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Organization of the  
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A detailed still life painting featuring a variety of fresh produce. In the foreground, a wooden bowl is filled with bright red tomatoes. To the left, there are green leafy vegetables, possibly lettuce or spinach. In the background, a large, light-colored bowl or basket is visible, along with other fruits and vegetables, including what appears to be a green pepper and some root vegetables. The painting uses soft lighting and visible brushstrokes, giving it a textured and realistic appearance.

**Sustainable and nutrition-sensitive  
food systems for healthy diets  
and prevention of malnutrition  
in Europe and Central Asia**

# Sustainable and nutrition-sensitive food systems for healthy diets and prevention of malnutrition in Europe and Central Asia

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## Preparation of this document

The nature of food insecurity and malnutrition have considerably changed in the ECA region during recent decades. In three main sections, this book addresses the role of food systems in the transition of diets and the prevention of malnutrition in the ECA region. **Part I** provides an introduction and executive summary of the book and shares key points for policy actions that can help bring about sustainable and nutrition-sensitive food systems for healthy diets and the prevention of malnutrition. **Part II** shares normative studies and a regional-level review, and **Part III** shares case studies from selected ECA countries.

***Sustainable and nutrition-sensitive food systems for healthy diets and prevention of malnutrition in Europe and Central Asia*** was produced under the direction and guidance of editors **Cheng Fang** and **Mirjana Gurinović**, who jointly developed and decided on the outline and content of the publication and coordinated the preparation of the book.

Several studies reported in this book were carried out by the FAO Regional Office for Europe and Central Asia for a regional project on food system analysis titled “Programme support for the role of food systems in the transition of diets and prevention of malnutrition in the ECA region.” Under this project, a workshop titled “Awareness raising on the food system approach to address malnutrition” was held 27 October 2020 in Belgrade, Serbia.<sup>1</sup> During the workshop, drafted papers were presented and awareness-raising activities carried out to promote a better understanding of the food system approach in the prevention of malnutrition in the region. The event served as a platform for multistakeholder engagement and dialogue, including the sharing of methodologies, tools and lessons learned to strengthen beneficiary countries’ evidence base for addressing nutrition-related challenges from the food system perspective.

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<sup>1</sup> For more information on this workshop, which was held online, see <https://www.capnutra.org/events/>.

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# Part I

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## TRANSFORMATION TOWARDS SUSTAINABLE AND NUTRITION- SENSITIVE FOOD SYSTEMS FOR HEALTHY DIETS AND PREVENTION OF MALNUTRITION IN EUROPE AND CENTRAL ASIA – SYNTHESIS AND RECOMMENDATIONS

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## Contents

This chapter outlines the pathways towards sustainable and nutrition-sensitive food systems transformation for Healthy Diets and Prevention of Malnutrition in Europe and Central Asia.

It gives overview of regional studies and comparative analyses of the situation in countries in the context of international engagement and opportunity frameworks concluding with key points for policy actions.

## Background

The *State of Food Security and Nutrition in the World* report shows that the number of undernourished has been slowly increasing for several years, and at the same time the number of overweight and obese people all over the world is increasing at an alarming rate (FAO *et al.*, 2020). The *2021 Regional Overview of Food Security and Nutrition in Europe and Central Asia* showed that this region has a low prevalence of both undernourishment and severe food insecurity compared with the world (FAO, WFP, UNECE, UNICEF, WHO, 2021). However, reductions in the numbers of people affected by hunger and severe food insecurity in some countries of the region have slowed since 2014. The COVID-19 pandemic has worsened the food security and nutrition status, causing more than 10 million people to become moderately or severely food insecure in 2020, in just one year (FAO, 2020c).

The situation is more challenging in reducing various forms of malnutrition in the region. In general, the ECA region is making progress in reducing malnutrition, but it is not on track regarding childhood overweight, adult obesity, anaemia and exclusive breastfeeding (FAO, WFP, UNECE, UNICEF, WHO, 2021). The triple burden of malnutrition – undernutrition, overweight and obesity, and micronutrient deficiencies – is present to varying degrees in all countries of the ECA region (Dupouy and Gurinović, 2020; FAO, 2015a; FAO, WFP, UNECE, UNICEF, WHO, 2021).

Agrifood systems in the ECA region have achieved high levels of food security, but a shift towards more sustainable and healthy diets is required for better nutrition. The region's agrifood systems remain diverse, with different structural and policy contexts in terms of development status, natural resources and structural characteristics. While agriculture remains key for income and livelihoods in many countries in the region, the gross domestic product (GDP) share does vary considerably, with the commonality that smallholder family farms predominate farming's structural characteristics in many countries.

### International engagement and opportunity frameworks: sustainable food systems for healthy diets

Food systems need to be transformed to sustainably provide high-quality diets for all, which are key to improving nutrition and preventing malnutrition in all its forms. Recent major international policy processes in nutrition generated by the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO) in the Second International Conference on Nutrition (ICN2) Rome Declaration on Nutrition (FAO/WHO, 2014a) and its Framework for Action (FfA) (FAO/WHO, 2014b), with 60 policy recommendations, acknowledged that “current food systems are being increasingly challenged to provide adequate, safe, diversified and nutrient-rich food, for all, that contribute to healthy diets” (FAO/WHO, 2014b). In September 2015, Member Nations adopted the 2030 Agenda for Sustainable Development and its SDGs (UN, 2015).

To address these challenges, United Nations Resolution 70/259, adopted by the General Assembly in April 2016, proclaimed the United Nations Decade of Action on Nutrition 2016–2025 (UN, 2016; UN General Assembly, 2016), putting a specific focus on the transformation of food systems to promote healthy diets that are sustainable, improve nutrition and all forms of malnutrition by 2025, and achieve global nutrition and diet-related NCD targets in line with the commitments of the ICN2 and the SDGs (FAO & WHO, 2018; UN, 2016). There are six pillars of the United Nations Decade of Action on Nutrition

2016–2025: sustainable food systems for healthy diets; aligned health systems providing universal coverage of essential nutrition actions; social protection and nutrition education; trade and investment for improved nutrition; safe and supportive environments for nutrition at all ages; and strengthened governance and accountability for nutrition. The six action areas of the Decade of Action on Nutrition and the recommendations of the Framework for Action of the ICN2 provide countries with a broad range of policy options for customizing and extending their activities. As a part of the Decade of Action on Nutrition, governments and partners are encouraged to make SMART (specific, measurable, achievable, relevant and time bound) commitments (FAO & WHO, 2016) that build upon and extend existing food and nutrition policies and actions.

Sustainable, healthy diets are essential for all of the SDGs. The SDG vision for nutrition is to end all forms of malnutrition, address nutritional needs throughout the course of life, give universal access to safe and nutritious food that is sustainably produced, and ensure universal coverage of essential nutrition actions. Beyond that, the High-Level Panel of Experts on Food Security and Nutrition has stated that “a food system gathers all the elements (environment, people, inputs, processes, infrastructures, institutions, etc.) and activities that relate to the production, processing, distribution, preparation and consumption of food, and the output of these activities, including socioeconomic and environmental outcomes.” Food supply chains, food environments and consumer behaviour are the key connection points for nutrition and health (HLPE, 2017).

Several events in the past few years have promoted practical applications of the food system perspective and have provided a platform for multispectral interaction, involving representatives from food and agriculture, health, education and social protection sectors:

- the FAO/WHO International Symposium on Sustainable Food Systems for Healthy Diets and Improved Nutrition, held in Rome, Italy, in 2016 (FAO, 2016), with its key messages (FAO & WHO, 2017) and proceedings (FAO/WHO, 2018a); and
- the Regional Symposium on Sustainable Food Systems for Healthy Diets and Improved Nutrition, FAO/WHO/WFP, in collaboration with UNICEF, held in Budapest, Hungary, 4–5 December 2017, <https://www.fao.org/europe/events/detail-events/en/c/1034293/> (FAO Regional Office for Europe and Central Asia, 2017), with its main outcome (FAO/WHO, 2018b), <https://www.fao.org/3/mw166en/mw166en.pdf>.

Beside these framework documents, FAO and WHO released *Strengthening Nutrition Action: A resource guide for countries*, developed based on the policy recommendations of ICN2 (FAO & WHO, 2018). This resource guide is structured around 24 themes that unpack the ICN2 Framework for Action policy recommendations; it is intended primarily for policy advisers supporting decision-makers and development partners involved in multisectoral food and nutrition-related policymaking processes.

Recently, the Farm to Fork strategy for a fair, healthy and environmentally friendly food system (European Union, 2020) gives European Union Members a strong and integrated policy framework to redesign their food systems, rethink the use of soils and the role of livestock, and provide healthy and sustainable diets.

Making the shift to sustainable nutrition with food systems is one cornerstone of the Food 2030 strategy as it is presented by the European Commission in the report *Food 2030 pathways for action: Research and innovation (R&I) policy as a driver for sustainable, healthy and inclusive food systems* (European Commission, 2020). Food 2030 applies a systemic approach to connect, scale up and boost European Union research and innovation and investments to provide solutions to four overarching priorities: nutrition for sustainable and healthy diets; climate-smart and environmentally sustainable food systems; circular and resource-efficient food systems; and food systems innovation and empowerment of communities.



The multi-actor engagement process involves a wide diversity of sectors, including primary production, food processing, logistics, retailing, food services (e.g. restaurants, canteens), public health, etc. It will also engage a wide range of stakeholders, including researchers and academia, policymakers, small and medium enterprises and industry, non-governmental organizations (NGOs), educators, knowledge brokers, consumers and civil society members (den Boer *et al.*, 2021; European Commission, 2020). The role of science–policy interfaces (SPIs) on the international level, and potential options for enhancing SPIs to better support food systems transformation, are currently being debated (Singh *et al.*, 2021).

There is an urgent need to promote diets that are healthy, that have low environmental impact, and that are socially and culturally acceptable and economically accessible to all. FAO and WHO prepared some guiding principles for sustainable healthy diets that take a holistic approach to diets. The guidelines consider international nutrition recommendations, the environmental cost of food production and consumption, and adaptability to local social, cultural and economic contexts, with the aim of supporting countries as they work to transform food systems to deliver on sustainable healthy diets and contribute to the achievement of the SDGs at the country level (FAO & WHO, 2019).

The Committee on World Food Security (CFS) Voluntary Guidelines on Food Systems and Nutrition aim to contribute to the transformation of food systems and the promotion of sustainable food systems to ensure that the food that contributes to sustainable healthy diets is available, affordable, accessible, safe and of adequate quantity and quality while in compliance with beliefs, culture and traditions, dietary habits and preferences of individuals, in accordance with national and international laws and obligations (CFS, 2021).

As we entered the Decade of Action to achieve the SDGs by 2030, many of the world’s food systems were fragile, not fulfilling the right to adequate food for all. The United Nations Food Systems Summit in 2021 was intended to mark a decisive step forward. A growing number of stakeholders, including governments, policymakers and corporate businesses, have acknowledged the crucial role played by food systems in delivering sustainable growth and food systems transformation (Von Braun *et al.*, 2021; UN Secretary-General, 2021).

To improve contributions to healthy diets and ensure the transformation of food systems, it is necessary to identify and evaluate the state of various elements of food systems and related needs at national, regional and global levels. This understanding can aid in evidence-based policy- and decision-making and help create mechanisms for monitoring and evaluating the progress in food systems transformation. The Food Systems Dashboard is one example (Fanzo *et al.*, 2020).

A recent meeting of the WHO European Office for the Prevention and Control of NCDs brought together Member States of the WHO European Region and expert stakeholders to discuss various aspects of food production, promotion, marketing and distribution for healthy and sustainable diets (WHO, 2021).

The current COVID-19 pandemic and the measures taken to reduce the spread of the disease have disrupted food environments around the world. Unhealthy diets leading to overweight and obesity are the leading cause of NCDs, including diabetes, heart disease, cancer and chronic respiratory disease. Unhealthy diets are also a primary cause of poor control of NCDs and resulting adverse health outcomes. Lockdowns, policy responses, and COVID-19 itself are showing an evolving impact on both external and personal food environment domains (UNSCN, 2020).

There is a need for the development of effective pandemic policy responses and actions to mitigate changes, improve food environments and build resilient food systems that incorporate healthy nutrition (Fanzo *et al.*, 2020; WHO, 2021).

Sustainable and nutrition-sensitive food systems for healthy diets and the prevention of malnutrition in Europe and Central Asia: Regional studies

Inadequate diets are a major contributing factor to the rising prevalence of malnutrition in all its forms, and the way food is produced and consumed is taking a toll on the environment and natural resource base.

**Chapter 1** presents a review of the status of food systems elements and the identification of challenges and opportunities for transformation toward sustainable, healthy diets in central and southeastern Europe. The inventory of the current state of different food system elements was conducted in 2018 using a comprehensive online survey distributed to 17 countries in central and southeastern Europe, of which 15 responded. Country representatives were from various institutions from the agrifood, nutrition and health sector. The review of food system elements in the countries of central and southeastern Europe revealed various challenges and opportunities in food systems. As seen in the review, policy implementation in countries across the ECA region have demonstrated significant improvements in food systems. However, further encouragement and guidance for countries to focus on transformations of specific food system elements is necessary. Moreover, this review assesses, evaluates and recommends priorities in policy development that are most relevant to sustainable food systems for healthy diets in the countries of central and southeastern Europe. Conclusions and recommendations were made by an expert panel and formalized in the Belgrade Declaration for strengthening regional capacities on sustainable food systems for healthy diets and nutrition in central and southeastern Europe. These recommendations propose a number of specific actions related to governance and public health nutrition, the food supply chain and food environment, consumer behaviour, research, education and training of (future) professionals, networking, and sharing knowledge and experience for establishing collaborations among capacity development networks.

