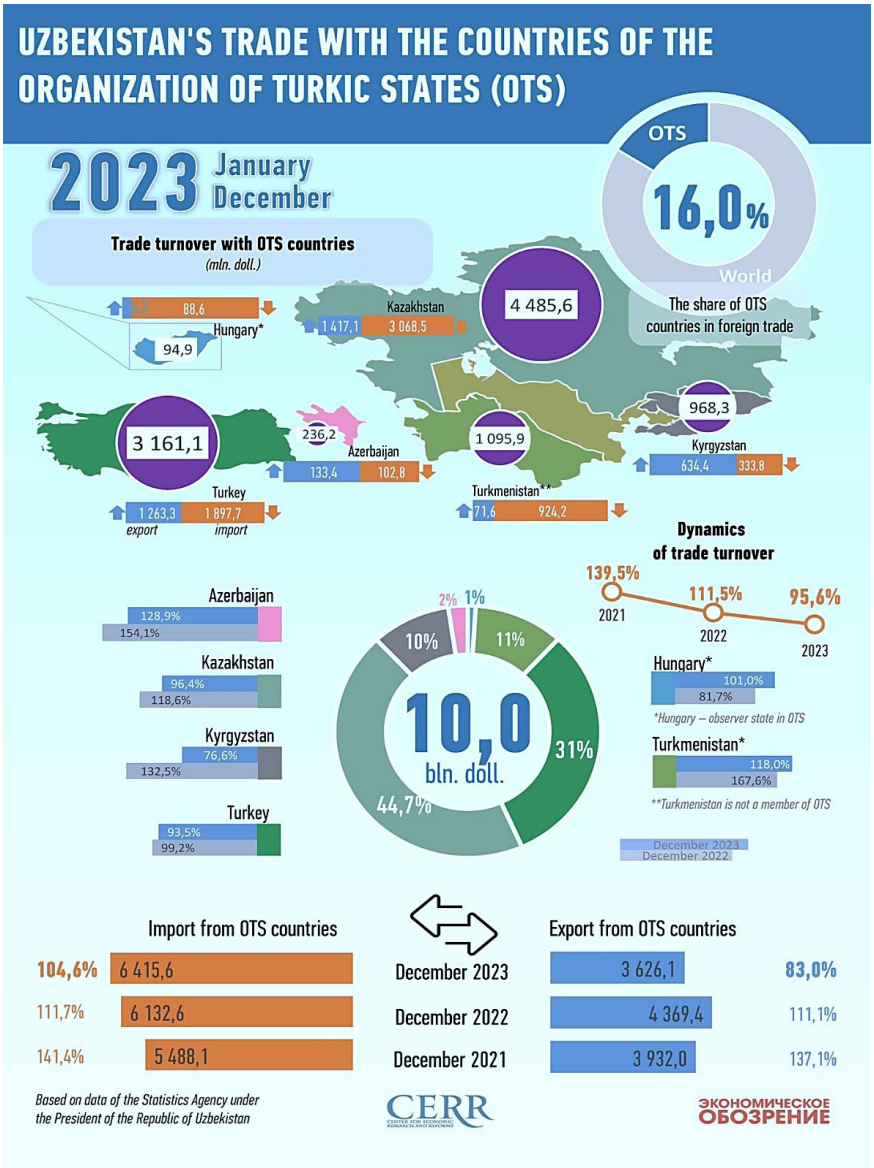



***Figure II.E.7. Uzbekistan's trade with the OTS countries in 2023***

Source: The Center for Economic Research and Reforms (CERR), 2023.

Uzbekistan primarily exports finished products such as textiles, electrical engineering, automotive, and fruit and vegetable products to OTS countries. Meanwhile, it imports products required for industrial enterprises, including rolled metal, aluminium, various mechanical devices, building materials, petroleum products, and many grains and other food products from OTS countries.

By the end of 2023, Kazakhstan accounted for the largest share of Uzbekistan's trade turnover with OTS countries, at 44.7%, Turkey at 31%, Kyrgyzstan at 10%, and Turkmenistan at 11%.

### II.E.2.1.2. Level of self-sufficiency in the main agri-food products

Uzbekistan has made significant progress in achieving self-sufficiency in various agricultural food products. Among the main categories, the country demonstrated the highest level of self-sufficiency in vegetables, melons and gourds, reaching an impressive 129% in 2022. This indicates that national production has met and exceeded domestic demand, allowing for surplus production in these categories.However, the self-sufficiency level for sugar remained at zero in 2022, reflecting Uzbekistan's complete dependence on imports to satisfy domestic demand for this product. Despite the country's efforts to diversify and boost agricultural production, specific product categories, such as sugar, rely entirely on external sources.

