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EUROPE AND CENTRAL ASIA REGIONAL OVERVIEW OF FOOD SECURITY AND NUTRITION

STRUCTURAL TRANSFORMATIONS OF AGRICULTURE FOR IMPROVED FOOD SECURITY, NUTRITION AND ENVIRONMENT

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VARDAGHBIUR, ARMENIA. Cheese factory, producing a local cheese type, called "lori", and international cheeses alike.

2019

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Food and Agriculture Organization of the United Nations
Budapest, 2019

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FOREWORD

This *Regional Overview of Food Security and Nutrition* introduced for the first time in 2017 a new indicator for measuring severe food insecurity, based on the Food Insecurity Experience Scale (FIES). This indicator complements the information provided by the prevalence of undernourishment (PoU) indicator, used by FAO to monitor hunger. Both indicators show that the prevalence of hunger at the chronic or severe level is mostly very low in this region, with the exception of a handful of countries.

This edition introduces analysis based on the prevalence of *moderate or severe food insecurity,* also based on the FIES methodology. It captures people's difficulties in accessing safe, nutritious and sufficient food and so is more relevant for countries in the Europe and Central Asia (ECA) region in which severe food deprivation may no longer be of concern but where sizeable pockets of food-insecure populations still remain. The new estimates show that the prevalence at the *moderate or severe* level could be quite high, at an average of 11 percent for the ECA region, affecting more than 100 million people. Moreover, the prevalence was non-trivial even in many relatively high-income countries of the European Union and the European Free Trade Association.

All these indicators paint a worrisome picture. They confirm that the progress in reducing undernourishment and food insecurity has not only slowed but has virtually halted in the past three to four years – even reversing slightly in several countries. The situation is similarly challenging in reducing various forms of malnutrition; a large majority of countries in the region risk not meeting the targets set by the 2030 Agenda for Sustainable Development. Data from newer surveys continue to show a multiple burden of malnutrition.

This report shows an alarmingly high – and increasing – prevalence of overweight and obesity in the Europe and Central Asia region. Almost all countries in the region have a prevalence of adult obesity that is above the world average of 13.2 percent, and in some countries the prevalence is twice as high as the world average.

This report also presents analyses on two topics that are important drivers of food insecurity and malnutrition: socio-economic inequalities and government expenditures on agriculture. The opening section of Part II stresses the importance of considering inequities in the design of food and nutrition policies, programmes and interventions. Farther on, Part II finds that most countries in the region may be under-investing in agriculture relative to the sector's importance in the economy.

The special theme of this year's report is focused on the structural transformations of agriculture and food systems and the process of reorienting agriculture and food consumption patterns towards healthy diets and sustainable food systems for attaining the goals of the 2030 Agenda for Sustainable Development regarding food security and nutrition and other related Sustainable Development Goals. Two frameworks increasingly recognized for this are a holistic food systems approach and agro-ecological practices, key building blocks of sustainable food systems. Reorienting policies and practices along these lines requires shifting the focus of agricultural support to general services and rural development. The Europe and Central Asia region provides many examples of innovative and successful approaches and practices regarding rural development and agro-ecology that need to be fine-tuned and scaled up.

As have the previous Regional Overview reports, it is our hope that this report continues to contribute to identifying issues and options for a more informed dialogue and concerted action by all partners to accelerate collective progress towards the goal of a hunger-free and healthy Europe and Central Asia.

VLADIMIR RAKHMANIN

Assistant Director-General and Regional Representative for Europe and Central Asia

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ACRONYMS AND ABBREVATIONS

AECM	Agri-environment-climate measures (of the EU)
AGDP	agricultural gross domestic product
AOI	agriculture orientation index
B40	bottom 40 percent of the population
BMI	body mass index
CA	Central Asia
CAP	common agricultural policy
CGIAR	Consultative Group on International Agricultural Research
CIS	Commonwealth of Independent States
DES	dietary energy supply
EBRD	European Bank of Reconstruction and Development
ECA	Europe and Central Asia
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FIES	Food Insecurity Experience Scale (based on Gallup World Poll)
$FI_{mod+sev}$	food insecurity at the moderate or severe level
FI_{sev}	food insecurity at the severe level
FSN	food security and nutrition
g	gram
GDP	gross domestic product
GEA	government expenditures on agriculture
HLPE	High Level Panel of Experts on Food Security and Nutrition
ICN2	Second International Conference on Nutrition
MDG	Millennium Development Goals
NCD	non-communicable disease
OECD	Organisation of Economic Cooperation and Development
PoU	prevalence of undernourishment
RDP	Rural Development Programme (of the EU)
SDG	Sustainable Development Goal
SP premium	shared prosperity premium
USD	United States dollar(s)
WFP	World Food Programme
WHA	World Health Assembly
WHO	World Health Organization
WTO	World Trade Organization

KEY MESSAGES

PART I: OVERVIEW OF FOOD SECURITY AND NUTRITION IN EUROPE AND CENTRAL ASIA

➔ Food security in the Europe and Central Asia (ECA) region has improved substantially over the past two decades. Chronic hunger – when a person lacks enough dietary energy for a healthy and active life, measured by the prevalence of undernourishment (PoU) (SDG Indicator 2.1.1) – is hardly an issue in most countries of the ECA region. The 2016–2018 average value of the prevalence of undernourishment was in the range of 5–8 percent in only six of the 50-or-so ECA countries monitored, compared with the world average of 10.8 percent.

➔ The second indicator for monitoring progress on SDG Target 2.1, developed by FAO, is the prevalence of moderate or severe food insecurity in the population (SDG Indicator 2.1.2), based on the Food Insecurity Experience Scale (FIES). This indicator complements the information provided by the PoU and gives a broader perspective on food access.

➔ The new estimates for 2018 for the prevalence of severe food insecurity show that 1.8 percent of the total population in the ECA region, about 16.5 million people, are exposed to the severe form of food insecurity. People facing severe food insecurity have likely run out of food, experienced hunger and, at the most extreme, gone for days without eating, putting their health and well-being at grave risk.

➔ Introduced for the first time this year, the prevalence of moderate or severe food insecurity, derived from the same FIES database, looks beyond hunger to reflect the goal of ensuring access to safe, nutritious and sufficient food. It is more relevant for countries in the ECA region in which severe food deprivation may no longer be of concern but where sizeable pockets of food-insecure populations remain. It is estimated that more than 100 million people (corresponding to 11 percent of the total population) in the ECA region are exposed to moderate or severe food insecurity.

➔ The new indicator showing the moderate level of food insecurity reveals that even in high-income countries, sizeable portions of the population have difficulty regularly accessing nutritious and sufficient food. More than 6 percent of the population in European Union Member States suffered from food insecurity at a moderate or severe level in 2018, among which approximately 1 percent were exposed to severe food insecurity.

➔ Besides the findings that the PoU and the prevalence of severe food insecurity are non-trivial for several countries of the region, and that the prevalence of moderate or severe food insecurity remains quite high, what is equally worrisome is that the new 2018 estimates confirm that the prevalence of moderate or severe food insecurity have continued to stagnate or are only slightly decreasing for several years now. The prevalence of moderate or severe food insecurity has even begun to increase in some countries of the region, in particular in Central Asia and the Caucasus. This has put at risk the attainment by 2030 of the Zero Hunger target, which, as we know, goes beyond hunger to include moderate levels of food insecurity.

➔ Sex-disaggregated estimates across the region show that moderate or severe food insecurity is experienced by females slightly more than by males (10.7 percent of women experience moderate or severe food insecurity, compared to 9.8 percent of men). This may signal societal gender inequalities that are reflected in access to food. To ensure that all people, regardless of gender, have adequate food and nutrition, more targeted measures are needed at all levels and in various policy areas.

➔ Besides food insecurity, many countries in the region continue to experience relatively high prevalence of various forms of malnutrition – stunting, wasting and overweight among children younger than five years of age; anaemia among women of reproductive age; obesity among adolescents and adults; and an inadequate level of exclusive breastfeeding for the first six months of life. A majority of countries are also facing multiple forms of malnutrition, with the situation getting worse in terms of prevalence as one moves from food

insecurity to malnutrition in all its forms. Given recent trends in the evolution of food security and nutrition, many countries risk not meeting the 2030 targets.

➔ Overweight and obesity imply significant health concerns in the ECA region. The prevalence of adult obesity in 2016 was relatively high, above the world average of 13.2 percent in almost all countries, and twice as high as the world average in 13 countries. What is also worrisome is that not only is the prevalence rising in all countries but also that the rate of increase has been higher in recent years (2010–2016) than in the previous decade (2000–2010) in most countries in the region.

➔ Estimates of low birth weight were released for the first time in *The State of Food Security and Nutrition in the World* this year. In the ECA region, the prevalence of low birth weight is below the global average of 14.6 percent (as of 2015), but there is a recent increasing trend in most of the countries. If this trend continues, the 2025 World Health Assembly target of a 30-percent reduction in the prevalence of low birth weight will not be met.

PART II: FOOD SECURITY AND NUTRITION: DRIVERS AND DETERMINANTS

➔ Socio-economic inequalities slow down or impede the rate of progress on the reduction of poverty, food insecurity and malnutrition, risking the 2030 Agenda for Sustainable Development principle of leaving no one behind. An increasing number of global studies document inequalities in outcomes on food insecurity and malnutrition indicators by socio-economic factors.

➔ Inequalities in the prevalence of the three forms of malnutrition among children younger than five years of age – stunting, wasting and overweight – are fairly low if assessed by the sex of the child and the place of residence (rural or urban) but relatively high if assessed by maternal education, wealth and geographic regions. The gaps are narrowing in most cases, however, with the prevalence among disadvantaged subgroups such as those in lower wealth quintiles or with lower maternal education falling at rates similar to the rates among advantaged subgroups. Intervention on maternal education and income generation/employment among the disadvantaged will be key to reducing the three forms of malnutrition among children younger than five years of age.

➔ The prevalence of adult obesity is rising faster in households identified as being in lower categories of socio-economic profiles based on living and working conditions, income and education.

➔ Addressing socio-economic inequalities requires, among other things, interventions targeted at disadvantaged and vulnerable groups. Shared prosperity, as measured by the growth of income of the bottom 40 percent of the population, was positive in many countries in those ECA subregions in which the prevalence of poverty, food insecurity and malnutrition is relatively higher. The shared prosperity premium, defined as the income growth of the bottom 40 percent of the population minus the income growth of the entire population, tends to be positive for the relatively lower-income countries of the ECA region, indicating reductions in inequality. This process also has been supported by the accelerated pace of economic growth in lower-income countries, where structural changes have elevated the most vulnerable groups above the national poverty line. However, the economic slowdown in recent years has halted the reduction of inequality in these countries, while in the case of other country groups in the ECA region, inequality remains a concern.