### **Highlights and key points**

- The review of the status of food system elements in countries of central and southeastern Europe reveals various challenges in food systems and highlights opportunities for their transformation towards sustainability and healthier diets across the region.
- The transformation of food systems towards sustainability and the overall improvement of nutrition requires governmental support and collaboration with the agriculture, health, education, trade, environment, and social protection sectors.
- Research projects and cooperation with other European partners and networks enhance regional capacity development in food, nutrition and public health – through training, the exchange of information and the transfer of knowledge – stimulating and contributing to food systems transformation in the region.
- Analyses of the status of certain food systems elements in central and southeastern Europe will contribute to the comprehensive situation and policy analysis of the region necessary for planning effective policy responses and further monitoring of the progress in food systems transformation (Gurinović *et al.*, 2022).
- There is a need to develop and establish harmonized food systems data collection with indicators that measure components, status, progress, drivers, and outcomes of food systems at national level and that are comparable across countries, regions and worldwide.

International recommendations, including key messages from the Regional Symposium on Sustainable Food Systems for Healthy Diets in Europe and Central Asia and the Belgrade Declaration define specific actions to be taken towards the development of sustainable food systems in the region.

Unsafe food has high costs for the social, economic and environmental dimensions of sustainability. Ensuring food safety is a complex task that requires integrated multidisciplinary contributions, engagement and multisectoral collaboration at all levels, including local, national, regional and global. The two-way food safety risk communication from global to local and from local to global is critical for maintaining a safe food supply. **Chapter 2** highlights the polyvalent importance of food safety and the enhancements in three food safety-supportive areas that may benefit the ongoing accelerations in global megatrends and dynamic changes in food systems, bringing into focus food safety governance, emergency response preparedness, and the professional education of specialists for agrifood systems. The impact on food safety of dynamic changes in global megatrends and agrifood systems necessitates the recognition of essential connections, integrated all-levels food safety governance and upgraded education in line with the One Health approach for adequate prevention, mitigation and trade-offs, aiming to ensure safe food through the optimized health of people, animals and ecosystems.

### Highlights and key points

- The impact on food safety of dynamic changes in global megatrends and in agrifood systems necessitates the recognition of essential connections for adequate mitigation measures.
- Effective food control systems require both sound technical knowledge, soft skills and inclusive and collaborative food safety governance.
- By prioritizing effective participation in the work of the FAO/WHO Codex Alimentarius Commission and in the food safety risk communication actions of the FAO/WHO International Food Safety Authority Network (INFOSAN), countries have opportunities to contribute to global food safety governance and to benefit from the exchange of good practices.
- Defining criteria and classifying the scalability of hazardous food safety events is an essential step in emergency response preparedness.
- The modernization of food safety education with the One Health approach would equip the new generation of professionals with knowledge and skills needed for robust food safety governance and for coping with various potential disruptive challenges and threats to agrifood systems. Food safety assurance, as the prerequisite for hunger and malnutrition prevention, is one of the major issues that still needs to be addressed to protect human health and ensure global economic development. Huge efforts are invested in reducing mycotoxin contamination in countries of southeastern Europe.

**Chapter 3** informs on the incidence of mycotoxins in countries of southeastern Europe and its implications for the food supply chain. This chapter provides insight into fungal sources of major mycotoxins and fungal secondary metabolites and their ecology, with an emphasis on the most important among them, mycotoxins, as contaminators of food and feed. It covers the considerable impact of mycotoxins on food safety systems, their occurrence in foodstuffs, toxicity, significance to human health, methods of analysis, regulations governing them, strategies to manage the pertaining risks, regional and international trade, and the global economy. In addition, the chapter reviews the impacts of climate change on mycotoxin contamination of feed and food. Mycotoxins are toxic chemical substances produced by fungal species that can colonize crops in the field, after harvest, or during storage; they pose a potential threat to human and animal health. The biological effects of many mycotoxins, their organ toxicity, mutagenicity, carcinogenicity, teratogenicity, and modulation of the immune system are well documented. The most prominent members of the group are aflatoxins, ochratoxin A, fumonisins, trichothecene, zearalenone, patulin and ergot alkaloids.

**Highlights and key points**

- Mould and mycotoxin contamination significantly compromise food and feed safety in countries of southeastern Europe.
- Particular mycotoxins possess carcinogenic, cytotoxic, immunosuppressive, neurotoxic, estrogenic or teratogenic activity.
- The impacts of climate change have been identified as an emerging issue for food and feed safety in association with mycotoxins.
- The literature data reveal that the food supply chains in countries of southeastern Europe are vulnerable to mycotoxin contamination.
- This study highlighted the predictions of mycotoxin contamination, adaptation strategies and research priorities.
- Monitoring and control measures represent key factors in the controlling of food and feed mycotoxin contamination.

**Chapter 4** provides an analysis of the nutrition transition in Central Asia from food systems perspectives and offers an overview of the changing nature of food and nutrition security in the countries of Central Asia. A food systems framework was used to understand the dynamic transitions in diets, food affordability, and food environments experienced in Central Asia. Data were collected from FAO food security resources, including FAOSTAT, Food Price Monitoring and Analysis, and recently conducted surveys. It was notable that the availability of sugar for human consumption has sharply increased in Central Asia, and the changes of food consumption patterns in Central Asia are associated with certain trends in the region, including increased disposable incomes, remittances from labour migrants, price volatilities of basic food items, rapid urbanization, and an increased variety of food available in urban areas. The observed transition in various dimensions of food systems – particularly in diet, food affordability and food environments – in Central Asia are related to significant shifts in demography, economy and food security. This requires a response with an interdisciplinary approach that includes inputs from multiple sectors, including agriculture, education, urban planning and public health. The evolution of these trends and how they associate with changes in diets and nutrition will be key in moving towards ending all forms of malnutrition.

**Highlights and key points**

- A food systems approach allows for an analysis of supply and demand in food systems within an integrated analytical framework.
- Central Asian countries face multiple burdens of malnutrition, with persistently high rates of undernourishment, increasing obesity, and increasing occurrences of NCDs.
- The transition of nutrition in Central Asia has been occurring simultaneously with significant shifts in demographics, the economy and food security.
- The recent rise in obesity and NCDs requires a systematic analysis of food access, diets and food environments.

## Country case studies

This chapter shares a summary and comparative analyses of the status of various elements of food systems and the development of sustainable and nutrition-sensitive food systems, including findings from Albania, Armenia, Bosnia and Herzegovina, Bulgaria, Czechia, Estonia, Hungary, Kyrgyzstan, Latvia, Lithuania, Republic of Moldova, Montenegro, North Macedonia, Poland, Romania, Serbia, Slovenia and Ukraine.

### Overview of poverty, food security and malnutrition

The causes of malnutrition are complex, and diet is one of the most important contributors to malnutrition, which itself is influenced by many factors, from personal preferences to the broad national availability of foods. The ECA region is characterized by the coexistence of undernutrition, overweight and obesity, with some countries having relatively high prevalence of more than one form of malnutrition. The high prevalence of the triple burden of malnutrition in Europe and Central Asia – undernutrition, micronutrient deficiencies and overnutrition – urges countries to prevent all forms of malnutrition and improve diets and the food environment. The indicators on various forms of malnutrition reviewed in this section are: three key indicators referring to malnutrition among children younger than 5 – stunting (SDG Indicator 2.2.1), wasting (SDG Indicator 2.2.2) and overweight (SDG Indicator 2.2.2) – and indicators on low birth weight, anaemia among women of reproductive age, and adult obesity. Selected indicators of food insecurity and malnutrition in selected countries and subregions are present in the Annex (FAO, WFP, UNECE, UNICEF, WHO, 2021; UNICEF, 2021).

#### *Prevalence of undernourishment*

Food security in the ECA region has improved substantially during the past two decades, with countries making important progress in decreasing the prevalence of undernourishment (PoU), or hunger. The PoU was below 2.5 percent in 2009–2011 and 2018–2020 for most of ECA countries. For the same monitoring periods, the prevalence was below 2.5 percent in the EU-27 and the United Kingdom of Great Britain and Northern Ireland, Poland and Ukraine. Central Asia has improved, with the PoU dropping from 5.5 percent in 2009–2011 to 3.2 percent in 2018–2020, but still lower than in the world at large (in 2009–2011, from 9.4 percent and in 2018–2020, 8.9 percent). The PoU reduction in the ECA region occurred more rapidly than in the world as a whole, with stagnation in the reduction in recent years.

Reduction of the PoU was identified in other countries, as well, including Albania (from 4.9 percent to 3.9 percent), Armenia (from 4.3 percent to 3.4 percent), Kyrgyzstan (from 8.3 percent to 7.2 percent) and North Macedonia (from 3.4 percent to 2.7 percent).

#### *Severe food insecurity*

The trend of the prevalence of severe food insecurity in the ECA region shows there were no changes from 2014–2016 to 2018–2020, with the prevalence steady at 1.9 percent. However, in Central Asia, severe food insecurity increased from 1.7 percent to 3.1 percent. It also increased in North Macedonia (from 3.6 percent to 5.0 percent) and in Ukraine (from 2.0 percent to 2.5 percent). During the same period, a decreasing prevalence of severe insecurity was observed in the EU-27 and United Kingdom of Great Britain and Northern Ireland (from 1.6 percent to 1.2 percent), Albania (from 10.0 percent



to 8.8 percent), Armenia (from 1.2 percent to 1.1 percent), and Poland (from 1.8 percent to less than 0.5 percent). The data show that in many countries, the prevalence of moderate or severe food insecurity was high and trending upward even before the pandemic. In many other countries, the moderate or severe food insecurity prevalence – though well below the world average – hovered at or surpassed 10 percent.

### *Stunting*

Table A0 shows that the prevalence of stunting in the world, in the ECA region, in Central Asia and in selected ECA countries for 2010 and 2020 is decreasing. Worldwide, it decreased from 27.7 percent to 22.0 percent. In the ECA region, it decreased from 10.2 percent to 7.3 percent. In Central Asia, it dropped from 17.1 percent to 10.0 percent, and in the EU-27 and United Kingdom of Great Britain and Northern Ireland, it decreased from 17.1 percent to 2.8 percent. Also seeing decreases were Albania (from 20.9 percent to 9.6 percent), Armenia (from 15.6 percent to 9.1 percent), Kyrgyzstan (from 17.7 percent to 11.4 percent), North Macedonia (from 6.6 percent to 4.1 percent), Poland (from 2.4 percent to 2.3 percent), and Ukraine (from 19.2 percent to 15.9 percent). Between 2010 and 2020, countries of concern with regard to child stunting in the ECA region made progress and are on track to achieve the 2025 and 2030 targets. However, the ongoing COVID-19 pandemic poses challenges.

### *Wasting*

Regarding wasting among children, in general, the ECA region is making progress and is on track to achieve the 2025 and 2030 targets in most countries. According to the available data, in 2020 the prevalence of wasting in the ECA region was 1.9 percent, and in world it was 6.7 percent. In Central Asia and the Caucasus, it was 2.3 percent, and in the EU-27 and United Kingdom of Great Britain and Northern Ireland, it was 0.7 percent. In the western Balkans, it was 2.5 percent, while in North Macedonia it was 3.4 percent. Wasting declined gradually in Kyrgyzstan, from 3.3 percent in 2006 to 2.8 percent in 2014, and it was 2 percent in 2020 (FAO, WFP, UNECE, UNICEF, WHO, 2021; UNICEF, 2021). The global nutrition targets for wasting call for the reduction of childhood wasting to less than 5 percent by 2025 and to 3 percent by 2030, and maintenance at that level. Some countries need to make rapid progress in order to achieve the 2030 targets, in particular due to uncertainty caused by the ongoing COVID-19 pandemic.

### *Children overweight*

The prevalence of overweight among children younger than 5 in the ECA countries declined from 10.4 percent in 2010 to 7.1 percent in 2020, but it remained higher than the global level (5.6 percent in 2010 and 5.7 percent in 2020). During this period, progress in reducing the prevalence of overweight among children younger than 5 was noted in Central Asia (from 9.5 percent to 5.6 percent), the EU-27 and the United Kingdom of Great Britain and Northern Ireland (from 5.9 percent to 5.7 percent), Albania (from 23.6 percent to 14.6 percent), Armenia (from 15.9 percent to 10.8 percent), Kyrgyzstan (from 8.4 percent to 5.8 percent), North Macedonia (from 14.4 percent to 10.0 percent), and Ukraine (from 27.9 percent to 17.0 percent). Only in Poland did the prevalence of overweight among children increase, from 5.6 percent to 6.7 percent. To achieve global nutrition targets for childhood overweight for 2025 (no increase in childhood overweight) and for 2030 (reduction of childhood overweight to less than 3 percent and maintenance at that level), collective efforts in ECA region will be necessary.

### *Adult obesity*

From 2010 to 2016, there has been an increasing trend of the prevalence of adult obesity in the ECA region (from 20.8 percent to 23.3 percent), Central Asia (from 14.7 percent to 17.7 percent), the EU-27 and the United Kingdom of Great Britain and Northern Ireland (20.5 percent to 22.9 percent) and in all selected countries in the region: Albania (from 18.2 percent to 21.7 percent), Armenia (from 17.5 percent to 20.2 percent), Kyrgyzstan (from 13.4 percent to 16.6 percent), North Macedonia (from 20.1 percent to 22.4 percent), Poland (from 20.8 percent to 23.1 percent) and Ukraine (from 22.0 percent to 24.1 percent).

In 2010, the prevalence of adult obesity in the ECA region was much higher, at 20.8 percent, than the world average of 11.2 percent. The prevalence of adult obesity rose in all ECA countries from 2010 to 2016, and no countries are on track to meet the 2025 and 2030 targets (FAO, WFP, UNECE, UNICEF, WHO, 2021).