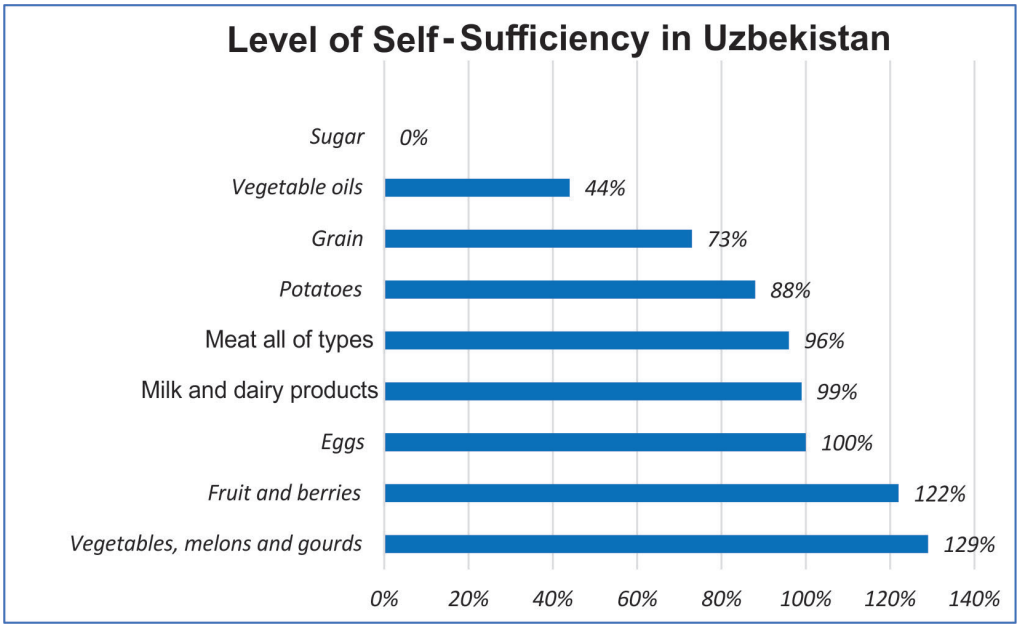



***Figure II.E.8. Self-sufficiency rate for selected agricultural food products in Uzbekistan in 2022, %***

Source: Statistics Committee of the Republic of Uzbekistan, 2022.

### II.E.2.1.3. Agri-food trade balance with countries- members of OTS (Organization of Turkic States). Disruptions in supply chains and cross-border trade between Turkic countries

Uzbekistan imports wheat grain and flour, mainly from Kazakhstan. Within OTS, Uzbekistan mainly exports to Central Asian countries, particularly Kazakhstan and Kyrgyzstan. Although agricultural and food trade is unstable, Kazakhstan is the largest importer of Uzbek products. Since Uzbekistan has the highest diversity in production among Central Asian countries, Uzbekistan's trade turnover with OTS member countries has noticeably risen since 2016.

### II.E.2.1.4. Certification and Foreign Trade Procedures. Compliance with WTO standards and procedures

Uzbekistan's national system of certification is under the control of the "Uztandard" agency, the National Certification Authority of the Republic of Uzbekistan. Since Uzbekistan is not a member of the WTO, the procedures of the national certification system are not fully implemented by the WTO regulations. The legislative and regulatory framework for the certification procedure, the following documents are still on a primary legal basis:

- Summary of Law on Certification of Products and Services of the Republic of Uzbekistan;
- Law of the Republic of Uzbekistan "On the Consumers Rights Protection";
- Law of the Republic of Uzbekistan "On the Foodstuffs Quality and Safety";
- Law of the Republic of Uzbekistan on conformity assessment;
- Cabinet of Ministers of the Republic of Uzbekistan Decree No. 409 dated August 8, 1994, «On the Adoption of the Products List subject to the Mandatory Certification, Order of the Certification Performance, import to the territory of Uzbekistan and export from its territory of goods for which certification of their safety is required»;
- Cabinet of Ministers of the Republic of Uzbekistan Decree No. 373 dated August 5, 2004, «On improvement of the structure and activity arrangement of the Uzbekistan Agency for Standardization, Metrology and Certification»;
- Cabinet of Ministers of the Republic of Uzbekistan Decree No. 427 dated December 5, 2002, «On Realization of Measures for Perfection of the Consumer Goods Import to the Republic of Uzbekistan»;
- Cabinet of Ministers of the Republic of Uzbekistan Decree No. 318, dated July 6, 2004, «On Further Measures for Rendering Product Certification Procedures».

In the meantime, Uzbekistan is working closely on joining the WTO. From this perspective, the Cabinet of Ministers has already confirmed State Interdepartmental Commission No.399 on the WTO in 2020—one of the main priorities is to introduce amendments and additions to the religation of Uzbekistan.

### II.E.2.1.5. Impact of Middle Corridor on Country's Food Security

For example, the Central Asia-Caucasus Middle Corridor directly impacts food security. Food security is achieved through regional trade and logistics links between Central Asian and Caucasian countries. Another emerging corridor is China-Kyrgyz Republic-Uzbekistan (CKU), which is necessary for trade diversification and competition[5]. The Government of Uzbekistan has committed itself to extending transcontinental land trade with Kazakhstan, Azerbaijan, and Georgia, which can affect agricultural trade and food security.

According to Figure 8, the middle corridor connects Southeast Asia and Europe. The corridor is particularly significant because it runs through Central Asia, the Caspian Sea, and the South Caucasus.