➔ Recent studies in the region point to horizontal inequalities between groups based on factors such as birth cohort, occupation, place of residence, regional location, age, gender, ethnicity and others, concluding that policy and programme responses need to address distributional tensions across groups rather than focusing only on income inequality among individuals.

➔ The data on government expenditures in agriculture show that almost all countries are under-investing in agriculture relative to the sector's importance in the economy, as measured by the agriculture orientation index, an indicator for Target 2.A of the Sustainable Development Goals. Moreover, the calculations show that countries in

which agriculture holds a larger share of total employment, relative to agriculture's share in the economy, are investing less, on average, in agriculture.

➔ Besides raising public investment in agriculture and rural areas, the quality of spending needs to be improved in order to realize goals on food security, nutrition and the environment – specifically by markedly reorienting spending towards general services and rural development and away from the traditional price and income support measures.

PART III: STRUCTURAL TRANSFORMATIONS OF AGRICULTURE, FOOD SYSTEMS AND FOOD POLICY IN EUROPE AND CENTRAL ASIA

➔ The thematic topic for this edition is structural transformations taking place in the Europe and Central Asia region – in the overall economy, in food and agricultural production, in food consumption patterns and diets, and in policies. After taking stock of the transformations that have occurred over the past three decades, the main question asked is what is needed for reorienting current policies and practices so as to attain the goals and targets of the 2030 Agenda for Sustainable Development.

➔ The analysis shows that agriculture's employment share continues to notably exceed agriculture's share in the economy in several countries of the region. This shows that while agriculture is an important source of income for a major share of the population, the productivity of the agricultural sector lags behind other sectors. This contributes to higher prevalence of rural poverty, food insecurity and malnutrition and points to a need for increased support of agriculture and rural development, with the goal of boosting productivity and raising support for income diversification, social safety net protection for the rural poor, and the creation of higher-value-added products. The growth of agriculture has been impressive across the region, but there are signs of slowdowns in several countries. There also is greater volatility in agricultural production, presumably due to shocks related to fluctuations in climate, trade and the economy.

➔ Virtually all countries of the region made impressive gains during the past two decades in raising the availability of diverse foods through production and trade, but questions have been raised in some studies about the quality of current diets relative to reference healthy diets. But evidence on the actual intakes of various foods and nutrients is generally too poor to enable the drawing of definite conclusions.

➔ The data show that the share of total dietary energy supply from animal-based foods has increased in most countries of the region. Overall, there have been large increases in the consumption of all food subgroups in most of the countries, and food diversity and the availability of nutritious foods have increased. However, there are some big differences by subregion. For example, Turkey and the countries in the Western Balkans have greater availability of fruits, vegetables and pulses. Additionally, countries of the Commonwealth of Independent States in Europe have more meat and fish available, while the countries in Central Asia have insufficient quantities of fruits, vegetables and fish products. These trends point to the need for more efforts towards raising the availability of several food items through nutrition-sensitive policies in both the production and trade areas.

➔ While the share of agrifood trade in total trade has not changed much over the past two decades, agrifood trade (both exports and imports) has increased significantly, making contributions to economic growth and food security and nutrition in the post-Soviet Union countries. While food availability has increased and diversified, imports of processed foods that are high in fat, sugar and/or salt also have increased, contributing negatively to nutrition and health. Further studies will be needed to identify the drivers of the growth of these foods and their impacts on malnutrition – in particular, on obesity and non-communicable diseases.

➔ As tariffs are reduced in many countries in the region, anticipated trade expansion is often frustrated by non-tariff measures. Case studies from UNECE indicate that, unlike tariffs, non-tariff measures come in multiple forms

and are often opaque, deep-rooted and difficult to eliminate. Therefore, a great deal of attention is being paid globally to the issue of non-tariff measures. Nine categories of recommendations have been made in this report based on the case studies.

➔ Towards reorienting production, diets and related policies for attaining the targets of food security and nutrition, two frameworks are being increasingly recognized – food systems and agro-ecological practices, which are key building blocks of sustainable food systems.

➔ The desirable attributes of these frameworks include making agriculture more nutrition-sensitive, promoting the diversification of farming, increasing support for small-scale and family farms, incentivizing production and consumption of foods that form healthy diets, promoting short value chains, boosting rural employment, and advocating for incentives and payments for environmentally friendly practices. Reorientation along these lines requires shifting the focus of agricultural support to general services and rural development.

➔ Moving from one system to another is not easy and includes many challenges, including the cost-price squeeze for farmers, consumers' dependence on supermarkets, and paradoxical requests that farmers sell high-quality products at low prices. Identifying measurements for the success of the agro-ecological transformation is another challenge. Beyond yield, performance assessment of a system should include environmental, economic and social dimensions. There are lock-ins that prevent changes from traditional food systems to agro-ecology and sustainable food systems.

➔ There are trade-offs among all objectives of food systems and agro-ecology, and it is not obvious that all objectives can be achieved. Public policy has the critical role of providing incentives and creating a good environment for the participation of all smallholders.

➔ The Europe and Central Asia region provides many examples of innovative and successful approaches and practices for rural development and agro-ecology that need to be fine-tuned and scaled up. The European Union rural development policy (the second pillar of the common agricultural policy) and the National Agroecology Programme of France are good examples of complete packages of measures containing the desired attributes of food systems and agro-ecology.

➔ Small-scale farmers still have limited access to the innovations, technology, knowledge and information needed to enhance productivity and incomes. They are exposed to negative shocks, such as drought and animal pests, and they face challenges in accessing input and output markets. Policy reorientation should stress the need to ensure focus on the most poor and vulnerable and otherwise marginalized groups in rural areas, including through supportive social protection and other risk management measures to facilitate the transition to sustainable practices, or alternatively to exit the sector.

INTRODUCTION

It is no surprise that the Europe and Central Asia region should be concerned with food insecurity, malnutrition and other socio-economic deprivations, as the region contains great diversities in income level, with two subregions (Central Asia and the Caucasus) having a per-capita gross domestic product below USD 5 000 (at constant 2010 prices) in 2017. As the 2017 and 2018 editions of this *Regional Overview of Food Security and Nutrition in Europe and Central Asia* have shown, and as this report will discuss, many countries in the region face challenges related to food insecurity and malnutrition in one form or another, be it lack of access to nutritious and diverse foods, anaemia among women of reproductive age, or overweight and obesity among children, adolescents and adults. The salience of these problems, however, varies across subregions, partly because of differences in per-capita income and partly for other social and economic reasons.

Undernourishment or hunger is not an issue in the region overall, except for the five or six countries in which the rate of prevalence still exceeds 5 percent, but what is worrying is that the rate of decline in prevalence has slowed in recent years, with even slight reversals in some countries and subregions. This puts at risk the attainment of the goal of Zero Hunger by 2030. Another indicator of food insecurity – used to track progress against Sustainable Development Goal 2 targets and based on direct responses of surveyed people – shows that while food insecurity at the severe level is very low in the region, the prevalence at a moderate or severe level is not negligible, indicating lack of access to nutritious and diverse foods to all people all year round. In addition, there also are in the region many large pockets of malnutrition among children younger than five years of age, and there are relatively high and rising rates of adult obesity and of anaemia among women of reproductive age.

Part I of this report monitors the progress being made in these indicators based on updated estimates, a regular feature of this report assessing the progress towards the achievement of Sustainable Development Goal 2 to end hunger, achieve food security, improve nutrition and promote sustainable agriculture.

Factors that explain the slowdown or reversal of progress on food security and challenges in various forms of malnutrition have been the focus of thematic studies in the recent Regional Overview as well as in the global reports published by FAO and other United Nations partners, including *The State of Food Security and Nutrition in the World*. This global report assessed the role of conflicts in its 2017 edition, climatic shocks in 2018, and in 2019 provides findings on the third main driver for food insecurity and malnutrition – namely, the one related to economic slowdowns and fluctuations.

The regional report for Europe and Central Asia reviews key issues relevant for the region. The 2018 edition made an in-depth assessment on labour migration, remittances and food insecurity and rural distress, and, in previous years, appraised the region's exposure to environmental degradation and climate change and the trends and features observed related to the triple burden of malnutrition. This 2019 regional report explores the structural transformations of agriculture and food systems and looks at options for food policies to address food security and nutrition in Europe and Central Asia.

It is well documented that the global poor are predominantly rural and largely dependent on the state of agriculture; poverty tends to be much higher among rural residents than among urban. Hence, the performance of agriculture and rural development matters considerably for the types of food security and nutrition challenges addressed in these reports on the state of food security and nutrition. Findings are further disaggregated by sex and age to aid in understanding inequalities and specific vulnerabilities within population groups and to help inform targeted interventions.

Part II of this report reviews two selected policy drivers and developments in the region. One analytical review takes stock of the scale of government support to agriculture in this region, using an indicator of the 2030 Agenda for Sustainable Development for monitoring progress on investment in agriculture – the agriculture orientation index. The data show almost all countries under-investing in agriculture relative to the sector's importance in the economy. The quality of spending matters equally. The issue of quality and prioritization is taken up in Part III of this report in the context of reorienting agricultural policies and investments in support of food security, nutrition and environment goals as called for in the 2030 Agenda.

The second analytical review in Part II addresses the vexing issue of the persistence of inequalities among population subgroups in key food security and nutrition indicators as well as in their drivers. It presents statistics on inequalities in outcomes in malnutrition and on how the income growth of the bottom 40 percent of the population compares with the overall income growth – to what extent the lower income groups have shared prosperity. The review notes that there are inequalities that need to be specifically addressed to speed up progress towards the 2030 targets.

How quickly economies manage to reduce poverty, food insecurity and malnutrition depends on how successful the process of structural transformation of the economy is. Where successful, agriculture's share in total employment does not lag too far behind the sector's share in the economy, leading to faster reductions in rural poverty, food insecurity and malnutrition. In this region, there are still several countries in which agriculture's employment share markedly exceeds the share in income, creating imbalances in socio-economic parities that need to be addressed by paying greater attention to agriculture and rural development.

The special theme selected for this edition, presented in Part III, is structural transformations. This covers transformations of the overall economy, agriculture production, food consumption and diets, and policy changes. The main question asked is what is needed to transform agriculture and food systems so that the process is supportive of the goals of the 2030 Agenda for Sustainable Development on food security and nutrition.