### *Micronutrient deficiencies*

Micronutrient deficiencies are a global public health problem. Iodine, vitamin A and iron deficiencies are the most prevalent globally, and they represent a major threat to health and development, particularly among vulnerable groups, including children and pregnant women. The worldwide prevalence of anaemia in reproductive women, in 2010 as a baseline, was 28.6 percent, and it increased to 29.9 percent in 2019. In the ECA region, the prevalence grew from 16.0 percent in 2010 to 17.4 percent in 2019. The rates of anaemia in the same years were higher in Central Asia (29.9 percent and 28.1 percent), Albania (21.1 percent and 24.8 percent) and Kyrgyzstan (34.2 percent and 35.8 percent), while the rates were much lower in the EU-27 and United Kingdom of Great Britain and Northern Ireland (11.8 percent and 13.5 percent), Armenia (18.0 percent and 17.3 percent), North Macedonia (16.8 percent and 19.3 percent) and Ukraine (13.8 percent and 17.7 percent), respectively. All presented countries in the region have experienced an increased rate of anaemia since 2010 and are not on track to meet the 2025 and 2030 targets of a 50 percent reduction in anaemia in reproductive women. Recommendation 42 from the ICN2 FfA states: "Improve intake of micronutrients through consumption of nutrient-dense foods, especially foods rich in iron, where necessary, through fortification and supplementation strategies, and promote healthy and diversified diets," and Recommendation 43 states: "Provide daily iron and folic acid and other micronutrient supplementation to pregnant women as part of antenatal care; and intermittent iron and folic acid supplementation to menstruating women where the prevalence of anaemia is 20 percent or higher, and deworming, where appropriate" (FAO/WHO, 2014b).

Undernutrition, overweight, obesity and micronutrient deficiencies (anaemia in reproductive women) continue to coexist, with some countries having a relatively high prevalence of more than one form of malnutrition. In Central Asia, and particularly Kyrgyzstan, there are high rates of undernutrition and micronutrient deficiencies. Albania and Armenia bear the triple burden of malnutrition. In North Macedonia and Ukraine, there are high rates of obesity and micronutrient deficiencies, and Poland has a high rate of obesity (Table A0). Recommendation 58 of the ICN2 FfA states: "National governments are encouraged to establish nutrition targets and intermediate milestones, consistent with the timeframe for implementation (2016-2025), as well as global nutrition and NCD targets established by the World Health Assembly. They are invited to include – in their national monitoring frameworks – agreed international indicators for nutrition outcomes (to track progress in achieving national targets), nutrition programme implementation (including coverage of interventions) and the nutrition policy environment (including institutional arrangements, capacities and investments in nutrition). Monitoring should be conducted, to the fullest possible extent, through existing mechanisms" (FAO/WHO, 2014b).

## Agriculture and poverty in Europe and Central Asia

After the breakdown of the Soviet Union in the early 1990s in Central Asia and the fall of the rule of communism in the countries of central and southeastern Europe, newly independent states underwent a transformation from a planned economy to a market economy. In most of these countries, land reforms were among the core reforms implemented; these reforms led to the disassembly and privatization of collective farms and to the emergence of numerous farm operators and landowners. Nowadays, in the observed countries, the majority of arable land and livestock belong to small farmers, either peasant farms or rural households, meaning that most agricultural products are produced by smallholders (FAO, 2019a).

This fact presents a risk of poverty or an opportunity for creating new employment and overall rural development, depending on multiple internal and external factors.

Countries report on a general decrease in rates of those at risk of poverty (without specific rates), but still around one-fifth of the population is at risk. The Gini coefficient, a measure of income distribution and inequality is between 25 percent and 35 percent, which is far below world's average value, indicating relative equality in ECA region (World Population Review, 2021).

### *Transformation of dietary change and food systems*

Current dietary patterns are unhealthy, unsustainable, and inequitable for many populations and present a significant risk factor for the global burden of disease and death (Fanzo and Davis, 2019). An analysis of the impacts of inadequate consumption of major foods and nutrients across 195 countries on NCD mortality and morbidity identified as the leading risk factors for mortality diets high in sodium and sugar and low in whole grains, fruits, nuts, seeds, vegetables and omega-3 fatty acids, accounting for more than 2 percent of global deaths. Non-optimal intake of three dietary factors (whole grains, fruits and sodium) accounted for more than 50 percent of deaths and 66 percent of disability-adjusted life years attributable to diet (Afshin *et al.*, 2019b). Six of the top 11 risk factors driving the global burden of diseases are related to diet (Global Panel on Agriculture and Food Systems for Nutrition, 2016). The *State of Food Security and Nutrition in the World* shows that the number of undernourished has been slowly increasing for several years, and at the same time the number of overweight and obese people all over the world is increasing at an alarming rate (FAO, WFP, UNECE, UNICEF, WHO, 2021). Monitoring nutrition policy implementation in the WHO European Region shows that there have been significant improvements in the food and drink environment. Yet, it remains necessary to encourage and guide Member Nations towards food system transformation (Breda *et al.*, 2020). Diet improvements could potentially prevent one in every five deaths globally. Given the complexity of dietary behaviours and the wide range of influences on diet, improving diets requires the active collaboration of a variety of actors throughout the food system, along with policies targeting multiple sectors of the food system. Dietary shifts to healthy diets can play an important role in increasing the environmental sustainability of food systems.

In 2019, the EAT-Lancet Commission on Food, Planet, Health published what is referred to as the "EAT-Lancet reference diet," which quantitatively describes a universal healthy reference diet based on an increase in the consumption of nutritious foods (such as vegetables, fruits, whole grains, legumes and nuts) and a decrease in the consumption of energy-dense foods (such as red meat, sugar and refined grains) that would provide major health benefits and increase the likelihood of attainment of the SDGs (EAT-Lancet Commission, 2019a). The transformation of current food systems to improve availability, affordability and uptake of nutritious, safe, affordable and sustainable diets is key to tackling malnutrition in all its forms and diet-related NCDs. The synergies of approaches to tackle multiple forms of malnutrition

can be realized through “double duty” actions that tackle several forms of malnutrition at the same time (Branca *et al.*, 2019; Hawkes *et al.*, 2020). According to the International Scientific Symposium “Biodiversity and Sustainable Diets: United Against Hunger,” organized jointly by FAO and Bioversity International in 2010, “Sustainable diets are those diets with low environmental impacts which contribute to food and nutrition security and to the healthy lifestyles of present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources.” (FAO, 2010). Shifting dietary habits, however, presents a significant challenge for cultural, political and economic reasons and will require actions at international, European and national levels – involving governments, stakeholders and individuals – that go beyond information and education programmes and require continual capacity development (Achterbosch *et al.*, 2019; Gurinović *et al.*, 2020; Hebinck *et al.*, 2021). FAO/WHO proposed guiding principles that aim to support countries in their work to transform food systems towards delivering sustainable healthy diets and achieving the SDGs at the country level (FAO & WHO, 2019). These guiding principles take a holistic approach to diets, considering international nutrition recommendations, the environmental cost of food production and consumption, and adaptability to local social, cultural and economic contexts. On the European Union level, integrated food policy is required in order to promote healthy diets and build sustainable food systems in Europe (De Schutter, Jacobs and Clément, 2020).

To evaluate the dietary shift, longitudinal monitoring of the food consumption and diets of the population at the individual level, using harmonized methodology, is essential. FAO and WHO have developed the FAO/WHO Global Individual Food consumption data Tool (FAO and WHO, 2021), an open-access platform that collates, harmonizes and disseminates existing dietary data from various countries at a global level, with 32 data sets available. Through the European Union Menu project, the European Union Food Safety Authority (EFSA) supports harmonized food consumption data collection currently for 36 dietary surveys on children and/or adults, from 18 European Union Member Nations and four pre-accession countries (EFSA Comprehensive European Food Consumption Database) (EFSA, 2021).

### *Trends of food consumption based on the FAO/country food balance sheets*

From the analysis of FAO country food balance sheets for 2015–2017 in six ECA countries, it was evident that daily cereal availability for consumption was higher than the scientific target for the healthy diet in both the EAT-Lancet Commission and GBD study references (Afshin *et al.*, 2019a; EAT-Lancet Commission, 2019b), with the consumption in Armenia, Kyrgyzstan, Albania, Ukraine, and the average of Central Asia somewhat higher (more than 400 g per capita) and under and closer to the world, while North Macedonia and Poland report consumption closer to the European average (Table A0-1).

Fruits and vegetables are an important part of a healthy diet, as they provide micronutrients (vitamins and minerals) required for health maintenance and mental and physical growth and development. FAO and the WHO recommend daily consumption of at least 400 g of fruits and vegetables together. The average consumption of vegetables and fruits in observed countries is above this recommended value. The EAT-Lancet Commission report (EAT-Lancet Commission, 2019b) provides guidelines of 300 g (with a range of 200–600 g) for vegetables for a healthy diet. Vegetable consumption in all observed countries is within or even above the scientific targets. The target daily value for fruit consumption is 200 g per capita (with a range of 100–300 g) in The EAT-Lancet Commission report (EAT-Lancet Commission, 2019b) and 250 g (with an optimal range of 200–300 g) in the Global Burden of Disease study (2017) (Afshin *et al.*, 2019a). In **Kyrgyzstan, Poland** and **Ukraine**, fruits are consumed below these referent values (Table A0-1).

According to the available consumption data in the six observed countries, **pulses** (peas, beans, lentils, chickpeas and others), underutilized but excellent sources of vegetable protein are consumed way below targeted references, perhaps due to their relatively low yields and low prices (Table A0-1).

The daily consumption of **sugar and sweeteners** is alarmingly high in all six countries in comparison to scientific targets (31 g per capita in EAT-Lancet and 5 g per capita in the GBD study), triple the consumption in Central Asia and double the world average consumption. However, daily consumption is in line with consumption levels in Europe (129.6 g per capita). The highest daily consumption was reported in Ukraine (171.9 g per capita) (Table A0-1).

The GBD study and EAT-Lancet Commission recommend high intake of **nuts and seeds** (21 g to 75 g). However, the consumption of these nutritionally rich foods is very low in general on the global level and in Central Asia. Consumption is somewhat higher in European Union than in the six observed countries (Table A0-1).

The reference for **vegetable oils**, in the form of unsaturated oils (including olive, soybean, rapeseed, sunflower and peanut oil) is an optimal daily intake of 40 g (with a range of 20 g to 80 g), provided by the EAT-Lancet study. From the data shown in Table A0-1, only the European Union region exceeds the daily average level (45.3 g per capita), with **North Macedonia** being on the same level (46.5 g per capita). The other observed countries fall below the optimal daily reference.

The daily consumption of **red meat** ranges from 46.2 g per capita in **North Macedonia** to 157.4 g per capita in **Poland**. The consumption of red meat observed in countries of Central Asia (Armenia, Kyrgyzstan and Ukraine) is within the observed values in the Central Asia region and the average global consumption. However, these values are double or even triple the targeted values for healthy diets by the EAT-Lancet Commission (14 g, with a range of 0–28 g) and the GBD study (23 g, with a range of 18–27 g) (Table A0-1).

Similar trends were observed in the consumption of **poultry**, with overall lower daily intake, from 10.1 g per capita in Kyrgyzstan to 79.8 g per capita in Poland. Generally, the consumption of poultry is lower in the Central Asia region, which might be related to lower availability of poultry in the region (FAO, WFP, UNECE, UNICEF, WHO, 2021). Only Poland and Ukraine have higher consumption than the EAT-Lancet Commission target (28 g, with a range of 0–58 g) (Table A0-1).

Target reference values for **milk consumption** differ between the GBD study (250 g) and the EAT-Lancet Commission (435 g), but with similar ranges, up to 500 g and 520 g, respectively. **Ukraine and North Macedonia** fall below these levels, with daily consumption at 396.6 g per capita and 427.7 g per capita, respectively. Other countries exceed point and upper levels of scientific targeted consumption of milk (Table A0-1).

Target reference values for **fish** consumption differ between the GBD study (20 g) and the EAT-Lancet Commission (28 g, with a range of 0–100 g). Consumption below these targets was reported in **Albania, Kyrgyzstan, and North Macedonia**. Generally, fish consumption was more than three times lower in Central Asia than in the world at large (FAO, WFP, UNECE, UNICEF, WHO, 2021).

Described trends of food consumption are in line with percentages of consumption levels in comparison to world average levels. The data in Table A0-2 indicate higher consumption of **vegetables and fruits** in **Albania and Armenia**, not only, but also in other countries, except for Poland and Ukraine.



All countries have consumption of **pulses** below the world average, but beans are being consumed at almost double the world average in **Albania, Kyrgyzstan** and **North Macedonia**. **Fish** is also consumed below the world average in all six countries. Higher consumption than the world average of **sugar, sweeteners** and **milk** is observed in all six countries. **Meat** is consumed above the world average in **Albania, Armenia** and **Ukraine**, and particularly in **Poland**.

The observed higher consumption of plant-based foods is a positive development not only for human nutrition (provided the nutritional requirements are properly managed), but also for improving the sustainability of production systems, considering the increasing impacts of climate change globally.

### *Trends of food consumption based on the household budget survey data*

The household budget survey (HBS) is a national survey carried out by each Member nation in which information is collected on households' expenditures on goods and services. Besides the data on consumption expenditure, the HBS also collects information on household structure and income. Higher food spending may negatively affect how much people can spend on essentials such as education and health, increasing their vulnerability for food and nutrition insecurity. There is a strong link between socioeconomic status and diet quality. Socioeconomic status (education, occupation, income) is a factor in determining purchasing power, consumption patterns and choices, i.e. diet quality and micronutrient intake.