***Figure II.E.9: The Middle of the Corridor***

Source:https://eurasianet.org/how-the-middle-corridor-is-shaping-georgias-relations-with-the-west

An international conference on food security in Samarkand has also raised the importance of transforming the food system in Uzbekistan[6]. There were different roundtable discussions between the United Nations in Uzbekistan and the Ministry of Agriculture of Uzbekistan. These confirmed consolidated country-level commitments and strategies to improve the pathway towards a resilient food system in the presence of shocks and stressors[7]. Such dialogues could bring different stakeholders and partners on one platform to formulate a national strategy for achieving sustainable food systems.

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[5]https://openknowledge.worldbank.org/server/api/core/bitstreams/7e6a216e-eb56-4783-ba1b-b7621abddcd9/content

6https://www.fao.org/newsroom/detail/fao-international-conference-food-security-uzbekistan-2023/en

[7]https://uzbekistan.un.org/en/133595-united-nations-uzbekistan-and-ministry-agriculture-convened-national-and-sub-national-food

### II.E.2.1.6. Impact of Russia-Ukraine conflict on country' food security

| | | | | |
|---|---|---|---|---|
| **Uzbekistan** | Seed pro-duction | 22.01.2023 | Resolution of the President of the Republic of Uzbekistan on additional measures for the further development of agricultural seed production. | https://agroinspeksiya.uz/oz/menu/ukazy-i-postanovlenija-prezidenta-respubliki-uzbekistan |
| **Uzbekistan** | Export | 12.09.2023 | The government of Uzbekistan announced a plan to expand the range of agricultural product exports to Russia. | https://www.hortidaily.com/article/9557903/uzbekistan-expands-the-range-of-agricultural-product-exports-to-russia/ |
| **Uzbekistan** | Food security | 31.03.2022 | Uzbekistan passed a decree "On additional measures to ensure food security and price stability in the domestic market". | https://lex.uz/docs/5933102?otherlang=1 |

### II.E.2.1.7. Digital tools used in agri-food trade

In Uzbekistan, the level of adoption of digital tools in agri-food trade is relatively low; therefore, it remains an obstacle to agricultural trade. The Government of Uzbekistan has adopted a techno-policy to initiate digitalization of agriculture and trade. In addition, various incubation centers are creating a digital trade ecosystem. However, sensor technologies and low-cost digital tools are still limited.

In recent years, Uzbekistan has increasingly adopted digital tools to enhance efficiency and transparency in the agri-food trade. These tools have revolutionised various aspects of the agricultural sector, from production to distribution and market access.

**1. E-Commerce Platforms**

*Agrotrade.uz:* A dedicated online platform that connects farmers with buyers, allowing them to trade agricultural products directly.

*Agromart.uz:* An online marketplace that enables producers to list their products and reach a broader audience, including international buyers.

**2. Mobile Applications**

*Agrobank Mobile App:* Provides farmers access to financial services, such as loans and subsidies, and allows them to conduct transactions digitally.

*Crop Monitoring Apps:* Apps like AgroMonitoring help farmers monitor their crops using satellite imagery and weather data, improving decision-making and productivity.

**3. Blockchain Technology**

*Supply Chain Transparency:* Blockchain is being explored to enhance the traceability of products from farm to table, ensuring food safety and quality.

*Smart Contracts* facilitate transactions between farmers and buyers, ensuring that payments are made promptly and comply with agreed terms.

**4. Digital Payment Systems**

*Uzcard and Humo:* These are widely used digital payment systems that facilitate transactions in the agricultural sector, reducing the reliance on cash and increasing financial inclusion.

*Mobile Payment Solutions:* Integration with mobile payment systems allows quicker and more secure transactions, especially in rural areas.

**5. Agricultural Management Software**

*Farm Management Systems:* Software like AgroSoft provides tools for managing various aspects of farm operations, including inventory, finances, and crop planning.

*Data Analytics Platforms:* These platforms help farmers analyse market trends, optimise pricing strategies, and improve yield predictions.

**6. Digital Extension Services**

*SMS-Based Advisory Services:* Farmers receive timely information on best practices, weather forecasts, and market prices via SMS, helping them make informed decisions.

*Online Training and Webinars:* Platforms offering digital learning resources to help farmers adopt new technologies and practices.

### II.E.2.1.8. Government Policies and Interventions. Relevance to the Turkic World Vision-2040

For the Turkic World Vision-2040, the government of Uzbekistan has already established strategic visions. For example, the development of intelligent agriculture and organic farming is highly linked with the objectives of the Agricultural Development in the Turkic World Vision-2040. In addition, the Uzbekistan government has already initiated initiatives to implement rural development programs. Such programs are highly aligned with the vision. For example, establishing agroclusters and agrobusinesses is one of the strategic dimensions of developing agriculture in Uzbekistan. In the meantime, Uzbekistan's government has already established a close partnership with FAO, IFAD, UNDP and other international organisations to develop its agricultural sector.