Thus, the report is structured in three parts, as follows.

Part I, which offers a regional overview of food security and nutrition, reviews a total of nine indicators of food security and nutrition: two on food security (the prevalence of undernourishment and directly experienced food insecurity) and seven on nutrition (stunting, wasting and overweight among children younger than five years of age, obesity among adults, anaemia in women of reproductive age, exclusive breastfeeding during the first six months of life, and low birth weight).

Part II, which looks at the underlying factors and drivers of the observed trends, presents analyses on two selected themes, each covering issues, trends and outlooks: i) the persistence of inequalities among population subgroups in key food security and nutrition outcomes and their drivers; and ii) public investment in agriculture.

Part III, which explores structural transformations of agriculture, food systems and food policy, looks at changes in the overall structure of the economy, agricultural production and food consumption patterns, and challenges in reorienting agriculture, diets and policies for more sustainable agriculture and food systems and for achieving the goals of the 2030 Agenda for Sustainable Development.

ARARAT MARZ, ARMENIA
First graders having lunch in the canteen of an FAO beneficiary school of a food security and nutrition project.
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PART 1
OVERVIEW OF FOOD SECURITY AND NUTRITION IN EUROPE AND CENTRAL ASIA

PART 1

OVERVIEW OF FOOD SECURITY AND NUTRITION IN EUROPE AND CENTRAL ASIA

In the 2030 Agenda for Sustainable Development (2030 Agenda), the aim of Sustainable Development Goal 2 (SDG 2) is to end hunger, achieve food security, improve nutrition and promote sustainable agriculture. It is a comprehensive goal covering all the four dimensions of food security (availability, access, utilization and stability) and nutrition, and it requires systematic monitoring of progress made towards the SDG 2 indicators to provide valuable and regular evidence to Member States, regional bodies and international organizations. FAO has committed to monitoring trends in food security and nutrition at global, regional and national levels, jointly with partners, within the framework of the 2030 Agenda.

The Europe and Central Asia region[1] is heterogeneous in terms of the composition of countries and their economic structures, climate conditions, rates of economic growth and transition, and other socio-demographic features. The region is composed of Western European countries,[2] the transition economies in Central and Eastern Europe, and countries in the Caucasus and Central Asia. More than half of the region's countries are members or candidates for membership in the European Union. The Eurasian Economic Union is also expanding its role in the region.

Target 2.2 of SDG 2 calls for an end to "all forms of malnutrition" by 2030. Malnutrition, under this target, covers a broad spectrum with several indicators. These nutrition and health targets build upon those set by the 2012 World Health Assembly (WHA), which approved six global targets to be met by 2025 for improving maternal, infant and young child nutrition. To align with the 2030 Agenda's deadline, the 2025 targets were subsequently extended to 2030 (Table 1). Of the six targets, three – on stunting, wasting and overweight among children younger than five years of age – are also part of the SDG monitoring framework. In addition, the WHO plan of action for the prevention and control of non-communicable diseases (NCDs) also called for a halting the rise in adult obesity by 2025. Thus, there are a total of seven targets that are monitored and assessed in this report.

TABLE 1
GLOBAL NUTRITION TARGETS FOR 2030, REVISED FROM THE 2025 TARGETS

	2025 Target	2030 Target
Stunting	40-percent reduction in the number of children younger than five years of age who are stunted	50-percent reduction in the number of children younger than five years of age who are stunted
Anaemia	50-percent reduction in anaemia in women of reproductive age	50-percent reduction in anaemia in women of reproductive age
Low birth weight	30-percent reduction in low birth weight	30-percent reduction in low birth weight
Childhood overweight	No increase in childhood overweight	Reduce and maintain childhood overweight to less than three percent
Breastfeeding	Increase the rate of exclusive breastfeeding in the first six months to at least 50 percent	Increase the rate of exclusive breastfeeding in the first six months to at least 70 percent
Wasting	Reduce and maintain childhood wasting to less than five percent	Reduce and maintain childhood wasting to less than three percent

SOURCE: *The extension of the 2025 Maternal, Infant and Young Child nutrition targets to 2030.* WHO and UNICEF (2018).

This part of the report presents the current state of food security and nutrition and shares updates on the progress being made based on the latest estimates, up to 2018, for countries in the Europe and Central Asia (ECA) region. On food security, two indicators that are part of the 2030 Agenda are the prevalence of undernourishment (PoU) and the prevalence of severe food insecurity based on the Food Insecurity Experience Scale (FIES). On various forms of malnutrition, three key indicators refer to malnutrition among children younger than five years of age: stunting (SDG Indicator 2.2.1), wasting (SDG Indicator 2.2.2) and overweight (SDG Indicator 2.2.2). Also reviewed are indicators on low birth weight, anaemia among women of reproductive age, exclusive breastfeeding during the first six months of life, and adult obesity. These indicators considered together allow for the highlighting of the multiple burdens of malnutrition, when one or more of the malnutrition conditions coexist. ■

1.1 PREVALENCE OF UNDERNOURISHMENT AND PREVALENCE OF FOOD INSECURITY BASED ON FIES

The prevalence of undernourishment (PoU) and the Food Insecurity Experience Scale (FIES) are two indicators for monitoring progress in hunger reduction and access to food under the 2030 Agenda for Sustainable Development. PoU also was the main indicator used to monitor the World Food Summit target and the Millennium Development Goal (MDG) 1C target of eradicating extreme hunger and poverty. PoU estimates are derived from national food balance sheet data and are computed based on three parameters: average national dietary energy supply, minimum dietary energy requirements for an average individual, and a measure of the distribution of food within a country. The FIES establishes a metric for the severity of the food insecurity condition of individuals or households and is derived based on people's direct responses to questions regarding their access to food of adequate quality and quantity. Thus, it is an experience-based indicator that captures the access dimension of food security.

Prevalence of undernourishment (PoU)

FAO does not consider national-level PoU estimates lower than 2.5 percent sufficiently reliable to be reported due to statistical margins of error around the parameters used to calculate the PoU. This is the case for 39 of the 50 countries covered in the Europe and Central Asia (ECA) region for 2016–2018 (and generally also for several prior years). The 39 include 28 European Union Member States, four European Free Trade Association countries and seven from the other four subregions.

Table 2 presents estimates for 18 countries of the four subregions that are of primary concern for food security and nutrition in the ECA region (along with averages for the EU-28 and EFTA). Of the 18, PoU values are estimated to be below 2.5 percent for seven and above that for nine (no updated estimates were available for Republic of Moldova and Tajikistan at the time of writing). The PoU values were above 5 percent for six of the nine countries – three in Central Asia, two in the Balkans, one in the Caucasus and none in the European CIS.

The PoU data for five periods from 2004 to 2018 in Table 2 help to assess two features of the trends: one, the progress made since

TABLE 2

PREVALENCE OF UNDERNOURISHMENT AND NUMBER OF PEOPLE UNDERNOURISHED IN THE ECA REGION, 2004–2018

	Prevalence of undernourishment (%)					Number undernourished (millions)				
	2004–2006	2010–2012	2014–2016	2015–2017	2016–2018	2004–2006	2010–2012	2014–2016	2015–2017	2016–2018
CAUCASUS	**6.4**	**4.3**	**3.2**	**3.3**	**3.3**	**1.0**	**0.7**	**0.5**	**0.5**	**0.5**
Armenia	7.8	5.6	3.8	4.0	4.3	0.2	0.2	0.1	0.1	0.1
Azerbaijan	5.5	<2.5	<2.5	<2.5	<2.5	0.5	n.r.	n.r.	n.r.	n.r.
Georgia	7.2	8.1	7.6	7.8	7.9	0.3	0.3	0.3	0.3	0.3
CENTRAL ASIA	**11.0**	**6.7**	**5.5**	**5.6**	**5.6**	**6.5**	**4.3**	**3.8**	**3.9**	**4.0**
Kazakhstan	5.9	2.7	<2.5	<2.5	<2.5	0.9	0.5	n.r.	n.r.	n.r.
Kyrgyzstan	9.7	7.8	6.6	6.8	7.1	0.5	0.4	0.4	0.4	0.4
Tajikistan	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Turkmenistan	4.8	4.9	4.9	5.1	5.4	0.2	0.3	0.3	0.3	0.3
Uzbekistan	14.5	8.1	6.4	6.3	6.3	3.9	2.4	2.0	2.0	2.0
EUROPEAN CIS	**<2.5**	**<2.5**	**<2.5**	**<2.5**	**<2.5**	**n.r.**	**n.r.**	**n.r.**	**n.r.**	**n.r.**
Belarus	3.0	<2.5	<2.5	<2.5	<2.5	0.3	n.r.	n.r.	n.r.	n.r.
Republic of Moldova	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Russian Federation	<2.5	<2.5	<2.5	<2.5	<2.5	n.r.	n.r.	n.r.	n.r.	n.r.
Ukraine	<2.5	<2.5	3.0	3.3	3.5	n.r.	n.r.	1.3	1.5	1.5
WESTERN BALKAN COUNTRIES AND TURKEY	**<2.5**	**<2.5**	**<2.5**	**<2.5**	**<2.5**	**n.r.**	**n.r.**	**n.r.**	**n.r.**	**n.r.**
Albania	10.9	6.6	6.0	6.1	6.2	0.3	0.2	0.2	0.2	0.2
Bosnia and Herzegovina	3.2	<2.5	<2.5	<2.5	<2.5	0.1	n.r.	n.r.	n.r.	n.r.
Montenegro	–	<2.5	<2.5	<2.5	<2.5	–	n.r.	n.r.	n.r.	n.r.
North Macedonia	6.1	4.6	3.8	3.5	3.2	0.1	<0.1	<0.1	<0.1	<0.1
Serbia	–	6.0	5.9	5.7	5.7	–	0.5	0.5	0.5	0.5
Turkey	<2.5	<2.5	<2.5	<2.5	<2.5	n.r.	n.r.	n.r.	n.r.	n.r.
EU-28	<2.5	<2.5	<2.5	<2.5	<2.5	n.r.	n.r.	n.r.	n.r.	n.r.
EFTA countries	<2.5	<2.5	<2.5	<2.5	<2.5	n.r.	n.r.	n.r.	n.r.	n.r.
EUROPE AND CENTRAL ASIA	**<2.5**	**<2.5**	**<2.5**	**<2.5**	**<2.5**	**n.r.**	**n.r.**	**n.r.**	**n.r.**	**n.r.**

NOTE: An entry of "n.r." means that data were not reported because the PoU estimates were below 2.5 percent. An entry of "n.a." means that estimates were not available.
SOURCE: FAO (2019).