Across ECA countries, the diverse socioeconomic status of the population translates into the share of food costs in the household budget varying from about 7 percent to 66 percent. The evidence for dietary quality in ECA countries indicates that nutrient-rich foods – such as fruits and vegetables, whole grain and low-fat animal food products, nuts and fish – are often unaffordable and thus underrepresented in the diets of low-income families. Low-income groups are more exposed to poor-quality diets, including consumption products with refined wheat flour, starchy foods, and processed meat with high sodium content, which consequently leads to development of micronutrient malnutrition, obesity and NCDs in these population groups.

Although food insecurity in Europe is less of a problem, vulnerable groups and the poor are still at risk. In 2019, 21.1 percent of the population in the European Union, equivalent to 92.4 million people, were at risk of poverty or social exclusion, slightly down from 2018 (21.6 percent) (Eurostat, 2020a). When looking at the trends of consumption of food in HBS in European Union countries between 2009 and 2019, the share of total household expenditure on food decreased or stagnated in most European Union Member Nations. The data show that the mean consumption expenditure per adult was the same from 2010 to 2015 in the European Union, and 16 percent of consumption expenditure based on the Classification of Individual Consumption by Purpose (COICOP) in the European Union was on food and non-alcoholic beverages. This trend continued to 2019 (Eurostat, 2020b).

Interestingly, in almost all countries of central and southeastern Europe, decreasing trends were observed in the percentages of GDP for consumption expenditure of households by COICOP from 2010–2019 (Table A0-3), with the greatest declines in Montenegro, Serbia, North Macedonia and Bosnia and Herzegovina, followed by Latvia, Lithuania and Poland. An increase of COICOP was observed in Croatia, Albania and Czechia.

In 2019, households in the European Union spent 6.5 percent of the European Union GDP on “food and non-alcoholic beverages,” a small decline from 2010’s 6.8 percent (Table A0-3). This was 13.0 percent

of total consumption expenditures, ranking as the third-largest category of household expenditures after “housing, water, electricity, gas and other fuels,” which accounted for 23.5 percent of household expenditures, and “transport,” which accounted for 13.1 percent. Countries of central and southeastern Europe were still among those in the European Union who shared the highest percentages of household expenditures on food and non-alcoholic beverages in 2019.

In 2020 in the ten main COICOP categories, more than a quarter of European Union household expenditures (25.7 percent of the total, or 13.0 percent of the GDP) was devoted to “housing, water, electricity, gas and other fuels,” followed by “food and non-alcoholic beverages” (14.8 percent of the total, or 7.5 percent of the GDP). Basic necessities – “housing, water, electricity, gas and other fuels,” “food and non-alcoholic beverages” and “transport” took more than half of the total household expenditures (52.1 percent) in 2020 (Eurostat, 2021). The next update of HBS data will take place in 2022 for the reference year 2020 (Eurostat, 2020b).

Rapid urbanization and economic growth are typically associated with an increase in the consumption of food away from home in absolute terms and as a share of calories and food expenditures. Food away from home consumption is particularly important because food consumed outside the home tends to be more calorie-dense and less nutrient-dense than food consumed at home. The increase in the amount of food consumed away from home tends to rise with increases in income. Failing to account for food away from home has been shown to affect measures of poverty and inequality, including inequality in the distribution of dietary energy consumption. There is a variety of sources for attaining food away from home, including restaurants, schools, places of work and street vendors. Implementing traditional HBS methodologies focused on household food consumption at home might underestimate consumption of food away from home and its proportion of calories and expenditures through changes in food systems (FAO and World Bank, 2018).

## Structure and changes of food trade

### *International trade and trade agreement and domestic market development*

The role of trade in food security and nutrition is increasingly coming to the attention of development practitioners in different disciplines. The 2014 Rome Declaration on Nutrition of the Second International Conference on Nutrition (ICN2) takes trade policies to be conducive to fostering food security and nutrition for all. The 2030 Agenda for Sustainable Development identified trade as a cross-cutting means for development. Trade policies influence households’ access to food and nutrition directly by affecting domestic prices, income growth and purchasing power.

Over the past two decades, the trade system and trade environment in post-Soviet countries have changed significantly. Regional and subregional integration among countries contributes to the creation of larger markets. Most of ECA countries are members of the World Trade Organization (WTO). At the regional level, policy measures in this area are mostly undertaken within the framework of the European Union and the Eurasian Economic Union (EAEU). These agreements are complemented by preferential market access arrangements, including under Generalized System of Preferences (GSP) schemes with Canada, the United States of America, Norway, Switzerland, Türkiye and Japan (FAO, 2019a).

Trade and trade policies in many countries in the region have closely followed these countries’ transition from a centrally planned to a more open, multilateral, market-based economy. All case study countries in this section are currently members of the WTO: **Albania** (joined in 2000), **Armenia** (2003), **Kyrgyzstan**

(1998), **North Macedonia** (2003), **Poland** (1995) and **Ukraine** (2008). These countries have also different regional trade agreements. **Armenia** signed the Comprehensive and Enhanced Partnership Agreement with the European Union in 2017 and became a member of the EAEU in 2015. Armenia has a GSP+ agreement with the European Union, the United States of America and Canada. Kyrgyzstan joined the EAEU in 2015. **North Macedonia** became a member of the Central European Trade Agreement (CEFTA) in 2000 and signed a Stabilization and Association Agreement (SAA) with the European Union in 2001. The European Union granted candidate status to the country in 2005. **Ukraine** entered the Deep and Comprehensive Free Trade Area (DCFTA) in 2017. Poland became a Member of the European Union in 2004.

Over the past two decades, as agrifood production and policies have shifted towards the free market, both agrifood exports and imports have increased significantly, contributing to economic growth and food security and nutrition through the increased availability of various products, in particular fruits, vegetables, meat and dairy products. **North Macedonia** is a net importer of agrifood products: meat (including poultry, beef and pork), confectionery, cheese, processed foods and grains. **Kyrgyzstan** is also a net importer of agrifood products, with imports including poultry, fruits and nuts, cereals, oils and fats, and sugar. **Armenia** is highly import-dependent on major food commodities, with a 2019 self-sufficiency of 26 percent for wheat, 6.5 percent for maize, 56 percent for pork, 22 percent for poultry and 2 percent for vegetable oil. **Ukraine** has a positive balance of trade in agricultural commodities, with export values at 386 percent of import values in 2019. Export plays significant role in the rural economy, employment, and food security and nutrition. Ukraine is among the world's largest exporters of sunflower oil, maize, wheat, rapeseeds and barley. Similarly, **Poland** is also a net importer of agrifood products and is one of the European Union leaders in food exports. It is ranked first in poultry exports and is one of the leading suppliers of apples, dairy and confectionery products. However, imports also are important for meeting national consumption, including of pork, fish, soybean cakes and other products.

The growth of trade has seen large fluctuations and disruptions (in 2000–02, 2007–08 and 2014–16) due to sharp currency depreciations, global food price crises, trade bans and non-tariff barriers as a result of climate shocks, the COVID-19 pandemic and human-caused conflicts globally and regionally.

Trade growth, especially export growth due to trade openness, contributes to economic growth, with more resources becoming available to improve citizens' access to better nutrition through increased purchasing power. However, imports of processed foods and food high in fat, sugar and/or salt also have increased, contributing negatively to nutrition and health outcomes (with particular impacts on overweight and obesity).

Through the inclusion of tariffs, trade policy and domestic market policies can effectively reduce the consumption of unhealthy food and mitigate food loss and waste. For instance, in Poland, in 2019, in order to prevent local retailers from trashing unsold food still fit for consumption, a new law was enforced, that requires the owners of retail outlets with a total surface of greater than 250 sq. metres to donate such food to charity organizations, with the disposal of edible food punishable by financial penalties.

## Structure and changes of agricultural and food production systems

The food and agriculture sector has the primary role of feeding people by increasing the availability, affordability and consumption of diverse, safe and nutritious foods aligned with dietary recommendations and environmental sustainability. Improving nutrition requires multisectoral policies and strategies, supported by effective coordination and accountability mechanisms, and the capacity to transform nutrition targets into actions and impacts. The ICN2 FfA gives as its Recommendation 8: "Review national

policies and investments and integrate nutrition objectives into food and agriculture policy, programme design and implementation, to enhance nutrition-sensitive agriculture, ensure food security and enable healthy diets” (FAO/WHO, 2014b). The contribution of agriculture and food systems to nutrition can be enhanced by setting explicit nutrition objectives and improving equity, targeting, gender sensitivity and environmental sustainability.

The importance of nutrition-sensitive food and agriculture-based approaches for overcoming malnutrition and improving nutrition in general is fully recognized. FAO promotes nutrition-sensitive agriculture and food-based strategies (FAO, 2015b). Food and agriculture-based strategies (including food production, dietary diversification and food fortification) focus on food as the primary tool for improving the quality of diets and overcoming and preventing malnutrition and nutritional deficiencies. This approach stresses the multiple benefits derived from enjoying a variety of foods and recognizing the nutritional value of food for good nutrition and the importance and social significance of the food and agricultural sector for supporting rural livelihoods (FAO, 2017a). FAO points out that programmes and projects are nutrition-sensitive if they (FAO, 2015b):

- maintain or improve the natural resource base;
- are gender-sensitive and support the empowerment of women;
- improve processing, storage and preservation;
- expand markets and market access for vulnerable groups; and
- incorporate nutrition promotion and education regarding food and sustainable food systems, building on existing local knowledge, attitudes and practices.

To support country policies and programmes in nutrition-sensitive agriculture and food systems, FAO has developed an integrated package of guidance on how to design, implement, monitor and evaluate nutrition-sensitive food and agriculture policies and programmes. This is the result of a consultative process within FAO and with external partners, including development partners (in particular the World Bank and the European Commission), NGOs and academia (FAO, 2017b). The set of priority actions should be jointly implemented by countries with different food system actors to better contribute to the transformation towards sustainable food systems, with support from international actors and partners at both regional and national levels to address malnutrition in the ECA region.

### *Structural changes*

The sustainable food systems framework calls for diversified agriculture that provides diverse and nutritious foods to all. The focus on small farmers and productivity is related to the 2030 Agenda for Sustainable Development’s target of doubling the productivity of small farmers and to SDG Target 2.4 for sustainable agriculture. Nevertheless, FAO studies have shown that the structure of agricultural production in most ECA countries underwent extensive changes during the past two decades following the transition declines. These changes were mostly driven by the need for increased domestic production to improve food security, but they were also influenced by newly established trade regimes, including customs unions.

However, despite the recorded growth, overall sustainable production and productivity gains have been undermined by factors that have discriminated against smallholders in areas such as access to land and other resources, inputs and services; support from research and extension; and finance. At present in the ECA region, a large majority of countries’ agriculture production comes from family farms and dualistic farm structures, with a large number of small farms, on one side, and a small number of large

corporate farms, on the other side. Small average farm size and excessive land fragmentation are the main negative outcomes of the conducted land reforms. Newly formed landholdings of around 1.5 ha in size and divided into three to five land plots are, for obvious reasons, not conducive to commercially oriented agriculture, representing an important major constraint for agricultural development (FAO, 2019a). On the other side, small and family farms are known to have a number of advantages over larger farms when it comes to reducing poverty, hunger and malnutrition; promoting healthy diets; and making agriculture more environmentally friendly and resilient to shocks (FAO, 2013). Armenia's agriculture is made up almost entirely (97 percent) of smallholders. A similar situation is observed in Albania, where there are geographical challenges, a lack of modern equipment, unclear property rights, and a prevalence of segregated land plots. Similarly, structural changes in Ukraine are required in the field of regulation of family farm registration, food production quality, the safety of food processing, and the provision of social guarantees to rural populations. In Kyrgyzstan, with 98 percent of arable land owned by smallholders, the overall trend in agricultural land use focuses on empowering individual farmers and rural households. In Poland, horizontal integration in agriculture and the joining of farmers in cooperative producers' organizations have proven beneficial for gaining a bargaining position on the market and ensuring lower transaction costs.

To be able to stay competitive and resilient to stresses and shocks, small-scale agricultural producers need to be well integrated into food supply chains, inputs and services. Achieving this integration into producers' associations and cooperatives would help facilitate access to productive resources such as machinery, equipment and credit and help ensure market penetration. Mutual benefits can be achieved, for example, through forward contracts: farmers receive guaranteed prices for their outputs regardless of market conditions, while processors and distributors receive products of a desired quality. Another resilience-enhancing strategy that small-scale farming households use increasingly is the adoption of more sustainable production practices, such as agroecology and agricultural biodiversity, that boost resilience to shocks and stresses, facilitate adaptation, maintain stability and support recovery from disturbances. Another option is climate-smart agriculture, which enhances food security and healthy livelihoods while promoting climate change adaptation and mitigation. These concepts recognize that conventional mainstream agriculture cannot feed the growing world population sustainably because it degrades the natural resource base (FAO, 2021a).

### *Policies and drivers for change*

It is clear that both small and large farms will continue to coexist and play out their respective roles. The underlying premise is that, given the multiple benefits, it is desirable that small farms should be fostered and supported by policies, i.e. offered additional incentives as a reward for the multiple benefits they generate. Doing so would be consistent with the desired reorientation of agricultural policies towards enhanced food security and nutrition (FAO, 2021b). The ICN2 FfA gives a package of recommendations to guide policy development and implementation (FAO/WHO, 2014b):

- Review national food and agricultural policies and investment portfolios to make them more nutrition-sensitive for healthy diets (Recommendation 8).
- Strengthen local food production and processing, especially by smallholder and family farmers, while recognizing the role of trade in contributing to nutrition objectives (Recommendation 9).
- Promote the diversification of crops, including underutilized traditional crops; promote the production of more fruits and vegetables; and promote the appropriate production of animal-sourced products, as needed (Recommendation 10).