## SECTION II.E.3. SDGS PROGRESS

### II.E.3.1. Role of agri-food systems in relative SDGs' targets achievement

#### II.E.3.1.1. Food Security and Nutrition (SDG 2)

Uzbekistan, endowed with fertile lands and a rich agricultural heritage, has made significant strides in combating food insecurity and advancing towards zero hunger goals. With a robust commitment to enhancing agricultural productivity, ensuring food access, and promoting sustainable practices, Uzbekistan has embarked on a multifaceted approach to address the challenges of hunger and malnutrition. The country has set ambitious goals in combating food insecurity aligned with the United Nations Sustainable Development Goals (SDGs), particularly Goal 2: Zero Hunger. The government has set specific targets to enhance food production, improve nutrition, and ensure food access for all population segments. Among the key targets are increasing agricultural productivity, reducing post-harvest losses, and eliminating malnutrition among children under five.

To achieve these targets, Uzbekistan has implemented various strategies focusing on agricultural innovation, infrastructure development, market access, and nutrition interventions. The government has prioritised investment in agricultural research and technology transfer to enhance crop yields and resilience to climate change. Additionally, efforts have been made to modernise irrigation systems, expand access to credit and inputs for farmers, and strengthen agricultural extension services. Furthermore, nutrition-sensitive agriculture programs and social safety nets have been implemented to address malnutrition and food insecurity among vulnerable populations.

A notable number of projects have been in line and executed to overcome food insecurity in the country. Several flagship projects and initiatives have been launched to implement these strategies effectively. Top of the list is "The Agricultural Diversification & Modernization Project (ADMP)," which aims to improve water management, increase the adoption of modern agricultural practices, and enhance market linkages for smallholder farmers. The government of Uzbekistan, IFAD, and the World Bank have jointly executed the project. The duration of the project is set to be from 2017 to 2025. The key objectives were to decrease food insecurity and make food available to all by eradicating the fundamental issues and filling those gaps. Some of them mainly related to Uzbekistan were improving the inclusiveness and profitability of selected value chains through increased productivity, better market access, and enhanced natural resource management.

The project is concentrated in the Fergana Valley, specifically in the regions of Andijan, Fergana, and Namangan. It targets rural low-income households on Dekhan farms, small private horticulture and livestock farmers, and agribusinesses, with a particular focus on involving women-headed households and rural youth, striving to create a more inclusive and profitable agricultural sector.

The project analyzes each step of the value chain using a demand-driven approach. It invests in areas with the highest potential for improving productivity, profitability, and competitiveness, particularly benefiting Dekhan farmers. ADMP has three interconnected components: inclusive value chain development, which focuses on building the capacity and sustainable performance of stakeholders to create a productive environment for agribusinesses; inclusive rural finance, which seeks to boost the productivity and efficiency of smallholders by increasing their access to financial resources, thereby enabling more significant investment in profitable agricultural activities; and climate-resilient rural infrastructure, which involves modernising the inter-farm irrigation network operated by Water Consumer Associations (WCAs) to diversify agricultural production, enhance land productivity, and improve water management.

As per the IFAD Presidential report, the Agricultural Diversification and Modernization Project (ADMP) is set to impact rural communities substantially, benefiting a wide range of households and individuals. The project will reach 75,000 households, with approximately 21,000 additional indirect beneficiaries. This includes 11,000 households that will gain access to loans and training and around 54,000 incremental suppliers who will benefit from the project's financial support to leading entities. As of 2023, the ADMP has facilitated modernising irrigation infrastructure covering over 100,000 hectares of agricultural land.

#### II.E.3.1.2. Poverty Reduction (SDG 1)

Uzbekistan's efforts to achieve Sustainable Development Goal 1 (SDG 1: No Poverty) have been significantly bolstered by improvements in its agri-food systems. By focusing on agricultural development, the country has been able to enhance food security, create employment opportunities, and improve the overall economic well-being of its rural population. This has been done through various projects aimed at expanding access to financial resources by launching various credit or loan programs for farmers, enhancing agricultural productivity and incomes by implementing different agricultural development programs and increasing the baseline revenue and incomes of rural households with these programs.

The government's first and foremost important initiative is the Family Entrepreneurship Development Program (FEDP), supported by the World Bank, which provides microloans and grants to small-scale farmers and rural entrepreneurs. The activities in this project included Microfinance Services (Providing microloans to small-scale farmers and rural entrepreneurs to start or expand their businesses.), Business Training (Offering training programs on business management, financial literacy, and entrepreneurship), Market Linkages (Facilitating connections between rural enterprises and larger markets to ensure better prices and stable demand.)

The project was categorised into six major parts: the "Every Family Entrepreneur Program", employment assistance fund, and loans for farmers or farm owners. The other categories included female and youth entrepreneurship and loan schemes. Under the Every Family Entrepreneur program, the credit lines included tailoring, greenhouse

and gardening, beekeeping, poultry farming, self-employment (service), rabbit farming, fishing, animal husbandry and other fields. The interest rate for this category is 18% for 3 to 7 years.

On the other side, the loans for farmers program have disbursed loans for 3 to 7 years, depending on the field of activity, with an interest rate of 17%. Loans are allocated through an entirely digitised electronic online platform (oil credit. uz). This program significantly reduced poverty by creating over 250,000 new jobs and developing over 17,500 farms.These efforts have lifted more than one million Uzbeks out of poverty since 2022.

#### II.E.3.1.3. Gender Equality (SDG 5)

Uzbekistan has been actively working on ensuring gender equality in its agri-food systems through various projects and initiatives. These efforts are part of a broader strategy to enhance the role of women in agriculture, improve their livelihoods, and ensure sustainable development.