2004–2006; and two, the persistence of the PoU in recent years. On the first, the data show that the PoU fell markedly in several countries over a short period since 2004–2006. For example, in Kazakhstan it fell from 5.9 percent in 2004–2006 to 2.7 percent in six years and then to below 2.5 percent in the next four years. In Uzbekistan, the PoU halved in just 10 years (2004–2006 to 2014–2016). Likewise, notable reductions were made by Albania and Armenia.

The second feature – the persistence of the PoU in recent years –has been a matter of concern globally and in all regions of the world. In the past two to three years, the latest estimates of the PoU increasingly have shown that the rate of reduction of the PoU has been slowing and even reversing, thus risking the attainment of the 2030 target of eliminating extreme hunger altogether. In the case of the ECA region, the data in Table 2 for 2014–2016 to 2016–2018 show

the persistence of the PoU for eight of the nine countries with data, the only exception being North Macedonia. Indeed, even worse, there has been a slight increase in the PoU in four countries (Armenia, Kyrgyzstan, Turkmenistan and Ukraine).

Regarding the number of people undernourished, the subregional totals for the latest three periods show persistence at half a million people for the Caucasus and small increases for Central Asia. For other subregions, the numbers of undernourished people are not estimated, as the PoU was below the 2.5-percent threshold.

What could be the underlying and proximate factors for the persistence, and even increases, in the PoU and in the number of undernourished? Identification of such factors and analyses of the linkages have been the focus of thematic studies in the *Regional Overview of Food Security and Nutrition in Europe and Central Asia* as well as in the global reports published by FAO (*The State of Food Security and Nutrition in the World*). The global report assessed the role of conflicts in its 2017 edition, climatic shocks in 2018, and, in 2019, findings on the third main driver for food insecurity and malnutrition related to economic slowdowns and fluctuations. The 2019 report explains that most countries (84 percent) that experienced a rise in undernourishment between 2011 and 2017 simultaneously suffered an economic slowdown or downturn. The majority of these are middle-income countries. In the Europe and Central Asia region, most of the countries that are not in the European Union or the EFTA also are middle-income. The report refers to recent trends outlining darker global outlooks for upcoming years due to increasing trade tensions and rising global borrowing costs (FAO, IFAD, UNICEF, WFP and WHO, 2019). The regional report for Europe and Central Asia reviews key issues relevant for the region. The 2018 edition made an in-depth assessment of labour migration, remittances, food insecurity and rural distress. In previous years, the report appraised the region's exposure to environmental degradation and climate change and the trends and features observed related to the triple burden of malnutrition.

Prevalence of food insecurity based on experience

A second indicator adopted for the 2030 Agenda for Sustainable Development for monitoring progress on food insecurity is the prevalence of moderate or severe food insecurity in the population (Indicator 2.1.2), which is based on the Food Insecurity Experience Scale (FIES). It establishes a metric for food insecurity based on people's direct responses to questions regarding their access to food of adequate quality and quantity.

The FIES Survey Module is composed of eight questions with simple dichotomous responses ("yes" or "no"). Respondents are asked questions such as whether anytime during a certain reference period they have worried about their ability to obtain enough food, whether their household has run out of food, or whether they have been forced to compromise the quality or quantity of the food they have eaten due to limited availability of money or other resources (Box 1). Based on their responses, two prevalence indicators are derived using two appropriately selected thresholds: the prevalence of moderate or severe food insecurity ($FI_{mod+sev}$) and the prevalence of severe food insecurity (FI_{sev}). The $FI_{mod+sev}$ indicator refers to combined estimates of both the percentage of the population in a situation of moderate food insecurity and the percentage with severe food insecurity.

Even though the FIES-based measures and the PoU are based on different data and approaches, the levels and trends in FI_{sev} should be consistent with those from the PoU. This is not surprising, given that a condition of severe food insecurity and the resulting reduction in the quantity of food consumed might lead to the inability to cover dietary energy needs (in other words, the condition of "undernourishment" as defined in the PoU methodology). Indeed, for the global sample of countries, the two indicators showed a consistent picture for most countries, with some outliers to this pattern (FAO, IFAD, UNICEF, WFP and WHO, 2018). Where the differences are large, this could be for a number of reasons, such as dated food balance data and the measure of inequality used to compute the PoU, or

BOX 1

SEVERITY OF FOOD INSECURITY ACCORDING TO FIES – THE EIGHT QUESTIONS OF THE FIES SURVEY

Experience-based food security measurement scales have been in use for many years in a number of countries. FAO launched the Voices of the Hungry Project in 2012 with the objective of ensuring truly comparable classifications to establish a global reference scale for severe and moderate food insecurity indicator. The eight items (questions) that compose the FIES survey module are chosen to represent a range of experiences, common to many cultures, to gauge the level of food insecurity, from mild to severe. The overall question asked is this:

During the last 12 months, was there a time when, because of lack of money or other resources:
1. You were worried you would not have enough food to eat?
2. You were unable to eat healthy and nutritious food?
3. You ate only a few kinds of foods?
4. You had to skip a meal?
5. You ate less than you thought you should?
6. Your household ran out of food?
7. You were hungry but did not eat?
8. You went without eating for a whole day?

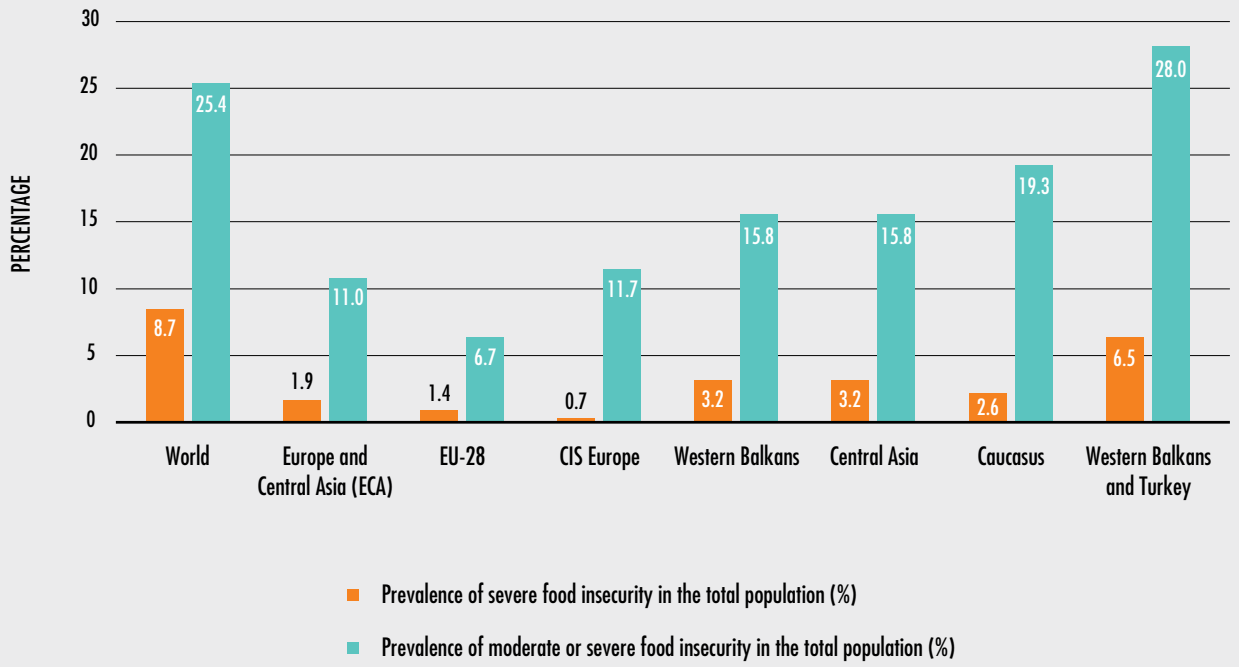
The answers to the above questions are classified in the following categories: worried, healthy, few foods, skipped meals, ate less, ran out of food, and hungry whole day. The set of eight questions compose a scale that covers a range of severity of food insecurity:

SOURCE: FAO, IFAD, UNICEF, WFP and WHO (2019).

errors in the FIES survey. Higher prevalence based on FIES than that shown by the PoU could also reflect short-term fluctuations in countries' economic and social conditions that impact economic access but that are not as yet reflected in the food balance data. FAO has been reviewing such cases to determine the source for the discrepancies.

The new estimates for 2016–2018 show that 1.9 percent of the total population in the ECA region is exposed to severe food insecurity (FI_{sev}). This is much lower than the 8.7-percent world average, and it is lower than in the Asia, Latin America and Near East regions, where the prevalence is in the 5–10 percent range (and about 25 percent in Africa). The estimates for the ECA subregions vary between 0.7 percent for European CIS countries to 6.5 percent for the Western Balkans and Turkey (3.2 percent in the Western Balkans), as shown in Figure 1. Also shown in Figure 1 are the prevalence rates of $FI_{mod+sev}$, discussed in more detail below.

FIGURE 1
PREVALENCE OF MODERATE OR SEVERE FOOD INSECURITY IN THE TOTAL POPULATION (%) IN EUROPE AND CENTRAL ASIA BY SUBREGION, 2016–2018 AVERAGE



SOURCE: FAO (2019).

The 1.9 percent prevalence for the ECA region translates to 17.7 million people exposed to severe food insecurity (FI_{sev}) – 6.4 million in the Western Balkans and Turkey, 6.9 million in the EU-28, 2.3 million in Central Asia, and smaller numbers in the Caucasus and European CIS.