- Improve storage, preservation, transport and distribution technologies and infrastructure to reduce seasonal food insecurity and food and nutrient loss and waste (Recommendation 11).
- Establish and strengthen institutions, policies, programmes and services to enhance the resilience of the food supply in crisis-prone areas, including in areas affected by climate change (Recommendation 12).

### *Country overview*

The situation in the observed ECA countries is characterized by an increasing percentage of smallholder farmers in rural areas. Various policy mechanisms are in place to support development, and shares of state subsidies are invested in technological and organizational improvements. Movements are being made towards diversification of production, implementation of the principles of organic farming and more, but the concept of nutrition-sensitive agriculture is yet to be comprehended and integrated. To see this happening, agricultural policies in the countries need to introduce these principles in their action plans and foresee how they will be promoted and implemented among stakeholders.

In Armenia, policies and action plans for food security and nutrition tend to focus primarily on food availability via agriculture and the improvement of self-sufficiency (in *The Strategy of Agricultural and Rural Sustainable Development for 2010–2020*) and the introduction of agroecological approaches (policies to promote organic and agroecology approaches).

In Albania, the farming system has evolved and adapted to governmental structural changes, which require development and investment in human and technological resources and better exploitation of available land.

In Kyrgyzstan over the past 20 years, the government has adopted numerous programmes and policies aimed at developing various agricultural sectors. State support is concentrated on subsidized credits (92 percent), maintaining on-farm reclamation networks (5 percent) and assisting seed production (3 percent). A slight increase in the GDP rate invested in agriculture (from 1.5 percent to 2.3 percent) has been observed in the past 20 years.

In North Macedonia, agricultural and rural development policies follow the overall concept of the European Union's Common Agricultural Policy (CAP) framework. The 2014–2020 framework allows for substantial funds allocated to agricultural and rural development policies, with annual increases. The agriculture budget accounts for around 4.5 percent of the total national budget. Following the CAP intervention logic, the national policy is delivered through market and direct producer support measures and structural and rural development measures, and it addresses negative environmental externalities of agriculture, such as organic agricultural practices.

In Poland, during the transformation and restructuring processes, many policy measures were introduced, including custom tariffs to prevent excessive imports, subsidies to agricultural loans and fuel, and preferential credit lines. However, it was the European Union integration process that had the main impact on the sector's transformation and modernization process.

In Ukraine, a budget programme was enacted in 2018 to support private farmers, providing partial compensation for locally produced agricultural crops, including seeds, agricultural consulting services, locally produced agricultural equipment and machinery, etc. The programme also provides support mechanisms for agricultural service cooperatives.

## Structural changes of food processing and marketing

The food processing sector in ECA countries has recorded constant increases in production volume and employment rates and is majorly structured around small and medium enterprises. Food production is influenced by various economic and trade policies, world prices of commodities that direct the import, export and availability of raw commodities and consumer demands. The level of processing is lower due to a lack of access to favourable finances, contractual agreements with suppliers of raw materials (such as agricultural producers), skilled workers, and adequate storage facilities. There is insufficient investment in the development of new value-added products, innovation, joint marketing and distribution. The consequences are that unprocessed or semi-processed goods are exported at lower prices, due to inadequate quality for external markets, while final, high-priced, high-quality products are imported. The food industry needs various kinds of financial and operational support and guidance to be able to improve production and make it more nutrition-sensitive and sustainable.

### *Structural changes*

Food processing sectors have experienced many structural changes in recent decades, including the cessation of regulation of retail food prices and increases in quality that have made products competitive with imported goods. Some food sectors, due to investments, have experienced significant increases in production and sources of modern technologies, marketing, management and organizational know-how. This has resulted in new employment, increased export possibilities and regional comparative advantages.

### *Policies and drivers for change*

So far, policies regarding the foods sector have focused on development of the food processing industry, increases in export potential, and the setting of standards and norms for food safety and quality. However, the transformation of food systems towards sustainability requires setting new standards that take into account food consumption that can meet the requirements of a healthy diet. The development of a new, nutrition-sensitive agrifood industry should be directed by modern research and development, the implementation of green technologies that save energy and resources, and new environmentally friendly solutions for processing, storage and food waste.

Another force of change comes from increasing consumer demand for diverse, high-quality and safe foods. Thus, new food safety legislation needs to develop rapid alert systems, systems for communication with consumers, and networks of national agencies and scientific bodies.

In Armenia, national policies have aimed to promote sustainable development in the agrifood sector and increase export. In Albania, beside these developments, strategies have foreseen the improvement of the livelihoods of rural households; improvements in the economic efficiency of agriculture and the food industry; and the improvement of agricultural markets. The Government of Kyrgyzstan developed its Programme for the Development of the Food and Processing Industry (2017–2021), aiming to develop the food processing industry, increase export potential, set standards and norms for food consumption that meet the requirements of a healthy diet, and develop an agro-industrial complex. In Ukraine, measures have included the development and implementation of technologies for the production, storage and processing of high-quality crops, including the creation of energy- and resource-saving technologies for growing crops. State support for research and development in agriculture is constantly increasing in absolute value; however, its share in total agriculture support is declining. In Poland, policies have focused

on providing safe food, ensuring consumer trust, and creating an environment in which the food industry and other stakeholders work towards changing and improving the diets of consumers.

### *Marketing, including advertising practices*

The marketing of food to children is widespread and has a negative influence on food choices and consumption patterns. In May 2010, the World Health Assembly (WHA) adopted the WHO Set of Recommendations on the Marketing of Foods and Non-alcoholic Beverages to Children (WHO, 2010). These recommendations urge Member Nations to reduce the impacts on children of the marketing of energy-dense, highly processed foods and beverages high in saturated fats, trans fats, free sugars and/or salt (HFSS). However, despite unequivocal evidence that HFSS food marketing has a harmful impact on children's eating behaviours and body weight, and despite repeated commitments made by Member Nations to halt the rise of childhood obesity by 2025, implementation of the WHO Set of Recommendations has been uneven worldwide (Sadeghirad *et al.*, 2016).

There have been many international actions, engagements and calls to reduce exposure to unhealthy food marketing, and technical support has been given to countries to take action. In the 2014 ICN2 Rome Declaration on Nutrition, it is stated: "We reaffirm that: ... (f) improvements in diet and nutrition require relevant legislative frameworks for food safety and quality ... while avoiding inappropriate marketing and publicity of foods and non-alcoholic beverages to children, as recommended by resolution WHA63.14" (FAO/WHO, 2014a). The ICN2 Framework for Action recommends (in No. 15): "Explore regulatory and voluntary instruments – such as marketing, publicity and labelling policies, economic incentives or disincentives ... – to promote healthy diets" and (in No. 40): "Regulate the marketing of food and non-alcoholic beverages to children in accordance with WHO recommendations" (FAO/WHO, 2014b). The United Nations Decade of Action on Nutrition gives examples of SMART commitments for Recommendation 15: "By December 2020, the government has implemented legislation that prohibits marketing and sale of foods and beverages high in saturated fat, trans-fat, free sugars, and/or salt in school settings where children gather, such as nurseries, primary and secondary schools, school grounds, sports facilities and preschool centres and playgrounds" (FAO & WHO, 2018). In the European region, 54 percent of countries responding to the WHO Global Nutrition Policy Review questionnaire in 2016 and 2017 reported some action to control the marketing of HFSS foods to children. Most of these actions are self-regulatory, with a main focus on broadcast media, such as television and radio, rather than digital social media platforms. According to the questionnaire, the formal monitoring of marketing to children existed in just 11 percent of the countries (Breda *et al.*, 2020).

### *Country overview*

In the observed ECA countries, limited actions have been taken in the past regarding policy related to the control of the marketing of HFSS foods to children. Laws on the regulation of marketing exist, in general, but specific regulations regarding restrictions on food marketing to children are not included in these laws in the majority of the countries. More precisely, in **Armenia**, the Law on Advertising, adopted in 1996, only sets advertising standards and principles, including a mandate that makes Armenian the official language of advertising. A similar situation exists in **Kyrgyzstan**, where the Law on Advertising, which was first enforced in 1998 and is still in use, regulates advertising, including requirements and conditions for any advertisement published in Kyrgyzstan. The State Antimonopoly Regulation Agency is responsible for the monitoring and control of advertising. In North Macedonia, all forms of advertising are available to food producers. There are restrictions in the Law on Broadcasting and the Law on Protection from Smoking that prohibit media advertising for tobacco and tobacco products. Information was not

available about the existence of any laws or restrictions in **Albania** and **Ukraine** regarding marketing and advertising. Only in Poland are there restricting measures regarding the marketing of high fat, sugary and salty (HFSS) foods and non-alcoholic beverages to children, but they are based on voluntary and self-regulatory measures provided by the industry. National mandatory policies to restrict the advertising of HFSS foods to children in various media platforms are in place in **Hungary, Lithuania, Republic of Moldova** and **Slovenia**, as well. In **Bulgaria, Czechia** and **Romania**, these activities are voluntary. Other countries in central and southeastern Europe do not have similar policies, regulations or voluntary activities. In a recent review of similar policies across Europe, the situation was somewhat similar (Breda *et al.*, 2020). Various measures to limit the marketing of HFSS to children are mostly voluntarily.

Initially, in 2012, European Union Pledge member companies committed to not advertise products to children younger than 12 (defined as advertising to media audiences with a minimum of 50 percent of children younger than 12), except for products that fulfil specific nutrition criteria. The European Union Pledge requirements of member companies have tightened almost on an annual basis, becoming more widespread and inclusive of all kinds and forms of marketing and advertising of food. From 1 January 2022 onwards, European Union Pledge membership requires that companies:

- not advertise food and beverages to children younger than 13, except for products that fulfil the European Union Pledge common nutrition criteria;
- not market or advertise in primary schools, except where specifically requested by or agreed with the school administration for educational purposes; and
- abide by the International Chamber of Commerce (ICC) Code of Advertising and Marketing Communication Practice and the ICC Framework for Responsible Food and Beverage Marketing Communications in all marketing communications.

These rules are applicable to all European Union Pledge member companies across the European Union. Individual member companies may maintain or adopt specific policies that go beyond the European Union Pledge commitment (EU Pledge, 2021).

### **Key messages for the marketing of foods and non-alcoholic beverages to children**

*There are both a need and call for regulations that effectively limit children's exposure to unhealthy food marketing. Since marketing is quickly and ever evolving, new techniques and channels require novel and efficient ways to advance policies. Regulation specific to food marketing in the digital and retail environments is needed. Applying a child rights-based approach supports effective policy development. Governments, as key stakeholders in policy development, are encouraged to set clear definitions, thereby allowing for uniform policy implementation. Thus, there are needs to support countries on: 1. the policy development level; 2. the policy implementation level; and 3. the monitoring and evaluation level. This comprehensive approach has the highest potential to achieve the desired impact. Stakeholders in policymaking and implementation should have in mind that:*

- *"Marketing" does not cover only advertising, but all other commercial communications that are designed to promote, or have the effect of promoting, HFSS foods.*
- *Reductions in both the exposure of children to marketing of HFSS foods and the power of such marketing should be sought, as both influence food preferences, purchase requests and consumption.*
- *Involve other Member Nations in cooperation to reduce the impact of cross-border marketing.*
- *Monitoring and enforcement mechanisms should be specified to ensure effective policy implementation.*

## Food additives and food fortification

### *Regulation of the addition of food additives in ECA countries*

Regulations for the application of food additives in central and southeastern Europe are enforced in all of the observed countries and majorly aligned with current requirements of the relevant international Codex Alimentarius standards and European Union directives. Countries in Central Asia, since becoming members of the EAEU, have adopted the Technical Regulations of the Customs Union (TR CU 029/2012) “Safety requirements of food additives, flavourings and processing aids,” which aligns levels of safe use of additives in foodstuff with European Union standards, opening the door for increases of exports for producers from Eurasian Economic Union member states (European Commission, 2019).

### *Food fortification regulation in ECA countries*

Laws and regulations related to universal salt fortification are established in all observed countries in the ECA region. There have been some initiatives for the regulation of the addition of other nutrients – such as iron in flour, or vitamin D – but they have been unsuccessful or have not been implemented entirely (Kyrgyzstan, North Macedonia). In central and southeastern Europe, many countries (Czechia, Poland, Republic of Moldova, Serbia and Slovenia but not Hungary or Latvia), have adopted food fortification legislation in line with European Union regulation on the addition of vitamins and minerals and of certain other substances to foods (Regulation No. 1925/2006 permits the addition of vitamins and minerals on a voluntary basis) (European Commission, 2006). The Republic of Moldova has legislation requiring the addition of iron and folic acid to at least one kind of commonly consumed wheat flour. Some other countries in central and southeastern Europe are also considering the adoption of mandatory flour fortification (FFI, 2013).

### *Taxation on unhealthy food and price policies for promoting healthy diets*

To reduce the consumption of unhealthy food, it is necessary to introduce taxation policies on HFSS foods and legislation that will require the reduction of these harmful compounds in food. In policy reviews from 2013 for countries in the region (Lachat *et al.*, 2013), it was observed that many ECA countries do not have policies that address and limit harmful nutrient components. Since then, there has been minimal progress in limiting these compounds in food in these countries. Price policies that would promote the purchase of food for healthy diets are far-fetched targets in the current setting. Yet, there are some initiatives in the establishment of food policies that limit the content of these harmful compounds. In 2019, the European Union Commission adopted regulation that strictly limits the amount of industrially produced trans fats to a maximum of 2 percent of total fat in foods for the final consumer.