One of the notable examples of this is "The FAO-Turkey Partnership Program on Food and Agriculture" has launched a groundbreaking initiative, "Leaving No One Behind: "Transforming Challenges Into Opportunities: The Empowerment of Rural Women for Economic Growth in Turkey and Central Asia," and focused on the issues of the rural women in Turkey, Tajikistan, and Uzbekistan. Despite the efforts to empower the rural women majority who have a central role in enhancing agriculture and food security, additional barriers still affect them because of gender disparities. As of October 2021, this project is set to increase EOUs for rural women by equipping them with knowledge and skills that will improve farm production, resource base, and formation and management of businesses and cooperatives, hence fostering change in rural communities. Further, it aims to enhance the capacities of NFPSs and policymakers in developing gender-sensitive policies by using knowledge exchange mechanisms and sharing networks among the ministries of agriculture of the concerned States. Through these, the project aims to contribute to economic transformation and social-economic rights of women and marginalised persons, especially in the agriculture value chain across the targeted region (FAO, 2022).

Furthermore, the USAID Agribusiness Development activity in Uzbekistan is aimed at the private sector development of the agriculture sector, introducing new technologies and practices in some stages of the agriculture value chain. The project's performance period is from 2020 to 25. They are new management practices and technology for the expansion of agribusiness co-financed by the applicant and human resources, including women and youths provided with business skills and vocational training, university interaction with agriculture-based internships, curricula development and conducting joint researches and participation in the capacity building of agriculture extension services and policy promotion of agriculture and agritourism. Results to date include training over 2,000 farmers and agribusiness owners, 1,300 professors and students, and 1,300 rural women and female youth in various vocational trades. The project

co-financed $3 million in investments for 13 agribusinesses, resulting in $9 million in revenue increases, distributed equipment to 223 female graduates, and improved public outreach, reaching over 2.7 million views on YouTube and increasing social media followers. Policy recommendations were prepared to improve agritourism, agricultural cooperatives, land reform, and establishing an international agricultural university (USAID, 2021).

Another program implemented by USAID is the USAID Program for the Rural Women in Uzbekistan, which was launched on the 15th of April, 2022, in the framework of Samarkand, Uzbekistan, in conjunction with the National Center for Socio-economic Development '**SABR**' and 13 regional socio-oriented NGOs, seeks to develop the knowledge in workforce development for the rural women and empower them in employment alongside strengthening female entrepreneurship. Internally generated funds from USAID shall encourage equipment procurement to empower lady CEOs who intend to establish start-ups. The program aims to develop almost one thousand women in rural areas; they are allowed to receive education in different directions – from business to vocational activities such as gardening and staff professional training for work in hotel and restaurant business, as well as the basics of financial literacy. These are micro-credit facilities, equipment financing, and business connections to offer internships and job opportunities and mentor the students. This is one of the initiatives under a more extensive project assisted by USAID, which has a total budget of $1 million and aims to enhance economic opportunities for women in Uzbekistan. Also, as implemented within the framework of the USAID Agribusiness Development Activity, jointly with the Ministry of Agriculture over five years, target initiatives are aimed at developing the agriculture sector in Uzbekistan as led by private businesses, focusing on the involvement of women and young people, as well as using modern technologies and advocating for proper policies (US Embassy, 2022).

#### II.E.3.1.4. Water and Sanitation (SDG 6)

Uzbekistan is one of the countries facing severe water shortages and is making rigorous efforts to maintain or conserve water the coming years. Uzbekistan has undertaken several projects and initiatives to ensure clean water and sanitation by improving its agri-food systems.

The Asian Development Bank (ADB) has approved a $150 million loan and a $3 million grant to enhance food and water security in Uzbekistan from 2018-24 by improving land and water resources management for better agricultural productivity. The **Climate Adaptive Water Resources Management in the Aral Sea Basin Sector Project** focuses on upgrading irrigation and drainage systems to ensure efficient water use and building the country's capacity to manage these resources effectively. Given Uzbekistan's reliance on transboundary waters for agriculture, which supports half of its rural population, the project addresses the critical impact of climate change on water supply, with 90% of water resources used in agriculture. Goals include improving on-farm water

management, introducing water productivity technologies, adapting irrigation systems to water shortages and climate variability, and strengthening policy and institutional capacities. An ADB $850,000 technical assistance grant will support the National Water Resource Management and Irrigation Strategy, focusing on capacity development and sector reforms. This initiative underscores ADB's commitment to fostering a prosperous, inclusive, resilient, and sustainable region, continuing its role as a key development partner for Uzbekistan.

#### II.E.3.1.5. Decent Work and Economic Growth (SDG 8)

Uzbekistan's economy has steadily improved over the past decade, with agriculture contributing about 25% to the country's overall GDP and employing about 26% of the country's workforce. (ITR, 2023). Agriculture has become the Uzbek economy's primary sector and industry in that context. There has been much focus on agri-food systems from both the government and international sides to achieve the best outcome. The system has aligned its activities and initiatives with SDG 8 to generate decent work and improve economic growth. Some of the projects and associated outcomes and impacts are shared in this section.