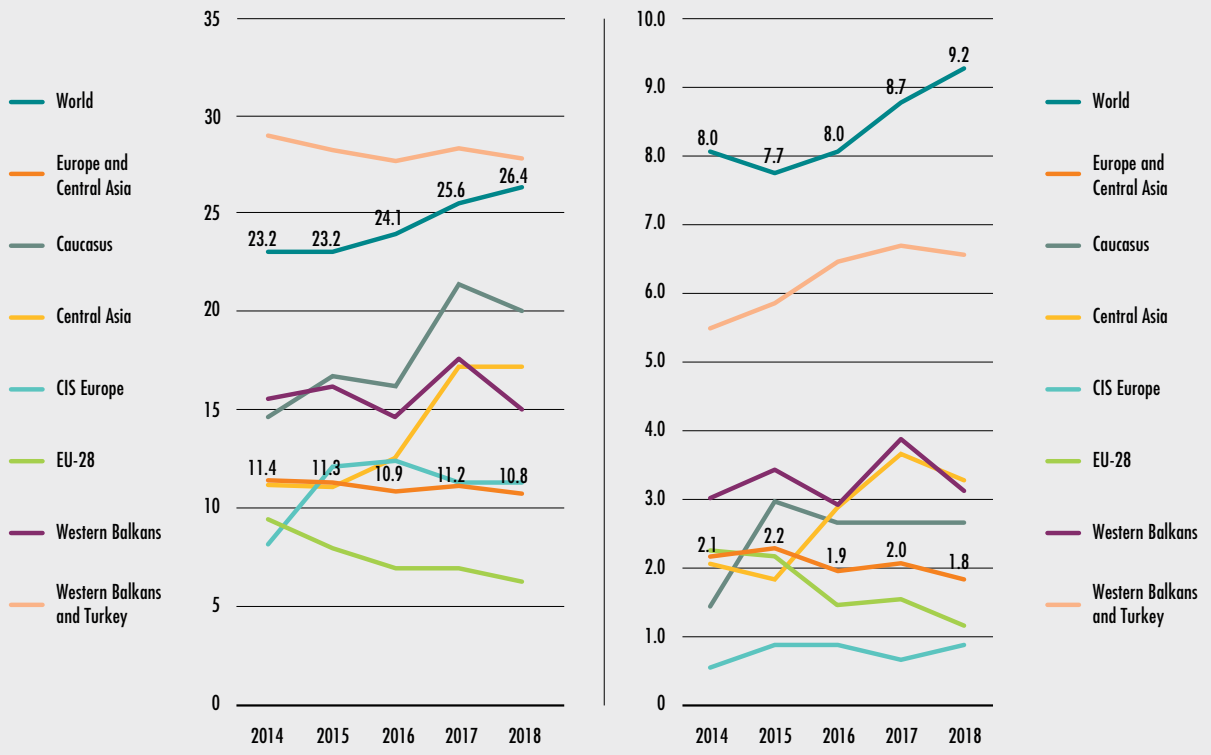
Country-level prevalence rates of FI_{sev} are published as three-year averages to reduce errors, and estimates are available for 26 EU-28 and EFTA countries and for 10 of the 18 countries from the other four ECA subregions. The results for the latter for the period 2016–2018 show relatively high prevalence rates of 4 percent or more in five countries: 11.1 percent in Albania, 9.6 percent in Tajikistan, 7.6 percent in Georgia, 5.1 percent in Kyrgyzstan and 4 percent in Armenia. For EU-28 and EFTA, of the 26 countries for which estimates are available, FI_{sev} is lower than 2 percent in 20 countries and between 2 and 4 percent in the other six – Romania (4 percent), Belgium (3.6 percent), Portugal (3.2 percent), Greece and Ireland (each 2.8 percent), and Finland (2 percent). These estimates show that food insecurity at the severe level is hardly an issue in the EU-28 and EFTA subregions but is still an issue of concern for six or seven countries in the other four

subregions. What factors explain the relatively high prevalence in some countries is difficult to pin down and will have to wait until the data are analysed using multiple regression or similar techniques. But it is clear that 5 percent to 7 percent of the population does experience chronic food insecurity and that there are deprivation, poverty and social and economic inequalities as well as periodic shocks from such things as weather, conflicts, remittance incomes and economic crises.

As said above, both the FI_{sev} and PoU seek to measure extreme insecurity or hunger, and so results from the two estimates should be similar. This was the case for the global sample of countries, and it also is the case for most of the ECA region. In the 14 countries for which data are available outside the EU-28 and EFTA subregions, the simple average FI_{sev} for the seven countries with a PoU over 2.5 percent is 4.7 percent, similar to the 5.9-percent simple average for the PoU. The simple average FI_{sev} for the other seven countries – those with a PoU below 2.5 percent – is 2 percent, similar to what a PoU of less than 2.5 percent would indicate. For the 26 EU-28 and EFTA countries, for which estimates are available, the weighted average value of FI_{sev} is 1.4 percent, consistent with the PoU of less than 2.5 percent that exists in most countries.

Given the nature of the concerns regarding food insecurity in the ECA region – notably, the experience or fear of having to compromise on quality and variety of food – $FI_{mod+sev}$[3] is

FIGURE 2
PREVALENCE OF SEVERE (RIGHT) AND MODERATE OR SEVERE (LEFT) FOOD INSECURITY, BASED ON THE FOOD INSECURITY EXPERIENCE SCALE (%), 2014–2018, ECA SUBREGIONS



SOURCE: FAO (2019).

a much more relevant indicator than FI_{sev} for assessing the prevailing food security issues. In contrast to the very low levels of FI_{sev} for this region, $FI_{mod+sev}$ is quite high, at 11 percent, on average, for the ECA region (Figure 2). It shows that in 2016–2018, prevalence ranged between 6.7 percent in EU-28 to 28 percent in the Western Balkans and Turkey (approximately 15.8 percent in the Western Balkans), with the other three subregions approximately between 11 percent and 19.3 percent in the triennium 2016–2018.

At the country level, the average prevalence of $FI_{mod+sev}$ during 2016–2018 was over 10 percent in most of the 14 countries in the four ECA regions outside the EU-28 and EFTA. Four of the former nine countries had much higher prevalence rates of 30 percent or above – Albania (38.6 percent), Armenia (34.5 percent), Georgia (34.3 percent) and Tajikistan (30 percent).

The combination of moderate and severe levels of food insecurity brings the estimated $FI_{mod+sev}$ (SDG Indicator 2.1.2) to 11 percent of the regional population, amounting to a total of more than 100 million people in the ECA region. This is much lower than the world average of 25.4 percent, but it is still challenging to the principles of the 2030 Agenda.

The prevalence of $FI_{mod+sev}$ during 2016–2018 shows that even in high-income countries, sizable portions of the population in European Union Member States have difficulty regularly accessing nutritious and sufficient food.

Figure 2 presents the changes in the prevalence of severe food insecurity and of moderate or severe food insecurity from 2014 to 2018 by subregion in Europe and Central Asia. Note also that the prevalence of $FI_{mod+sev}$ in the ECA region as a whole has persisted at around 11 percent since 2014. The trend of $FI_{mod+sev}$ is negative for the EU-28 and slightly so for European CIS, but it is rapidly rising in the Caucasus and Central Asia and persistent at a very high level in the Western Balkans and Turkey.

The trend of FI_{sev} only shows that there was a trend down, on average, in the ECA region, mainly as a result of the declining rate in the EU-28. In the Central Asia subregion, there has been a rising trend during the past several years.

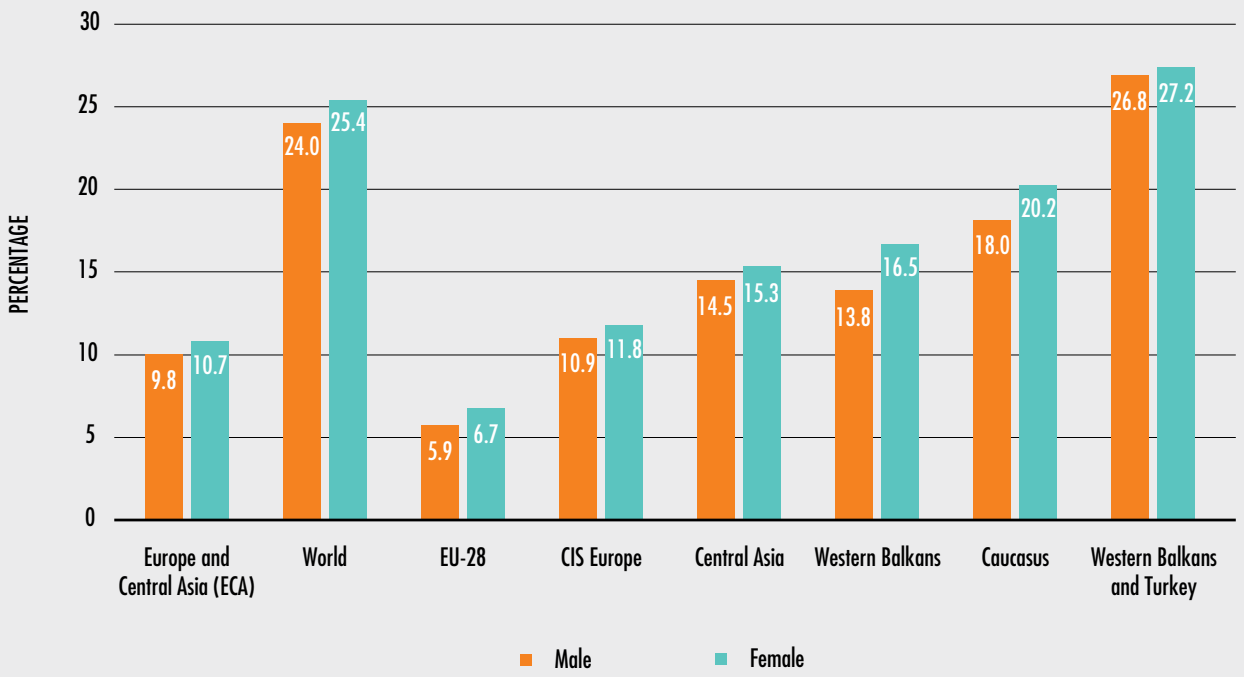
Gender differences in food insecurity

The FIES data collected by FAO through the World Gallup Poll is at the individual level (though some estimates based on data from national surveys also could be at the household level) and so provides an ability to disaggregate the prevalence of food insecurity by sex. Note that these sex-disaggregated estimates for food insecurity are available for the adult (15 years old and older) population only. Globally, the prevalence of food insecurity as experienced by females is slightly higher than that felt by males, but the difference is relatively small. Figure 3 presents the prevalence of moderate or severe food insecurity for the main ECA subregions for the 2016–2018 period. The data show that females experience food insecurity at severe or moderate levels more than males across all subregions in the ECA region. Overall, sex-disaggregated estimates across the region show that moderate or severe food insecurity is experienced by females slightly more than by males (10.7 percent of women experience moderate or severe food insecurity, compared to 9.8 percent of men). In particular, the gap exceeds 2 percentage points in the Caucasus and the Western Balkans. The difference may signal societal gender inequalities that are reflected in access to food.[4] Globally, the difference is relatively higher only in Latin America and the Near East.