### *Country overview*

Studies from countries in Central Asia show a quite unregulated food market, especially in the sector of street food vendors, where foods with these harmful compounds is prevalent and where the advertising of such foods is ubiquitous. In central and southeastern Europe, so far, legislation concerning taxation of unhealthy foods high in fat, sugar and salt is available only in Hungary, Latvia and Montenegro.



### *Good practices: Policies that limit harmful nutrients in the food supply*

Food policies that limit harmful nutrients in foods are established in Bosnia and Herzegovina, Bulgaria, Hungary, Latvia, Lithuania, Republic of Moldova, Montenegro and Slovenia. Lithuania and Republic of Moldova have policies that limit trans-fatty acids, saturated fatty acids, salt and added sugars. Bulgaria limits saturated fatty acids, salt and free sugars. Slovenia and Latvia limit trans-fatty acids and salt, while Bosnia and Herzegovina and Montenegro have regulated salt content. The other seven countries do not have policies that address and limit harmful nutrient components (Gurinović *et al.*, 2022).

In particular, industrially produced trans fats, more than any other nutrient, seriously increase the risk of coronary heart disease, the leading cause of death in Europe (European Commission, 2015). Their content is particularly high in certain processed foods, such as bakery products, cakes and biscuits, convenience food, and deep-fried products. These foods are commonplace in markets in the countries of central and southeastern Europe (Stender, 2020). Denmark, the United States of America, Hungary, Latvia and others (WHO, 2020) have established legislation that limits or eliminates industrially produced trans fats. So far, this has been shown to be effective measure in improving public health and consumer protection. The WHO has provided the REPLACE action package, which can serve as a guide to countries that are in the process of or completing the elimination of industrially produced trans fats from the food supply (WHO, 2018).

### *Food labelling/information*

Food labelling plays a key role in sustainable food systems, e.g. in promoting sustainable consumption and production patterns in accordance with the objectives of SDG 12 (United Nations Statistics Division, 2016). Further, the ICN2 FfA recommends, in Recommendation 15, the exploration of “regulatory and voluntary instruments – such as marketing, publicity and labelling policies, economic incentives or disincentives in accordance with Codex Alimentarius and World Trade Organization rules – to promote healthy diets” (FAO/WHO, 2014b). Food labels inform consumer decisions – and not just on nutrition, but also on recycling, food origin, carbon footprint, etc. Mandatory nutritional information on foodstuffs should include information on energy value, the content of fats, saturated fats, carbohydrates, sugars, proteins and salt. In order to avoid misleading information, additional voluntary information should not confuse or mislead the consumer and, when appropriate, be based on relevant scientific data. The use of nutritional claims should be used only under strict requirements. The promotion and endorsement of policies for front-of-package labels, for example, could be effective, as these policy measures are already in place in some European countries (Breda *et al.*, 2020).

### *Country overview*

Food labelling regulations are established and implemented in all countries of central and southeastern Europe. Bulgaria, Czechia, Estonia, Latvia, Lithuania, Romania and Slovenia have indicated that they have established national food labelling policies that are aligned with the European Union Regulation No. 1169/2011 of the European Parliament and of the Council. European Union pre-accession countries are also adapting their regulations in line with European Union regulation. Similar trends are observed in Central Asian countries, such as Kyrgyzstan and Ukraine.

Surveys of consumers' use of nutrition labels are not common in countries of central and southeastern Europe and Central Asia. Only Lithuania and Poland have conducted national consumer surveys to assess the use of nutrition labelling that encourages healthy food choices. Designing and distributing similar surveys in other countries of central and southeastern Europe would help authoritative bodies design methods and programmes to educate consumers on healthy food choices, such as the use of food labelling.

## Consumer demand, awareness, education, and social protection

### *Food-based dietary guidelines*

Food-based dietary guidelines (FBDGs), as an effective tool for supporting public health and policies that aim to reach sustainable healthy diets and reduce the triple burden of malnutrition, should be based on sound evidence and should respond to country-specific public health and nutrition issues, food production and consumption patterns. National FBDGs are an important tool that governments can use to inform, evaluate and align policy and programmes that aim to promote healthy diets. Using language and images that are intuitive and easy to understand, national FBDGs are the context-specific translation into foods and meals of what is a healthy diet and advice on how to achieve it.

FAO assists Member Nations in developing, revising and implementing FBDGs in line with current scientific evidence. This support is delivered through programmes for capacity development, the organization of global/regional/national advocacy and expert meetings, the publication of guidance documents, and the direct provision of technical assistance regarding the development of FBDGs, taking into consideration the specific country situation and the incorporation of sustainable and healthy eating. FAO is hosting a series of global webinars to support knowledge exchange and debate around FBDGs.<sup>2</sup>

### *Country overview*

In central and southeastern Europe, national FBDGs are present in the majority of countries. In **North Macedonia**, FBDGs – available since 2008 and extended in 2014 – contain dietary recommendations that would contribute to the health benefits of the population. Key messages promote eating a balanced and nutritious diet based on diverse food groups, maintaining healthy eating habits, and restricting highly processed foods with high levels of sodium, sugar and fat. **Albania** published its dietary guidelines in 2008 using a food pyramid representing six food groups: cereals at the bottom of the pyramid; fruits and vegetables on the second level; dairy products and animal-sourced foods on the third level; and fats and products high in sugar and fat at the top. More than half of FBDGs present in central and southeastern Europe were established more than five years ago. This is important, as sustainability aspects have been captured only in the novel FBDGs of several developed countries.

Dietary guidelines for the Polish population were introduced by the Institute of Food and Nutrition (IŻŻ) in 1995 and later modified in 2009, 2016 and 2019. In October 2020, new recommendations were developed and endorsed by the National Institute of Public Health – National Institute of Hygiene, in collaboration with the Ministry of Health. Polish consumers are encouraged to eat a variety of foods every day and consume more full-grain cereals, vegetables, fruits, pulses, fish, low-fat milk products

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<sup>2</sup> More information regarding FBDGs is available on the FAO website at <http://www.fao.org/nutrition/education/food-dietary-guidelines/en/>.

and nuts. Lowering the intake of salt, red meat, sugar, sweetened beverages and processed products is recommended.

In **Ukraine**, at the end of 2017, the Ministry of Health, together with the Centre for Public Health and nutrition experts, presented national recommendations on healthy nutrition and identified the most important food categories to be included in the daily diet (Ministry of Health of Ukraine, 2017). The first recommendations on healthy nutrition in Ukrainian history, in the form of a healthy nutrition plate, have become the basis for a national pro-healthy lifestyle information platform.

In many countries with FBDGs, the sustainability aspects of the guidelines are on paper but are not widely acknowledged or implemented. In all countries of central and southeastern Europe, updating the existent FBDGs to include sustainability aspects should be an objective for further work (FAO, 2020a; Herforth *et al.*, 2019).

#### **Key message for evidence-based FBDGs**

*Evidence-based FBDGs do not exist in many ECA countries, e.g. in Central Asia and the Caucasus (Armenia and Kyrgyzstan) and in Balkan region (Montenegro and Serbia). In addition, many of the existing FBDGs need to be updated to include evidence-based, healthy and more environmentally sustainable advice.*

### *School food and nutrition*

Optimal nutrition and healthy diets are the most important determinants of children's growth, development, nutritional status and health. Inadequate nutrition in childhood presents potential nutritive risk factors for various forms of malnutrition. Therefore, early healthy eating habits are essential to reducing the risk of immediate and long-term health problems. Children are at the focal point of the United Nations 2030 Agenda for Sustainable Development and the SDGs, particularly Zero Hunger (SDG 2), Good Health and Well-Being (SDG 3), Quality Education (SDG 4) and Gender Equality (SDG 5). International human rights law sets obligations and standards for countries to implement national policies and legislation that aim to fulfil children's rights to adequate food, education and health. During the ICN2, in 2014, FAO and WHO Member Nations committed to developing policies, programmes and initiatives to ensure healthy diets throughout children's life cycles, emphasizing the potential of schools as platforms for integrated action (FAO/WHO, 2014a; UN, 2015). One of the ICN2 FfA specific policy recommendations (No. 16) is related to school food and nutrition: "Establish food or nutrient-based standards to make healthy diets and safe drinking water accessible in public facilities such as hospitals, childcare facilities, workplaces, universities, schools, food and catering services, government offices and prisons, and encourage the establishment of facilities for breastfeeding" (FAO/WHO, 2014b). FAO promotes a holistic approach to school food and nutrition that leverages synergies among four main areas of work: 1. promotion of a healthy school food environment and adequate and safe school food/meals; 2. integration of effective food and nutrition education throughout the whole school system; 3. stimulation of inclusive procurement and value chains for school food; and 4. creation of enabling political, legal, financial and institutional environment (Cruz, 2020; FAO, 2019b). Analysis of European national school food policies across the EU-27 plus Norway and Switzerland shows that all 29 countries have mandatory regulations or voluntary guidance on school food in place (Storcksdieck genannt Bonsmann *et al.*, 2014).

### Good practices

School meals have great potential as a platform to promote healthy and sustainable food behaviour. School meal programmes are of particular interest for improving public diet, as they reach children at a population scale across socioeconomic classes and prioritize the promotion of healthy and adequate food for children and adolescents. These programmes contribute to teaching children the culinary heritage and norms around consumption, sustainability and health in their surroundings, and they can create a social and physical learning environment around food that may help tackle current challenges in health and sustainability (Oostindjer *et al.*, 2017). To support Member Nations in translating their national school food standards related to health and nutrition into food procurement specifications, the Joint Research Centre (JRC) published a technical report for the implementation and sharing of relevant examples from across Europe (Caldeira *et al.*, 2017). Also, the WHO released an action framework that provides an overview of how to develop (or strengthen), implement, assess compliance with and evaluate the effectiveness of a healthy public food procurement and service policy. It is intended for use by government policymakers or programme managers working in public food procurement or service at national, subnational, regional, provincial or city levels (WHO, 2021).

To facilitate the implementation of the European Union Action Plan on Childhood Obesity 2014–2020, the Directorate-General for Health and Food Safety of the European Commission helped 25 Member Nations and Norway gather for a Joint Action on Nutrition and Physical Activity (JANPA) in pursuit of improved nutrition for schoolchildren (Kovacs *et al.*, 2020).

FAO is implementing school food and nutrition programmes in Armenia, Kyrgyzstan and Tajikistan within the project “Developing Capacity for Strengthening Food Security and Nutrition in Selected Countries of the Caucasus and Central Asia” (FAO, 2021c). In Armenia, the programme has involved the government of Armenia, the WFP, the Nutrition Institute of the Russian Federation and other partners and has resulted in the establishment of the Sustainable School Feeding Foundation in Armenia. In Kyrgyzstan, the National School Nutrition Programme, established in 2006, has provided funds to feed schoolchildren breakfast.

Countries in the ECA region have already made some progress in the context of developing policies and action plans targeting kindergarten and school-age children. However, further analysis of the implementation needs to be performed. For instance, mandatory national nutrition standards for school meals are available in the majority of the observed countries in central and southeastern Europe, but half of the countries have not yet implemented them.

The FAO Representation in Albania, with technical support from FAO Regional Office for Europe and Central Asia in Budapest, has been providing policy and technical assistance to Albania for a national school food and nutrition programme since May 2016.

### Nutrition-sensitive social protection

Social protection is one of the most effective ways to reach socially marginalized, resource-poor, nutritionally vulnerable populations. During the ICN2, countries identified social protection as a sector with high potential for improving nutrition. One of the six Action Areas of the United Nations Decade of Action on Nutrition is related to social protection and nutrition education. The ICN2 Rome Declaration for Nutrition reaffirmed that “a common vision for global action to end all forms of malnutrition – coordinated action among different actors, across all relevant sectors at international, regional, national and community levels – needs to be supported through cross-cutting and coherent policies, programmes and initiatives,

including social protection, to address the multiple burdens of malnutrition and to promote sustainable food systems” (FAO/WHO, 2014a). The ICN2 FfA recommends (in No. 22) “Incorporate nutrition objectives into social protection programmes and into humanitarian assistance safety net programmes” and, in Recommendation 23, “Use cash and food transfers, including school feeding programmes and other forms of social protection for vulnerable populations to improve diets through better access to food which conforms with the beliefs, culture, traditions, dietary habits and preferences of individuals in accordance with national and international laws and obligations, and which is nutritionally adequate for healthy diets” (FAO/WHO, 2014b).

Social protection programming comprises initiatives that protect vulnerable populations against shocks and that reduce risks, often through strengthening livelihoods, improving social status and legal rights, and increasing access to food, education and health care. Examples of social protection instruments include conditional and non-conditional cash transfers, in-kind transfers and school feeding activities. By increasing purchasing power and access to diversified and nutritious food and sanitation, health, and education services, these instruments promote better nutritional outcomes via improved food security, health, diet diversity and quality (FAO and WHO, 2018).

Key principles for making social protection more nutrition-sensitive are: target the nutritionally vulnerable; incorporate explicit nutrition objectives and indicators; empower women and make them the recipients of social protection benefits; promote strategies that enable households to diversify their diets and livelihoods; strengthen linkages to health and sanitation services; integrate nutrition education and promotion; and scale up safety nets in times of crises (FAO, 2015c).

The indicators of socioeconomic status (education, occupation and income) correlate with diet quality and micronutrient intake. Socioeconomic status is a factor in determining purchasing power, consumption patterns and choices. The increased availability and affordability of nutritious and safe food for poor people in both rural and urban areas are key to ending malnutrition in all its forms (FAO, 2015a).