One of the notable "The Skills Development for a Modern Economy Project" in Uzbekistan is a comprehensive initiative aimed at developing the human resource capacities in the country for dealing with the modern economy. With funds from the Asian Development Bank (ADB to the tune of $93 million in 2020), the project is to strengthen the abilities of the youth and unemployed civilian populace to meet market demands. This funding is part of a broader plan that the ADB has for Uzbekistan, with human capital development being one of the critical aspects it aims to boost. It targets five key trades: The significant sectors for investment in the country include construction, textile and garments, information and communication technology (ICT), agriculture and food processing, and machinery servicing (ADB, 2020).

The primary partners in this initiative include the Asian Development Bank (ADB) and the Government of Uzbekistan. The Ministry of Employment and Labor Relations of Uzbekistan is the leading implementing agency, with support from various educational institutions and vocational training centres nationwide. The development of training programs involves evaluating and continuously refining the training curricula of the five identified trades, building capacity for trainers to acquire the latest training knowledge and skills, improving infrastructure to upgrade training equipment and facilities, collaborating with industry, and supporting vulnerable groups, particularly the 48,000 unemployed job seekers and 500 individuals with disabilities.

The project will contribute significantly to Uzbekistan's job creation and economic development. It envisages building human capital by granting certifications to at least 60,000 appropriately skilled and experienced workers to make valuable economic contributions. It aims to reduce the level of skill mismatch in the current labor market by linking workplace training programs with market demand, thereby increasing employment competitiveness.

The Agricultural Support Services Project for Uzbekistan was endorsed on June 7, 2012, to increase productivity and improve the sustainability of agricultural services for the country. This project, set to span six years, is a collaborative effort between the World Bank and the Government of Uzbekistan. It is funded by a $120.66 million credit from the International Development Association (IDA), part of the World Bank Group, with a total project cost of approximately $150 million (WB, 2022).

The main stakeholders in this project include the Ministry of Agriculture and Water Resources of Uzbekistan, local agriculture and water resource institutions, farmers, and investors from the private sector. The following is a brief description of the project intentions where the activities are spread: The project aims to develop and enhance Agricultural Extension Services, implement a paradigm shift to enhance veterinary services, and develop and enhance seed production. It also seeks to strengthen the agricultural production and sales market information system for farmers and other relevant players.

The impact it had is a landmark feature of the project's efficacy. Agriculture has benefitted through better outputs, and livestock productivity enhances the earnings of farming households. For instance, increasing the adoption of better seeds in farming and improved animal husbandry techniques for raising livestock can lead to a 20% increase in productivity. The incredible improvement in market information means that farmers can make better decisions about what and when to produce and sell, thereby increasing their profits by 10-15% margin. The project has also generated employment opportunities in farming-related services and support, with around 5000 jobs, thus enhancing the economic development of rural regions (WB, 2023).

Furthermore, The "Youth Employment through Sustainable Agriculture Project" in Uzbekistan agreed on December 1, 2018. It continued up to 2021 to enhance the livelihoods of unemployed young people in rural areas by supporting their assurance in agriculture and agriculture-based enterprises. It was implemented through the International Fund for Agricultural Development at a total cost of $3. 7 million, of which $2 million was contributed by IFAD through its grant on the project (IFAD, 2020).

The main stakeholders involved in this venture were the government of Uzbekistan and IFAD, with significant outputs that this project envisioned giving skills to young people in sustainable agriculture. This included the development of economic initiatives involving agri-business policies, contract farming, market linkages, farming equipment, and, most importantly, providing credit facilities to young farmers.

The project's impact was significant, with direct benefits reaching approximately 1,000 unskilled and unemployed rural youth. The project delivered employment opportunities for the locals, focusing on enhancing food production to boost income levels. This was done through the training interventions, inputs, and production units – agricultural enterprises and markets. The project also created broader linkages to economic development in rural areas in a way that enhanced entrepreneurship and innovation, particularly in the agricultural sectors (IFAD, 2020).

Moreover, amid global threats like climate change, increasing food costs, and rising poverty, the International Fund for Agricultural Development (IFAD) and the Government

of Uzbekistan have extended their cooperation to support rural development goals through a new Country Strategic Opportunities Programme (COSOP) for 2023-2027. This initiative, endorsed at a high-level event in Tashkent, aims to invest in the resilience and productivity of 205,000 rural households, impacting 1.2 million rural people, including small-scale producers, women, and youth.

IFAD and the Government of Uzbekistan will focus on improving access to competitive agricultural markets, scaling up innovation, and enhancing climate resilience, with a work programme exceeding USD 600 million. The COSOP will also prioritise climate-smart agriculture, sustainable land management, and addressing inequalities by enhancing female representation and focusing on rural youth entrepreneurship, representing 30% of direct beneficiaries. (UN, 2022).

The initiative is timely, considering the compounded effects of COVID-19, regional conflicts, and climate change on smallholder farmers. It aims to support Uzbekistan's vision of increasing prosperity, doubling farmers' income by 2026, and achieving upper-middle-income status. Agriculture, representing nearly 30% of Uzbekistan's GDP, is crucial, as 75% of the country's low-income population lives in rural areas. As of 2021, IFAD has supported 99,000 rural households in the horticulture and dairy sectors (UN, 2022).