Country-level data are available for 23 countries of the EU-28 and EFTA subregions and for ten countries of the other four subregions.[5] In the former group, in 2016–2018, the prevalence of $FI_{mod+sev}$ among females was higher than among males for 16 countries – and by 3 percentage points or more in ten cases. In the latter subregions, of the ten countries, the prevalence among females was higher for eight countries, and by 3 percentage points or more in two cases (Serbia and Montenegro). The data for the combined sample of 33 countries do not show any correlation between the gaps in prevalence and the countries' per-capita gross domestic product.

Analysis based on a pooled global sample of countries over multiple years shows that a person's area of residence, poverty status and education level are significant determinants of the difference in food insecurity levels between

FIGURE 3
PREVALENCE OF MODERATE OR SEVERE FOOD INSECURITY AMONG ADULTS, BY GENDER, IN THE ECA REGION, 2016–2018 AVERAGE (%)



SOURCE: FAO (2019).

men and women (FAO, IFAD, UNICEF, WFP and WHO, 2019). Moreover, globally, the gender gap in food insecurity appears to be larger among the less-educated, poorer strata of the population and in urban (large city and suburb) settings. Globally, the prevalence of food insecurity is slightly higher for women (25.4 percent) than for men (24.0 percent), and the chances of being food insecure are still approximately 10 percent higher for women than for men, after controlling for the area of residence (rural or small town vs. large city or suburb), poverty status and the education level of respondents. This means that other – possibly subtler – forms of discrimination make access to food more difficult for women, even when they have the same income and education levels as men and live in similar areas.

FAO studies (FAO, 2019c) indicate that rural women disproportionately experience poverty and exclusion and face multiple forms discrimination (CEDAW, 2016, p. 3). Despite that virtually all nations have undertaken international commitments to eliminate discrimination against women, the rights and needs of rural women "remain insufficiently addressed or ignored in laws, national and local policies, budgets, and investment strategies at all levels" (CEDAW, 2016, p. 3). ■

1.2 MALNUTRITION TRENDS

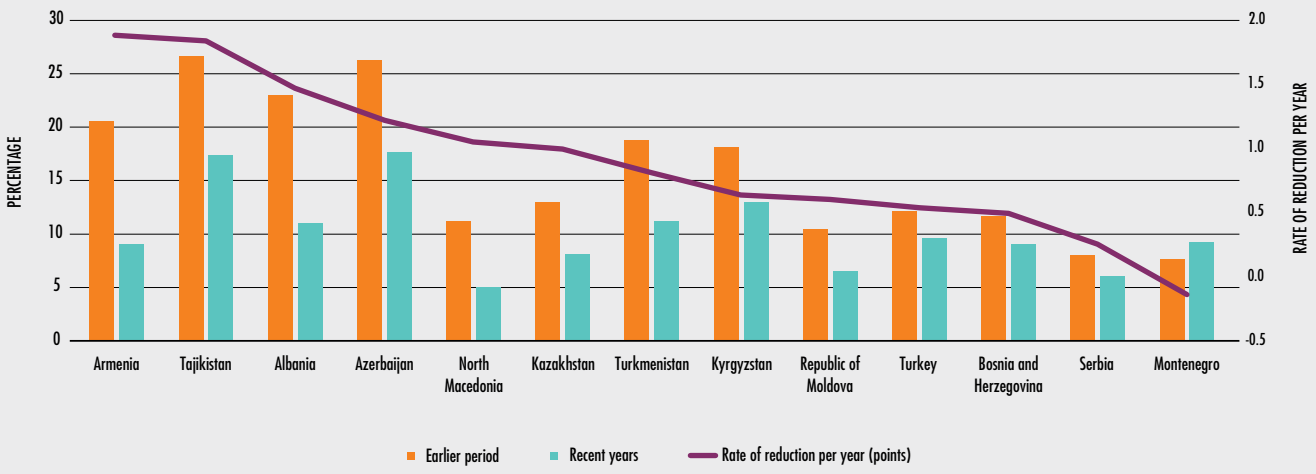
Target 2.2 of Sustainable Development Goal 2 is to, by 2030, "end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons." Three key indicators relate to malnutrition among children younger than five years of age – stunting (Indicator 2.2.1) and wasting and overweight (Indicator 2.2.2). This subsection reviews these three indicators, as well as three others listed in Table 1 that are among the global nutrition targets established by the 2012 World Health Assembly – namely, anaemia among women of reproductive age, low birth weight, and exclusive breastfeeding during the first six months of life – and adult obesity. Together, these indicators highlight the multiple burdens of malnutrition facing this region.

Stunting among children younger than five years of age

Globally, the prevalence of stunting in 2018 was estimated to be 21.9 percent, down from 32.5 percent in 2000, while the number of stunted children fell from 198 million in 2000 to 149 million in 2018 (UNICEF, WHO and WB, 2019). While no estimates were made for subregions of Europe, the estimate for Central Asia was 28 percent in 2000 and 10.9 percent in 2018.

Figure 4 shows the prevalence of stunting for selected ECA countries for two periods, the most recent year available (between 2011 and 2017) and an earlier period (between five and nine years back), as well as the annual rates of reduction between two years. The data for the recent period show that prevalence was low[6] (between 2.5 percent and 10 percent) for eight countries (Armenia, Bosnia and Herzegovina, Kazakhstan, Montenegro, North Macedonia, Republic of Moldova, Serbia, and Turkey) and medium (10–20 percent) for the other

FIGURE 4
CHANGE OVER TIME IN THE PREVALENCE OF STUNTING AMONG CHILDREN YOUNGER THAN FIVE YEARS OF AGE, EARLIER PERIOD (2005–2012) AND RECENT YEARS (2013–2018), IN THE SELECTED COUNTRIES



NOTES: For the earlier period, the latest data available from 2005 to 2012 are used; and for the recent years, the latest data available from 2013 to 2018 are used. The rate of change is calculated by finding the difference in prevalence between the two years and dividing by the number of years in between. For Tajikistan, for example, this is 1.9 points per year (difference between 26.8 percent and 17.5 percent, divided by 5 for the years between). The prevalence of stunting is given in percent, while the rate of change is in percentage points.
SOURCE: Prevalence data from UNICEF/WHO/World Bank Joint Child Malnutrition Estimates, May 2019 update.

five (Albania, Azerbaijan, Kyrgyzstan, Tajikistan, and Turkmenistan). No countries were in the high category (20–30 percent) or the very high category (≥30 percent). Thus, most countries in the Western Balkans and Turkey subregion have low prevalence, while most in the Central Asia subregion have relatively higher prevalence.

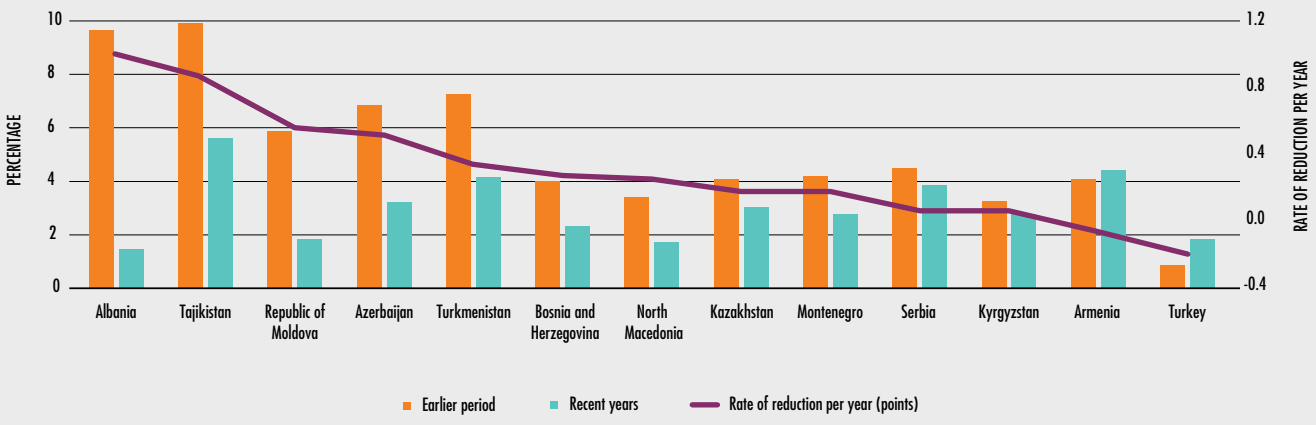
The prevalence of stunting fell between the periods in all countries but one (Montenegro) of the 13 countries with data. Reduction rates vary. The fastest reductions (about 1.9 points per year) were for Armenia and Tajikistan, followed by Albania, Azerbaijan, North Macedonia and Kazakhstan (between one and 1.5 points per year). As a result, the threshold for Armenia changed from high to low in just six years. The data for the 13 countries show that increases in per-capita income are negatively correlated with reductions in prevalence, though the correlation is low. This indicates that other immediate, underlying and basic factors also played important roles in reducing prevalence between the two periods. For example, six countries have higher reduction rates in stunting.

Wasting among children younger than five years of age

The prevalence of wasting at the global level in 2018 is estimated to be 7.3 percent. In the Europe and Central Asia region, the prevalence is generally low relative to the rates in many other regions of the world. Figure 5 shows that among the 13 countries for which data were available, prevalence in recent years exceeded 5 percent for only one country. Using prevalence thresholds stated earlier,6 prevalence was considered very low in five countries and low in seven, with only Tajikistan falling in the medium category (at 5.6 percent, just above the 5-percent cut-off).

Between the periods, which were between five and nine years apart, prevalence fell in 11 of the 13 countries, with large reductions for Albania, Tajikistan, Republic of Moldova and Azerbaijan, and with some increases for Turkey and Armenia. There are other important factors driving the reductions in wasting. FAO's 2018 global report The State of Food Security and Nutrition in the

FIGURE 5
PREVALENCE OF WASTING AMONG CHILDREN YOUNGER THAN FIVE YEARS OF AGE, EARLIER PERIOD (2005–2012) AND RECENT YEARS (2013–2018), IN SELECTED COUNTRIES OF THE ECA REGION



NOTES: For the earlier period, the latest data available from 2005 to 2012 are used; and for the recent years, the latest data available from 2013 to 2018 are used. The rate of change is calculated by finding the difference in prevalence between the two years and dividing by the number of years in between. For Azerbaijan, for example, this is 0.53 points per year (difference between 6.8 percent and 3.1 percent, divided by 7 for the years between). The prevalence of wasting is given in percent, while the rate of change is in percentage points.
SOURCE: Prevalence data from UNICEF/WHO/World Bank Joint Child Malnutrition Estimates, May 2019 update.