### *Country overview*

In the observed ECA countries, social protection programmes reaching vulnerable subpopulations historically have included various forms of financial aid and other benefits for the most deprived. These programmes are targeted towards the most vulnerable members of society, but not everyone is reached. Often, those who need assistance the most do not entirely benefit from what is available. Some countries report on basic household food basket assistance, school meals for all children, and packages for the elderly, adults living alone, those who are in difficult life situations, and the sick and disabled. There are, at the local level, establishments such as “public kitchens” and local community workshops – supported voluntarily by communities, NGOs, etc. – that are focused on cooking/food products, healthy eating, preventing food waste and managing household budgets. However, not much attention is being paid to the quality of food or other aspects related to the nutrition that is so much needed in these vulnerable and usually nutritionally deprived populations. This aspect presents a gap in actual social protection programmes in the ECA region; an evidence base is needed in addressing in new policies and action plans in the region.



Armenia, Kyrgyzstan and Ukraine provide, through various governmental and external programmes, financial assistance to vulnerable and disadvantaged subpopulations that do not consider nutrition-sensitive packages. In Poland, there is a long-established system of non-financial assistance, including food aid programmes, for the most deprived; this system is supported by the European Union, NGOs and other funds.

### *Nutrition education and behaviour change communication*

Diets and eating behaviours are influenced by many factors: individual (food preferences and enjoyment, beliefs, attitudes, values, perceptions, knowledge, skills, empowerment); family/group (cultural and social practices, social support, networks, peer influence); community and institutional (rules, informal structures, child care organizations, workplaces, schools, neighbourhoods, shops, restaurants, community organizations, information available, recreational facilities, parks); and national (health care system, food assistance programmes, food industry, food and agricultural systems, policy, political and social structures, media, social and cultural norms). Nutrition education can be delivered through multiple venues from multiple stakeholders, involving activities at individual, institutional, community and policy levels (Gill *et al.*, 2019).

The four groups of actions at the core of nutrition education are public awareness campaigns; education in specific settings; skills training; and changes to the food environment that influence consumer knowledge, awareness and attitudes about food, diet and nutrition (Hawkes, 2013). Several international frameworks recommending schoolchildren nutrition education, among others, are the ICN2 Rome Declaration and Framework for Action (Recommendations 19 and 20) and the United Nations Decade of Action on Nutrition 2016–2025 (FAO/WHO, 2014a, 2014b; UN General Assembly, 2016).

School-based food and nutrition education aims to foster long-lasting food outlooks, skills, practices and habits that promote resilience and are conducive to better health and well-being in children and their families. To be effective, school-based food and nutrition education should comprise a combination of evidence-based and behaviourally focused educational strategies that are context specific; that involve the active participation of the most relevant influencers of food practices (i.e. schoolchildren, parents, school staff, local smallholder farmers and rural enterprises, community leaders, etc.); and that are reinforced by an enabling school food environment in empowering children and adolescents to become active participants in shaping the food system to be better able to deliver healthy and sustainable diets. An FAO white paper on the current state, principles of effectiveness and challenges of school-based food and nutrition education for low- and middle-income countries, with recommendations for action, can support governments in strengthening their policies related to school-based food and nutrition education (FAO, 2020b).

### *Country overview*

Nutrition education is mandatory at the national level in primary and/or secondary school curricula in Armenia, Czechia, Estonia, Hungary, Kyrgyzstan, Lithuania, Republic of Moldova, Montenegro, North Macedonia, Poland, Slovenia and Ukraine. Meanwhile, in Albania, Bosnia and Herzegovina, Latvia, Romania and Serbia, these programmes are not yet mandatorily included in school programmes.

However, there are many various actions and initiatives in the field of school-based food and nutrition education that take place on the local level, involving such actors as NGOs, food industry and retailers, and famous sport and health promoters and influencers.

For example, in Poland, the National Centre for Nutritional Education was established and financed by the National Health Programme. A big role in educating the population is played by the hundreds of NGOs that often have motivated and competent management but do not have sustained funds to fulfil their goals. However, there is an overall lack of cooperation mechanisms among NGOs in various regions of the country.

In North Macedonia, several governmental institutions play active roles in nutrition education and communication. The ministries of Health, Labour and Social Protection, Agriculture, Forestry and Water Economy, and Education and Science constitute the main responsible bodies in the governmental framework. The Institute of Public Health and the Food and Veterinary Agency are active in the areas of nutritional coverage, safety and education. The Organisation of Consumers of North Macedonia and donor programmes such as FAO, UNICEF, the World Bank and the United Nations Development Programme (UNDP) also contribute to these policy arenas. For instance, the Institute of Public Health implements the Children's Initiative for Children's Obesity in Europe (COSI) in North Macedonia, a research initiative sponsored by the WHO to explore the trends in weight gain and obesity among schoolchildren since 2009. In 2014, a public campaign promoted healthy food and keeping a healthy lifestyle, under the slogan "Health is the choice! Healthy food and a healthy lifestyle mean a long life!" The campaign was aimed at the entire population of North Macedonia. However, there has been no measurable outcome about the success of the campaign.

Besides that, the influence of social media on the acquisition of information is not to be neglected. Children and young people are more than ever exposed to inflows of information on food, the environment and health and are becoming more aware of their importance than any generation before. They are and will be interested in taking part in building future food systems (EIT Food, 2021). Thus, school-based food and nutrition education should go beyond classrooms to produce inclusive programmes that provide scientifically proven information on nutrition, environment protection, food waste, food production and processing, food labelling, diet-health relations and many other related topics to children and youth.

## Conclusions and key messages for policy action in the Europe and Central Asia region for food systems transformation

The transition to sustainable food systems in the ECA region requires a collective approach that involves public authorities at all levels of governance, private sector actors across the food value chain, NGOs, social partners, academics and citizens. It will contribute to the prevention of various forms of malnutrition and to the achievement of the SDGs at the country and regional levels, especially SDG 1 (No Poverty), SDG 2 (Zero Hunger), SDG 3 (Good Health and Well-Being), SDG 4 (Quality Education), SDG 5 (Gender Equality), SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action). It also will contribute to global nutrition targets for 2025 and 2030, to diet-related NCD targets and to the United Nations Decade of Action on Nutrition 2016–2025. There is an urgent need for research and innovation harmonization in indicators and data collection and evidence-based policymaking. To see progress in food systems transformation and the strengthening of food and nutrition security, we also need to create adequate targets and indicators for monitoring – indicators that cover the whole food system and reflect

the outcome. Measuring progress will demonstrate movement towards future-proofing food systems so they can become more sustainable, resilient, responsible, diverse, competitive and inclusive.

To address malnutrition in the ECA region and better contribute to the transformation towards sustainable food systems, a set of priority actions harmonized with relevant international strategies and policies should be implemented by Member Nations, together with various food systems actors, with support from international actors (United Nations and Economic Commission) partners at regional and national levels.

There is growing evidence that the performance of current food systems in the ECA region needs to improve to overcome multiple challenges related to food insecurity and malnutrition; to provide access to affordable, safe and nutritious food; and to minimize environmental costs.

A commitment to transforming food systems is evident across the region, as outlined at the FAO Regional Conference for Europe in 2020 and again in 2022, and discussions continue linked to the United Nations Food Systems Summit 2021.

Based on the identified status, gaps and priority needs, the following key messages for policy action for food systems transformation in the ECA region are presented:

Essential for food systems transformation is the establishment of national food systems governance as a multisectoral, multistakeholder, transdisciplinary, national coordination mechanism that addresses countries' food security and nutrition challenges with country-specific SMART (specific, measurable, achievable, relevant and time bound) actions.

- Part of overall governmental budgets need to be allocated, yearly, for the implementation of national nutrition strategies, policies and action plans. Recent analyses of the status of food systems elements in central and southeastern Europe have identified that majority of the countries (nine of 15) have reported that they still do not have any budget allocated for the implementation of national nutrition strategies, policies and action plans. National nutrition committees have been established in six countries, while nine still do not have a similar governmental body. National nutrition plans with country-specific SMART commitments have been developed in just four of the 15 participating countries (Gurinović *et al.*, 2022).
- Methodological guidance for food systems transformation is needed to support countries and policymakers in the implementation of the recommendations, proposed policies, programmes and priority actions, harmonized with relevant international strategies and policies. These should be implemented by Member Nations with support from international actors and partners at regional and national levels to shift towards environmentally sustainable and healthy diets and food systems transformation.
- Partnership and collaboration are needed with national, regional, and international science–policy interfaces (SPIs) (Directorate-General for Research and Innovation of the European Commission *et al.*, 2022), with support from FAO, WHO, EC, UNICEF, the WFP, EFSA and others. Communication should be established with national food systems governance for the monitoring, analysis and evaluation of the status of food systems elements at national and regional levels, using standardized methodology in a harmonized way for the identification of the baseline status and evidence-based priority needs and further capacity development for food systems transformation policy recommendations and implementation. Support should be given to countries and regions for capacity development, knowledge transfer and the strengthening of SPIs for food systems transformation. Technical support and capacity development are needed from United Nations specialized agencies and EC.

- National policies, action plans and strategies, including objectives, indicators and targets as identified by countries, are strategic documents that, when adopted, are part of national development strategy for successful implementation of action for food systems transformation.
- There is an urgent need to promote diets that are healthy, socially and culturally acceptable and economically accessible for all, with low environmental impacts. Many countries don't have food-based dietary guidelines (FBDGs), which are an important tool for sustainable healthy diets. Governments, in cooperation with scientific institutions, should support developing, where appropriate, evidence-based FBDGs for various age groups and people with special dietary requirements that define context-specific sustainable, healthy diets by taking into account social, cultural, ancestral, scientific, economic, traditional, ecological, geographical and environmental drivers. Countries need methodological guidance to develop or revise existing FBDGs that take into consideration country-specific situations and environments while considering the FAO–WHO guiding principles for healthy diets. Food System Based Dietary Guidelines (FSBDG) development and implementation with technical support from FAO and other UN agencies is key policy action for transition to sustainable healthy diets and food systems transformation.
- There is need to develop and establish harmonized food system data collection in the framework with indicators that measure components, status, progress, drivers and outcomes of food systems at national levels for mapping ECA food systems and compare components of food systems across countries and regions.
- Data collection for evidence-based policymaking is critical, using established national monitoring frameworks for continual national food system data collection, monitoring and surveillance using harmonized methodology for evaluating and tracking progress in achieving national targets, gauging the effectiveness of national plans and policies, and identifying subsequent actions. The Food Systems Dashboard is one example.
- Food, nutrition and health research infrastructure is an important element for evidence-based policymaking and for monitoring, evaluating and assessing food systems. There is a need for food, nutrition and health research infrastructure development. Policies should prioritize a citizen-centred, multinational, multidisciplinary and multistakeholder research infrastructure to provide standardized and customer-friendly tools and services that generate and unify evidence from currently separate research communities into a food systems perspective.
- Capacity development is needed in the harmonization of the research infrastructure for food systems monitoring, assessment and evaluation at national, regional and global levels for evidence-based policymaking for food systems transformation.
- Also needed are education and training about sustainable food systems for healthy diets. There is a need to enhance capacity development in nutrition and food systems, promote networking and collaboration, appropriately train the workforce, and update training programmes to cover new developments in understanding foods and food systems in addition to the wider ecological context. Modules on sustainable food systems for healthy diets and improved nutrition should be integrated into extension services and delivered to actors involved in all elements of food systems.
- Capacity development and training are needed for relevant food system actors and stakeholders in sustainable and healthy diets and food systems to cover new developments.
- It is necessary to translate research and innovation knowledge into practice for policymakers in government, for consumers and citizens, for food producers, and for the private sector.
- It is important to transfer knowledge and improve food systems communication and education. To assist in the changing of dietary patterns, there is a need for communication tools and education materials about sustainable food systems and healthy diets to be made available to policymakers, consumers, media, schools, food industry, civil society organization and the entire community.

- Gaps exist in education, practical training and continuing professional development among trainees and public health practitioners related to sustainable food systems. Modules are needed on sustainable food systems for healthy diets and improved nutrition.
- Evidence-based guidance is needed on issues such as labelling, food reformulation, digital food environments and sustainable, healthy public procurement. Innovative tools (including digital tools) can be used to better inform consumers through food labelling campaigns, strategies on the link between healthy and safe food consumption practices, and other aspects such as sustainability, the environment, climate change and diversity to empower them to make conscious and responsible choices.
- The impact on food safety of dynamic changes in global megatrends and in agrifood systems necessitates the recognition of essential connections, integrated all-levels food safety governance, and upgraded education in line with the One Health approach for adequate prevention, mitigation and trade-offs, aiming to ensuring ensure safe food through the optimized health of people, animals and ecosystems.
- The global outbreak of coronavirus disease in 2019 (COVID-19) disrupted agricultural and food systems around the world and brought attention to the importance of building resilience to vulnerabilities, shocks and stress. There is a need for the development of effective pandemic policy responses and actions to mitigate changes, improve food environments and build resilient food systems that incorporate healthy nutrition.
- To achieve the integration of principles of nutrition-sensitive and sustainable agriculture into mainstream food systems, it is necessary to invest resources in research and in the education of all actors and to create integrative programmes for associations, cooperatives, and individual smallholders to adopt and improve production practices following principles of sustainable agroecology, agricultural biodiversity and climate-smart agriculture.
- There are both a need and call for regulations that effectively limit children’s exposure to unhealthy food marketing. Marketing is quickly and constantly evolving, and new techniques and channels require new and efficient ways to advance policies. Regulation is needed specific to food marketing in the digital and retail environments. Applying a child rights-based approach supports effective policy development. Governments, as key stakeholders in policy development, are encouraged to set clear definitions, thereby allowing for uniform policy implementation. There is a need to support countries in policy development, policy implementation, monitoring and evaluation.
- To be effective, school-based food and nutrition education (SFNE) should comprise a combination of evidence-based and behaviourally-focused educational strategies that are context specific, that involve the active participation of the most relevant influencers of food practices (schoolchildren, parents, school staff, local smallholder farmers and rural enterprises, community leaders, etc.), and that are reinforced by an enabling school food environment in empowering children and adolescents to become active participants in shaping the food system to be better able to deliver healthy and sustainable diets.
- Schools and preschools provide an excellent opportunity to address the various causes of malnutrition by promoting healthy diets and improved nutrition. Integrated school food and nutrition education initiatives have the potential to mobilize schools and communities to act towards the improvement of nutrition and health.
- Policies must address the facilitated availability of healthy, diverse foods in schools, banning unhealthy food marketing and improving education on nutrition and healthy lifestyles. Implementation of the “whole school approach” in SFNE involves the national curriculum, extracurricular activities and/or school food and nutrition programmes. Learning activities are reinforced by a nutrition- and health- friendly school environment that involves the participation of all school personnel, families and the community.