### II.E.3.2. SDGs monitoring summary

#### II.E.3.2.1SDGs' indicators' current monitoring results

| Country | SDG Indicator | Definition/ Custodian International Agency | International Monitoring Results (measured indicator) | National Implementation Institution Assessment |
|---|---|---|---|---|
| **SDG 1** | | **NO POVERTY**/FAO | End poverty in all its forms everywhere. | |
| Uzbekistan | Indicator 1.4.2 | The proportion of the total adult population with secure tenure rights to land. | Approximately 40% of adults in Uzbekistan have secure land rights. | The Republic of Uzbekistan State Committee on Land Resources and Geodesy Cartography oversees land tenure issues. |
| Uzbekistan | Indicator 1.5.2 | Direct economic loss attributed to disasters affects global gross domestic product (GDP). | Direct economic losses due to disasters amount to 0.5% of GDP. | The Ministry of Emergency Situations monitors and assesses economic losses resulting from disasters. |
| **SDG 2** | | **ZERO HUNGER/** FAO | End hunger, achieve food security and improved nutrition and promote sustainable agriculture. | |
| Uzbekistan | Indicator 2.1.1 | Prevalence of undernourishment | Around 7.1% of the population of Uzbekistan is undernourished. | The Ministry of Health in the Republic of Uzbekistan implements nutrition and food security programs. |
| | Indicator 2.1.2 | Prevalence of moderate and severe insecurity | Food Insecurity Experience Scale (FIES) | |
| Uzbekistan | | | Approximately 13.2% of the population of Uzbekistan experiences moderate or severe food insecurity. | The Ministry of Agriculture and the Ministry of Health in Uzbekistan are working together to address food insecurity. |

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| | 2.2.1 | Prevalence of stunting among children under five years of age/ UNICEF, WHO, WB. | Numbers affected (millions/%) | |
| Uzbekistan | | | Around 8.9% of children under five are affected by stunting. | The Ministry of Health in Uzbekistan oversees programs to monitor and improve child nutrition. |
| | 2.2.2 | Prevalence of malnutrition among children under five years of age. | Numbers affected (millions/%) | |
| Uzbekistan | | | Around 5.2% of children under the age of 5 are malnourished. | The Ministry of Health in Uzbekistan is responsible for addressing child malnutrition. |
| Uzbekistan | | | No data | The Ministry of Agriculture is working on gathering this data. |
| Uzbekistan | | | No data | |
| Uzbekistan | | | The average income of small-scale food producers is $1,200 per year for males and $800 per year for females. | The Ministry of Agriculture and the State Statistics Committee monitor income levels. |
| Uzbekistan | | | Uzbekistan has secured the genetic resources of 350 plant and 50 animal species in medium- or long-term conservation facilities. This ensures the preservation and protection of these species for future research, breeding programs, and biodiversity conservation efforts. | The Institute of Genetics and Experimental Plant Biology oversees conservation facilities in Uzbekistan. |

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| Uzbekistan | | | In Uzbekistan, 20% of local livestock breeds are currently at risk of extinction. This means these breeds face a significant threat of disappearing entirely due to habitat loss, climate change, disease, and insufficient breeding programs. The loss of these breeds could have profound implications for biodiversity, agriculture, and cultural heritage. | The Ministry of Agriculture in Uzbekistan and the State Veterinary Committee monitor breeding risks. |
| Uzbekistan | | | The Agriculture Orientation Index (AOI) for government expenditure in Uzbekistan is 0.35. This index measures the ratio of government spending on agriculture to the sector's contribution to the national GDP. | The Ministry of Economy and Finance and the Ministry of Agriculture ensure budget allocation. |
| Uzbekistan | | | No Agricultural export subsidies were reported. | The Ministry of Investments Uzbekistan and Foreign Trade adheres to international trade rules. |
| Uzbekistan | | | No significant food price anomalies were reported. | The Republic of Uzbekistan State Committee on Statistics monitors food prices. |
| **SDG 5.** | | **GENDER EQUALITY**/FAO | Achieve gender equality and empower all women and girls. | |
| Uzbekistan | | | 30% male and 15% female proportion of the total agricultural population with ownership or secure rights over agricultural land. | The Republic of Uzbekistan State Committee for Women and Family Affairs promotes gender equality in land ownership. |

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| Uzbekistan | | | The legal framework is in place, but implementation varies. | Ministry of Justice Uzbekistan ensures the legal framework supports women's land rights. |
| **SDG 6.** | | **WATER AND SANITATION FOR ALL/** FAO | Ensure availability and sustainable management of water and sanitation for all. | |
| Uzbekistan | | | The water-use efficiency has increased by 5% over the past decade. | The Ministry of Water Resources manages water efficiency projects. |
| Uzbekistan | | | The water stress level is about 45%. | The Ministry of Water Resources Uzbekistan monitors and regulates water usage. |
| **SDG 10** | | **REDUCE INEQUALITY**/FAO | Reduce inequality within and among countries. | |
| Uzbekistan | | | Around 98% of tariff lines for LDCs have zero tariffs. | The Ministry of Investments and Foreign Trade applies tariff policies. |
| **SDG 12** | | **SUSTAINABLE CONSUMPTION AND PRODUCTION** | Ensure sustainable consumption and production patterns | |
| Uzbekistan | | | The food loss index is about 12%. | The Ministry of Agriculture works on reducing food loss. |
| **SDG 14** | | **LIFE BELOW WATER** | Conserve and sustainably use the oceans, seas and marine resources for sustainable development. | |
| Uzbekistan | | | Around 70% of fish stocks are within sustainable levels. | The Ministry of Agriculture and the State Committee on Ecology monitor fish stocks. |