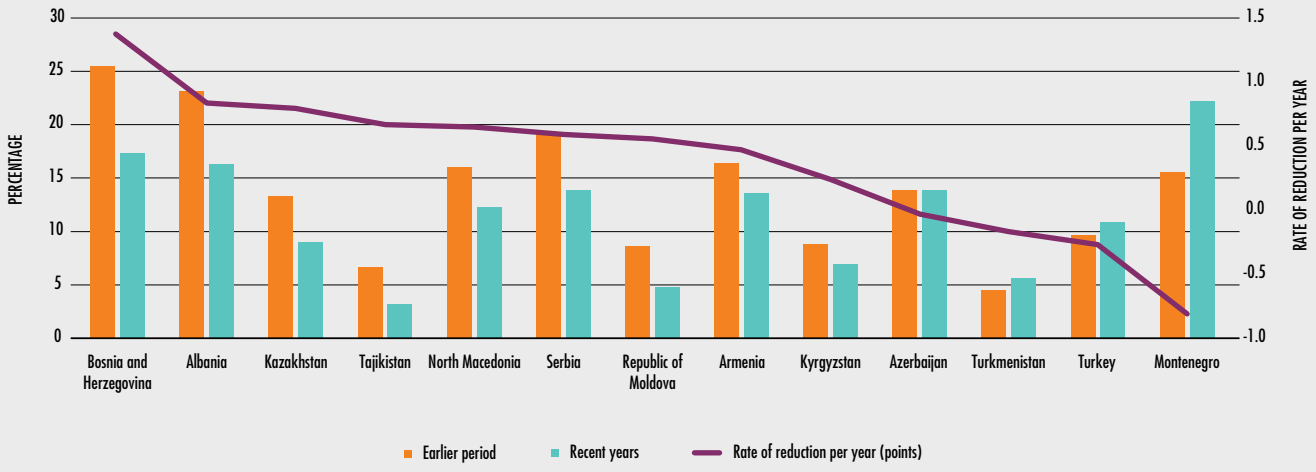
World presents a deeper exploration on wasting, analysing trends and discussing underlying drivers and prevention measures (FAO, IFAD, UNICEF, WFP and WHO, 2018). For ECA, based on data for the 13 countries in which it was available, there was no correlation between increases in per-capita income and reductions in prevalence between the two periods. Aside from the small sample, this could be due to small changes in prevalence for most countries, because prevalence was already low in the first period. This also could be because at these fairly low levels of prevalence, there are other important factors driving further reductions in wasting.

Overweight among children younger than five years of age

According to the 2019 global estimates, the prevalence of overweight among children has been rising in almost all subregions of the world, from 4.9 percent globally in 2000 to 5.9 percent (40 million children) in 2018. For the ECA region, prevalence data are available for 13 countries (Figure 6). The data show that, on the whole, prevalence is generally on the higher side relative to the global average levels. Based on prevalence categories, in recent years three countries fall in the very high (≥ 15 percent) category (Albania, Bosnia and Herzegovina and Montenegro) and an additional five in the high (10 to < 15 percent) category (Armenia, Azerbaijan, North Macedonia, Serbia and Turkey). Thus, prevalence is generally higher in the Western Balkans and Turkey subregion. Of the rest of the countries, three in Central Asia fall in the medium (5 to < 10 percent) category, while Republic of Moldova and Tajikistan are in the low (2.5 to < 5 percent) category.

A scatter plot of prevalence and per-capita income, with 26 data points covering both periods, shows an interesting relationship: Prevalence rises strongly with per-capita income up to about USD 12 000 (correlation of 0.70) but tends to

FIGURE 6
PREVALENCE OF OVERWEIGHT AMONG CHILDREN YOUNGER THAN FIVE YEARS OF AGE, EARLIER PERIOD (2005–2012) AND RECENT YEARS (2013–2018), IN SELECTED COUNTRIES OF THE ECA REGION



NOTES: For the earlier period, the latest data available from 2005 to 2012 are used; and for the recent years, the latest data available from 2013 to 2018 are used. The rate of change is calculated by finding the difference in prevalence between the two years and dividing by the number of years in between. For Serbia, for example, this is 0.60 points per year (difference between 19 percent and 14 percent, divided by 9 for the years between). The prevalence of overweight is given in percent, while the rate of change is in percentage points.
SOURCE: Prevalence data from UNICEF/WHO/World Bank Joint Child Malnutrition Estimates, May 2019 update.

fall with income beyond that level. The simple average value of prevalence was 7 percent for income up to USD 5 000, 17 percent for income between USD 5 000 and USD 10 000, 15 percent for income between USD 10 000 and USD 15 000, and 12 percent for income above USD 15 000. This pattern suggests that other factors – such as education, awareness, living conditions and dietary diversity – start to play significant roles when income crosses some higher threshold.

Prevalence fell in nine of the 13 countries, and by over 0.5 percentage reduction per year in eight. Reduction rates were particularly rapid for Bosnia and Herzegovina (1,4 percent per year), Albania (0.9 percent), Kazakhstan (0.8 percent per year), and Tajikistan (0.7 percent per year). However, prevalence also rose in four countries, but only significantly in Montenegro (by 0.8 percent per year). Case studies in some of these countries in which the prevalence changed markedly would be needed to identify the key drivers of change.

The data also show that while prevalence is modestly correlated with per-capita income, the reduction rates between the periods were negatively correlated with changes in income (correlation of -0.45) – that is, the larger the income change, the lower the rate of reduction. This indicates the role of other drivers of change, such as diversity and quality of diets, food composition, consumer choices and preferences, sedentary lifestyles and others,[7] as analysed in previous global and regional reports on food security and nutrition.

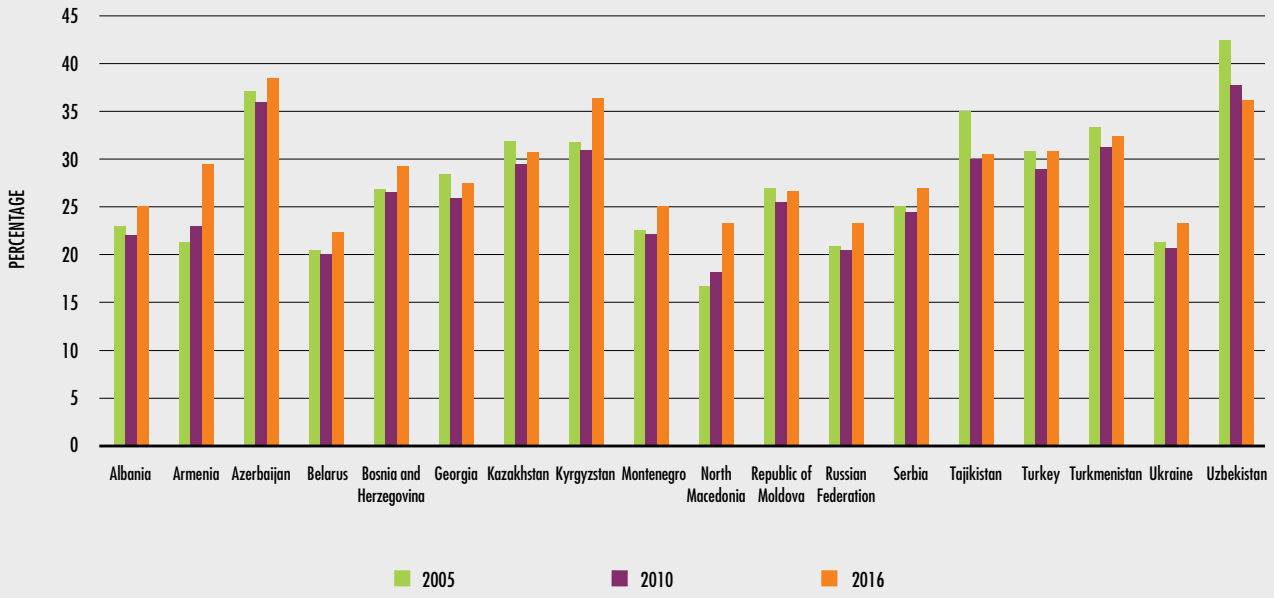
Anaemia among women of reproductive age

The most common cause of anaemia worldwide is iron deficiency, resulting from a prolonged negative iron balance. An estimated 50 percent of anaemia in women worldwide is due to iron deficiency. Globally, the prevalence of anaemia among women of reproductive age has risen incrementally, from 30.3 percent in 2012 to 32.8 percent in 2016, and, unlike other nutrition targets, no country is currently on track to meet the World Health Assembly 2030 anaemia target of a 50-percent reduction (FAO, IFAD, UNICEF, WFP and WHO, 2018).

The prevalence of anaemia in 2016 varied significantly across the ECA subregions: 34.4 percent in the Caucasus, 33.8 percent in Central Asia, 30.2 percent in the Western Balkans and Turkey, 23.4 percent in European CIS, 18.7 percent in EU-28 and 17.2 percent in EFTA (FAO, 2018a). Moreover, the data for the period 2000–2016 showed a tendency for the prevalence to rise in all six subregions, especially since around 2011. These uptrends were preceded by gradual reductions during 2000–2010 in some subregions and by no change in trends in others. This means that no subregion (or country, see below) is on track to meet the 2030 anaemia target of a 50-percent reduction between 2015 and 2030.

Figure 7 shows the prevalence of anaemia for several countries for the years 2000, 2005 and 2016. In 2016, no country had a prevalence at or above 40 percent, the level the World Health Organization considers to be of severe public health significance. Two were close, however – Azerbaijan at 38.5 percent and Uzbekistan at 36.2 percent. Of the 18 countries, the prevalence of anaemia was between 20 and 30 percent in 11 countries and between 30 and 40 percent in seven. As noted earlier, the prevalence was either steady or falling until around 2010, but it increased thereafter. There was a decline between 2005 and 2010 in 16 of the 18 countries (except for Armenia and North Macedonia), but the prevalence was higher in 2016 than in 2010 for 17 of the countries, the only exception being Uzbekistan. There also were notable increases in this short period in some countries – 6.2 percentage points in Armenia, 5.2 percentage points in Kyrgyzstan, 4.9 percentage points in North Macedonia and 3.1 percentage points in Albania. Inadequate intake levels of vitamin A, iron, vitamin D, folic acid, iodine and calcium are the primary causes of micronutrient deficiencies for all age groups in the ECA region (FAO, 2017a). Micronutrient deficiencies are often more prevalent in countries with poor dietary diversity. This could be the reason why prevalence is higher in lower-income countries in which the bulk of the dietary energy is sourced from foods such as cereals, roots and tubers. Some micronutrient deficiencies are also related to poor hygiene and sanitation.