- Harmonized and detailed food consumption data, such as what are available from the FAO/WHO Global Individual Food consumption data Tool (FAO/WHO GIFT) and EFSA, are needed to allow for the comparison of various countries and population groups, monitoring, evaluation and risk assessment.
- Due to the complex nature and multiple causes of malnutrition, improving nutrition and health requires government support with SMART commitments and the collaboration of multiple sectors, including agriculture, health, education, trade, environment and social protection. The whole food system is involved, including all elements and activities related to the production, processing, distribution, preparation and consumption of food and the outputs of these activities, including socioeconomic and environmental outcomes.
- Policymakers need to ensure that multiple stakeholders from food systems work together to achieve the SDGs, deliver high-quality diets and implement follow-up actions from the FAO/WHO ICN2 FfA policy recommendations and Declaration on Nutrition, the key messages from the Regional Symposium on Sustainable Food Systems for Healthy Diets in Europe and Central Asia, the United Nations Decade of Action on Nutrition, European Commission policy recommendations, the United Nations Food Systems Summit and Nutrition for Growth (N4G) Summit joint statement, and others.

The transformation of current food systems to improve the availability, affordability and uptake of nutritious, healthy safe, affordable and sustainable diets is key to tackling malnutrition in all its forms and diet-related NCDs. *“FAO’s Strategic Framework 2022–2031 seeks to support the 2030 Agenda through the transformation to MORE efficient, inclusive, resilient and sustainable, agri-food systems for better production, better nutrition, a better environment, and a better life, leaving no one behind.” (FAO’s Strategic Framework 2022–2031 Food and Agriculture Organization of the United Nations Rome, October 2021)*

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## Annex 1. Tables

**Annex Table A0. Selected indicators of food insecurity and malnutrition  
in selected countries and subregions of the ECA region**

Regions/countries	PoU		Severe food insecurity		Stunting		Child overweight		Adult obesity		Anaemia		Wasting		Overall state of nutrition
	2009–2011	2018–2020	2014–2016	2018–2020	2010	2020	2010	2020	2010	2016	2010	2019	2010	2020	2020
<b>World</b>	9.4	8.9	8.2	10.5	27.7	22.0	5.6	5.7	11.2	13.1	28.6	29.9	n.a.	6.7	
<b>Europe and Central Asia</b>	<2.5	<2.5	1.9	1.9	10.2	7.3	10.4	7.1	20.8	23.3	16.0	17.4	n.a.	1.9	
<b>Central Asia</b>	5.5	3.2	1.7	3.1	17.1	10.0	9.5	5.6	14.7	17.7	29.9	28.1	n.a.	2.4	UM
<b>EU-27 and the United Kingdom of Great Britain and Northern Ireland</b>	<2.5	<2.5	1.6	1.2	3.2	2.8	5.9	5.7	20.5	22.9	11.8	13.5	n.a.	0.7	less concern
<b>Albania</b>	4.9	3.9	10.0	8.8	20.3	9.6	23.6	14.6	18.2	21.7	21.1	24.8	n.a.	1.6	OMU
<b>Armenia</b>	4.3	3.4	1.2	1.1	15.6	9.1	15.9	10.8	17.5	20.2	18.0	17.3	4.1	4.4*	OMU
<b>Kyrgyzstan</b>	8.3	7.2	n.a.	1.1	17.7	11.4	8.4	5.8	13.4	16.6	34.2	35.8	1.3	2	UM
<b>North Macedonia</b>	3.4	2.7	3.6	5.0	6.6	4.1	14.4	10.0	20.1	22.4	16.8	19.3	1.8	3.4	OM
<b>Poland</b>	<2.5	<2.5	1.8	<0.5	2.4	2.3	5.6	6.7	20.8	23.1	n.a.	n.a.	0.7	n.a.	0
<b>Ukraine</b>	<2.5	<2.5	2.0	2.5	19.2	15.9	27.9	17.0	22.0	24.1	13.8	17.7	8.2	n.a.	OM

**Source:** FAO, WFP, UNECE, UNICEF, WHO, WMO. 2021. Regional Overview of Food Security and Nutrition in Europe and Central Asia 2020: Affordable healthy diets to address all forms of malnutrition for better health. Budapest. FAO, WFP, UN, UNICEF, WHO and WMO. <https://doi.org/10.4060/cb3849en>.

\*Latest data from 2015. PoU: Prevalence of undernourishment; U: underweight; O: overweight; M: micronutrient deficiencies

Annex Table A0-1. Availability for consumption (g per capita per day) of prominent food subgroups in selected countries of the ECA region, 2015–2017

Food group	Consumption (g/capita/day) 2015–2017									EAT-Lancet Commission report (2019)			The Global Burden of Disease study (2017)- GBD study		
	Armenia	Kyrgyzstan	Albania	North Macedonia	Ukraine	Poland	Central Asia	European Union	World	Target reference for healthy diet			Target reference for healthy diet		
										point	range from	to	point	range from	to
<b>Cereals – excluding beer</b>	400.6	451.2	408.0	359.7	445.5	390.3	455.9	350.5	480.4	232 g			130 g 150 g		
<b>Fruits &amp; vegetables</b>	1339.1	598.1	1241.7	989.9	578.1	488.0	845.7	535.2	591.9						
Vegetables	1023.9	495.0	770.1	721.1	448.8	320.6	642.8	299.1	386.6	300 g	200 g	600 g	360 g	290 g	430 g
Fruits – excluding wine	315.2	<b>103.1</b>	471.6	268.8	<b>129.3</b>	<b>167.4</b>	<b>202.9</b>	236.2	205.4	200 g	100 g	300 g	250 g	200 g	300 g
<b>Pulses</b>	<b>7.6</b>	13.8	16.3	14.1	4.8	5.4	2.8	7.5	19.9	75 g	0	100 g	60 g 70 g		
Beans	4.4	13.1	15.3	9.3	0.0	2.1	1.9	2.2	6.8						
Peas	0.9	0.7	0.0	2.4	3.0	3.2	0.8	2.5	2.5						
Pulses, other and products	2.2	0.1	1.0	2.4	1.8	0.1	0.1	2.9	10.6						
<b>Sugar &amp; sweeteners</b>	144.4	143.8	101.5	144.3	171.9	119.9	54.0	120.6	72.5	0 31 g			5 g		
<b>Nuts and products</b>	5.2	6.2	9.3	9.6	3.4	2.5	4.2	10.1	5.6	50 g	0	75 g	21 g 25 g		
<b>Vegetable oils</b>	26.4	16.3	21.9	46.5	29.6	19.2	34.5	45.3	28.2	40 g	20 g	80 g			
<b>Meat</b>	120.6	86.1	119.3	98.0	128.3	237.5	113.3	224.7	116.3						
Red meat	81.8	71.9	81.6	46.2	66.5	157.4	90.8	156.5	72.8	14 g	0	28 g	23 g	18 g	27 g
Poultry meat	38.7	<b>10.1</b>	37.6	51.5	60.3	79.8	<b>18.1</b>	63.8	41.2	29 g	0	58 g			
<b>Milk – excluding butter</b>	549.5	566.3	1036.4	<b>427.7</b>	<b>396.6</b>	480.9	566.4	645.5	239.5	<b>435 g</b>	350 g	520 g	250 g	0 500 g	
<b>Fish total</b>	30.5	<b>4.9</b>	<b>16.9</b>	<b>20.0</b>	34.2	34.8	<b>12.2</b>	73.3	77.3	28 g	0	100 g	20 g		
Fish, seafood	17.3	3.7	14.7	17.3	28.6	29.3	7.2	63.3	55.3						
Fresh-water fish	13.1	1.1	2.3	2.7	5.5	5.5	5.0	10.1	22.0						

Source: Calculated by authors based on FAOSTAT data

**Annex Table A0-2. Percentage of consumption levels of selected ECA countries compared to world average level 2015–17**

Percentage of consumption levels	Compared with World Average								
	Albania	Armenia	Kyrgyzstan	North Macedonia	Poland	Ukraine	Central Asia	European Union	World
<b>Cereals – excluding beer</b>	<b>85%</b>	<b>83%</b>	<b>94%</b>	<b>75%</b>	<b>81%</b>	<b>93%</b>	<b>95%</b>	<b>73%</b>	100%
<b>Fruits &amp; vegetables</b>	<b>210%</b>	<b>226%</b>	<b>101%</b>	<b>167%</b>	<b>82%</b>	<b>98%</b>	<b>143%</b>	<b>90%</b>	100%
Vegetables	199%	265%	128%	187%	83%	116%	166%	77%	100%
Fruits – excluding wine	230%	153%	50%	131%	82%	63%	99%	115%	100%
<b>Pulses</b>	<b>82%</b>	<b>38%</b>	<b>69%</b>	<b>71%</b>	<b>27%</b>	<b>24%</b>	<b>14%</b>	<b>38%</b>	100%
Beans	224%	65%	192%	136%	31%	0%	27%	32%	100%
Peas	0%	36%	27%	97%	126%	119%	32%	99%	100%
Pulses, other and products	9%	21%	1%	22%	1%	17%	1%	27%	100%
<b>Sugar &amp; sweeteners</b>	<b>140%</b>	<b>199%</b>	<b>198%</b>	<b>199%</b>	<b>165%</b>	<b>237%</b>	<b>74%</b>	<b>166%</b>	100%
<b>Nuts and products</b>	<b>167%</b>	<b>92%</b>	<b>112%</b>	<b>172%</b>	<b>45%</b>	<b>60%</b>	<b>75%</b>	<b>181%</b>	100%
<b>Vegetable oils</b>	<b>78%</b>	<b>94%</b>	<b>58%</b>	<b>165%</b>	<b>68%</b>	<b>105%</b>	<b>122%</b>	<b>161%</b>	100%
<b>Meat</b>	<b>103%</b>	<b>104%</b>	<b>74%</b>	<b>84%</b>	<b>204%</b>	<b>110%</b>	<b>97%</b>	<b>193%</b>	100%
Red meat	112%	112%	99%	63%	216%	91%	125%	215%	100%
Poultry meat	91%	94%	25%	125%	194%	147%	44%	155%	100%
<b>Milk – excluding butter</b>	<b>433%</b>	<b>229%</b>	<b>236%</b>	<b>179%</b>	<b>201%</b>	<b>166%</b>	<b>236%</b>	<b>270%</b>	100%
<b>Fish total</b>	<b>22%</b>	<b>39%</b>	<b>6%</b>	<b>26%</b>	<b>45%</b>	<b>44%</b>	<b>16%</b>	<b>95%</b>	100%
Fish, seafood	27%	31%	7%	31%	53%	52%	13%	114%	100%
Freshwater fish	10%	60%	5%	12%	25%	25%	23%	46%	100%

Source: FAO.2021. FAOSTAT data

**Annex Table A0-3. Final consumption expenditure of households by consumption purpose (COICOP 3 digit) in selected central and southeastern European countries for 2010 and 2019**

COICOP	Percentage of GDP		Percentage of total		Current prices, million euro	
	2010	2019	2010	2019	2010	2019
<b>EU-28</b>	6.8	6.5	12.2	12.1	875,159.80	1,078,115.20
<b>Central and southeastern European countries</b>						
<b>Albania</b>	29.7	31.5	36.6	38.0	2,670.90	4,336.40
<b>Bosnia and Herzegovina</b>	27.6	22.8	32.3	29.5	3,584.30	4,112.90
<b>Croatia</b>	12.7	13.0	18.5	18.2	5,789.30	7,228.90
<b>Czechia</b>	7.1	7.2	14.0	15.2	11,217.40	16,306.00
<b>Estonia</b>	10.7	9.5	19.8	19.3	1,572.70	2,626.00
<b>Hungary</b>	8.9	8.6	16.5	17.2	8,873.40	12,623.60
<b>Latvia</b>	12.6	10.5	20.3	18.1	2,257.30	3,211.80
<b>Lithuania</b>	15.4	12.2	24.1	20.3	4,308.10	5,950.10
<b>Montenegro</b>	29.7	22.7	30.2	24.5	929.60	1,121.50
<b>North Macedonia</b>	23.6	20.3	31.0	30.6	1,677.80	2,270.90
<b>Poland</b>	11.6	9.4	19.1	16.4	42,014.50	49,977.90
<b>Romania</b>	16.5	15.3	26.4	25.2	20,715.20	34,211.00
<b>Serbia</b>	18.9	15.7	25.6	23.6	5,977.90	7,230.50

**Source:** Eurostat, 2021. HBS. ([https://ec.europa.eu/eurostat/databrowser/view/NAMA\\_10\\_CO3\\_P3\\_\\_custom\\_271244/bookmark/table?lang=en&bookmarkId=d11abfa0-c6f5-4dda-9070-06bff2069d68](https://ec.europa.eu/eurostat/databrowser/view/NAMA_10_CO3_P3__custom_271244/bookmark/table?lang=en&bookmarkId=d11abfa0-c6f5-4dda-9070-06bff2069d68))