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| Uzbekistan | | | Moderate implementation level. | The Ministry of Agriculture and the State Committee on Ecology enforce fishing regulations. |
| Uzbekistan | | | Fisheries contribute 1.5% to GDP. | The Ministry of Agriculture of Uzbekistan promotes sustainable fishing practices. |
| Uzbekistan | | | Framework partially in place. | The Ministry of Agriculture of Uzbekistan supports small-scale fisheries. |
| **SDG 15** | | | Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and biodiversity loss. | |
| Uzbekistan | | | Around 7.8% of the total land area is forest. | The State Committee on Forestry and the Ministry of Agriculture manage forest conservation. |
| Uzbekistan | | | Moderate progress in forest management. | The State Committee on Forestry oversees sustainable forest management. |
| Uzbekistan | | | Around 12% of the land is degraded. | The Ministry of Agriculture and the State Committee on Land Resources |
| Uzbekistan | | | (a) Mountain Green Cover Index: 0.65, (b) 10% of mountain land is degraded. | The Republic of Uzbekistan State Committee on Ecology and the Ministry of Agriculture monitor mountain ecosystems. |
| Uzbekistan | | | Uzbekistan has adopted relevant frameworks. | Ministry of Justice Uzbekistan ensures compliance with benefit-sharing frameworks. |

# SECTION II.E.4. REFERENCES

## II.E.4.1. Explanations of Statistical Indicators[8]

**Agricultural production** is a generalised indicator of the volume of agricultural production. It is defined as the sum of the value of crop and livestock products produced in the reporting period on farms, Tehran (personal subsidiary) farms, and organisations engaged in agricultural activities.

**Crop production** - includes the gross harvest of crops and other crop production produced in the reporting year, the cost of growing young perennial plantations and the change in the value of work in progress from the beginning to the end of the year.

Livestock products include the costs of raising livestock, poultry, and other animals, as well as producing milk, eggs, wool, honey, and other livestock products.

To calculate the indices of the volume of agricultural production, the indicator of its value in constant prices is used.

**Hunting** - includes activities for hunting and trapping wild animals, services in this area, and expenses for the conservation, breeding and treatment of hunting animals and birds in nurseries and farms.

**Forestry** - includes activities for the use of forests and forest resources. Forestry enterprises develop programs for forest care, constant renewal, protection from pests, diseases and illegal deforestation, maintenance of sanitary conditions and compliance with fire safety rules. Forestry products include poplar, oak, birch, pine, black karagay and other tree seedlings. When calculating forestry products, the costs of their cultivation (production) and the collection of wild mushrooms, truffles, berries, nuts, etc., are considered.

**Fishing** includes products (services) for catching fish, aquatic biological resources, aquaculture, and costs for developing these areas, as well as artificial reproduction and cultivation of fish resources.

**Gross harvest of crops** - the volume of harvested products of various crops, both primary and intermediate crops, the volume of produced (actually harvested) products over the entire sowing area of various crops grown in the fields and household plots of organisations engaged in agricultural activities, farm and dehkan(personal subsidiary) farms.

**A farm** is an independent economic entity that produces commercial agricultural products on leased land plots.

**Dehkan (personal subsidiary) farm** - a small-scale family farm that produces and sells agricultural products based on the personal labour of family members on a personal land plot provided to the head of the family for life-long inherited possession.

Activity in dehkan (personal subsidiary) farms refers to entrepreneurial activity and can be carried out at the request of members of the dehkan(personal subsidiary) farm, both with and without forming a legal entity.

[8] Prepared by using the Statistics Committee's report of the Republic of Uzbekistan.

**An organisation carrying out agricultural activities** is a legal entity with land in its economic jurisdiction and other property that produces crop and livestock products, servicing agricultural production.

**Livestock** - includes livestock of all age groups by main livestock types (cattle, including cows, sheep and goats, pigs, etc.) by farm category.

**Meat production** - includes the live weight of all farm animals and poultry, sold for slaughter and slaughtered on their farm.

**Milk production** is determined by the milk produced by cows, goats, sheep, mares, and camels, including milk produced and colostrum consumed for drinking young animals. Milk sucked by calves is not included in gross production.

**Egg production** includes the number of eggs obtained from all types of birds and eggs used to hatch chickens by hens or in an incubator.

**Wool production** - includes all clipped wool in natural weight (in weight after shearing) from sheep, goats, and camels, including wool used for on-farm needs, as well as loss of clipped wool during storage and transportation; this also includes wool-shedding, goats fluff as well as re-shearing wool.

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