FIGURE 7
PREVALENCE OF ANAEMIA IN WOMEN OF REPRODUCTIVE AGE IN SELECTED COUNTRIES OF THE ECA REGION



SOURCE: WHO/NCD-RisC and WHO Global Health Observatory Data Repository [cited March 2019].

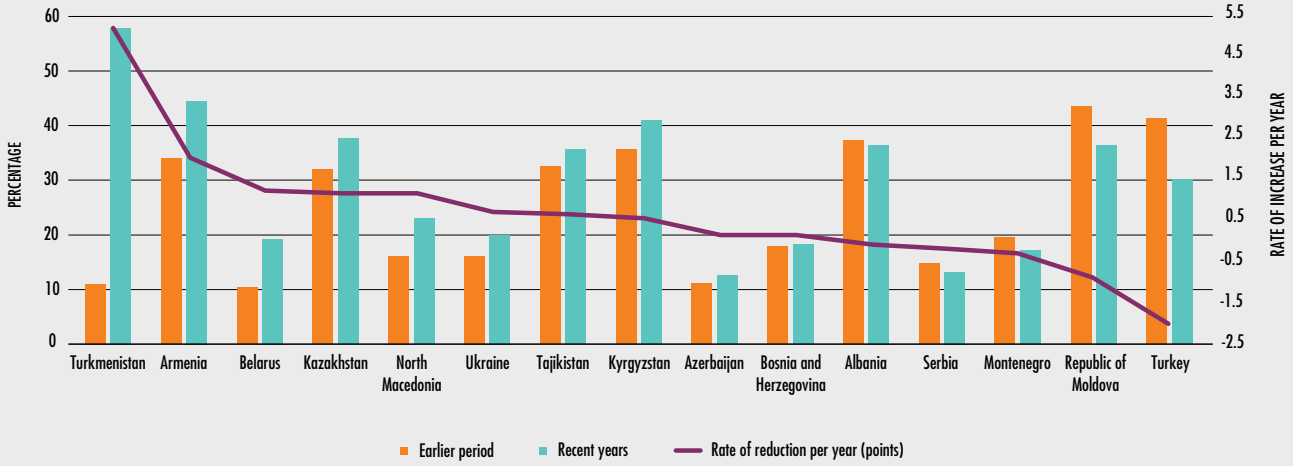
Exclusive breastfeeding during the first six months of life

Exclusive breastfeeding for the first six months of life, in which infants receive nothing but breast milk, is part of optimal breastfeeding practices. The prevalence of exclusive breastfeeding in Europe and Central Asia is estimated to be around 30 percent, well below the world average of 42 percent. The global target is at least 70 percent by 2030. Data for recent years are available for 15 countries in the four subregions other than the EU-28 and EFTA. Of the 15, prevalence is above 40 percent in three countries: Turkmenistan (58 percent), Armenia (44 percent) and Kyrgyzstan (41 percent). Another four countries are between 30 percent and 40 percent, one is between 20 percent and 30 percent, and six are below 20 percent (Figure 8).

Of the 15 countries for which data was available for more recent years (between 2011 and 2017), and a previous period five to nine years back, prevalence rose notably in five countries: Turkmenistan, by 47 percentage points in nine years (coverage from 11 to 58 percent); Armenia, by 10 percentage points in five years; Belarus, by 9 percentage points; North Macedonia, by 7 percentage points; and Kazakhstan, by 6 percentage points (32 to 38 percent). Prevalence worsened in four countries, but markedly so in Turkey and Republic of Moldova. For the rest, changes were marginal.

A comparison of the prevalence in earlier period and that in recent years and the rate of change per year are provided in Figure 8.

FIGURE 8
PREVALENCE OF INFANTS YOUNGER THAN SIX MONTHS WHO ARE FED ONLY BREAST MILK, EARLIER PERIOD (2005–2012) AND RECENT YEARS (2011–2018), IN SELECTED COUNTRIES OF THE ECA REGION



NOTES: For the earlier period, the latest data available from 2005 to 2012 are used; and for the recent years, the latest data available from 2013 to 2018 are used. The rate of change is calculated by finding the difference in prevalence between the two years and dividing by the number of years in between. For Armenia, for example, this is 2.1 points per year (difference between 34 percent and 44 percent, divided by 5 for the years between). No recent prevalence data are available for Georgia and Uzbekistan. The prevalence of exclusive breastfeeding is given in percent, while the rate of change is in percentage points.
SOURCE: UNICEF global database on Infant and Young Child Feeding, March 2019 update.

Of the 15 countries for which data were available, it would appear that just three – Armenia, North Macedonia and Turkmenistan – will meet the 2030 target, based on current progress. Two additional countries, Kazakhstan and Kyrgyzstan, have slightly higher increase rates and may come close. Thus, it would appear that meeting the 2030 World Health Assembly target of at least 70-percent exclusive breastfeeding remains a serious challenge for the other countries in Figure 8.

Prevalence of low birth weight

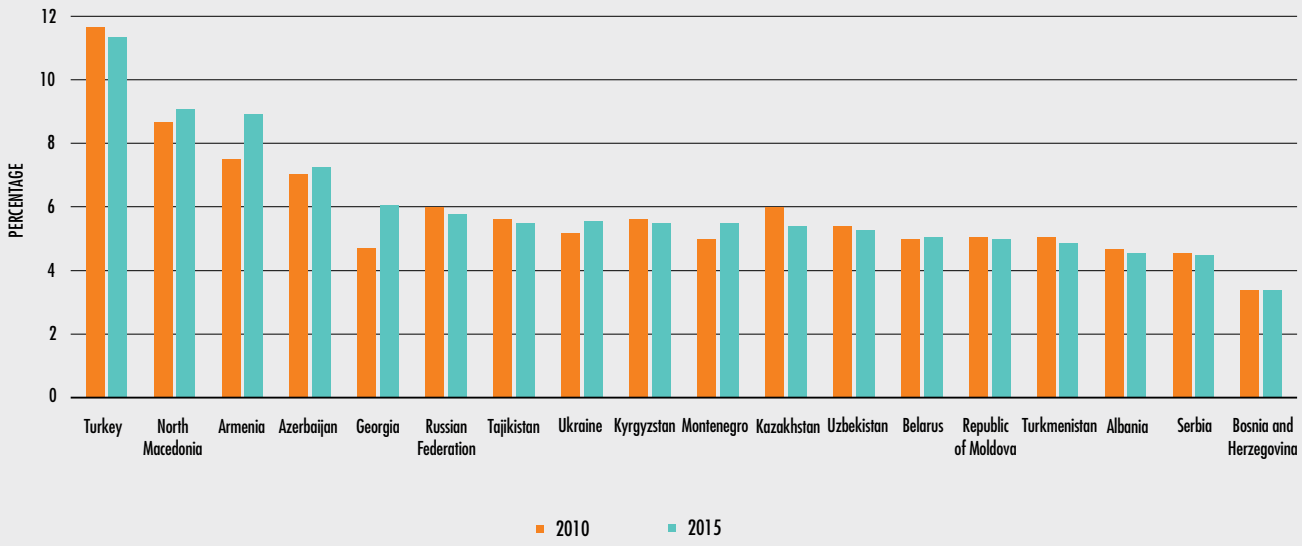
A newborn's weight at birth is a crucial indicator of maternal and foetal health and nutrition. Newborns with low birth weight have a higher risk of dying in the first 28 days of life (Christian *et al.*, 2013). Those who survive are more likely to suffer from stunted growth and lower cognitive abilities (Gu *et al.*, 2017). The consequences of low birth weight may continue into adulthood, increasing the risk of adult-onset chronic conditions such as obesity and diabetes (Jornayvaz *et al.*, 2016). Evidence from several middle- and high-income countries suggests that mothers from socially disadvantaged groups have a higher risk of giving birth to babies of low birth weight and being affected by anaemia (Gray *et al.*, 2014; Brotanek *et al.*, 2007).

Estimates of low birth weight, released for the first time in *The State of Food Security and Nutrition in the World 2019*, indicate that one in seven live births, or an estimated 14.6 percent of babies globally, were of low birth weight.

In the Europe and Central Asia (ECA) region, the prevalence of low birth weight is mostly below the global average. The data for 18 ECA countries outside the EU-28 and EFTA subregions show that the prevalence of low birth weight in 2015 was above 6 percent in five of the 18 countries – Turkey, North Macedonia, Armenia, Azerbaijan and Georgia (Figure 9), with the highest being Turkey (11.4 percent). The data also show that prevalence increased between 2010 and 2015 in seven countries, though the changes were small in most cases (two exceptions being Georgia and Armenia, with relatively marked increases). If current trends continue, the 2030 World Health Assembly target of a 30-percent reduction in the prevalence of low birth weight will not be met.

It is worth noting that some EU-28 countries have also higher prevalence of low birth weight, including Greece (8.7 percent), Italy (7.0 percent), Spain (8.3 percent) and Hungary (8.8 percent).

FIGURE 9
PREVALENCE OF LOW BIRTH WEIGHT IN SELECTED COUNTRIES OF THE ECA REGION, 2010 AND 2015



SOURCE: *UNICEF-WHO Low birthweight estimates: Levels and trends 2000–2015.* Geneva, WHO. https://apps.who.int/iris/bitstream/handle/10665/324783/WHO-NMH-NHD-19.21-eng.pdf?ua=1. UNICEF and WHO (2019).

Adult obesity

The prevalence of adult obesity in Europe as a whole, based on the World Health Organization (WHO) definition, was estimated to be 23.3 percent (roughly 200 million obese people) in 2016. The prevalence is up from 17.2 percent in 2000 and 20.8 percent in 2010. The implied annual increase was 0.36 percentage points during 2000–2010 and 0.42 percentage points during 2010–2016, indicating some acceleration in recent years. The WHO aggregate for Europe also shows that while obesity has been higher among females than among males, the gaps are closing, from 5 points in 2010 to 3.6 points in 2010 and 2.6 points in 2016, when 24.5 of females and 21.9 percent of males were considered obese. The rate of increase of obesity during 2010–2016 was much higher for males (0.50 percentage points per year) than for females (0.33 percentage points per year).

Overall, the data on adult obesity show three main trends:
1) The prevalence of obesity in 2016 increased from the prevalence in 2010 for all 50 countries of the Europe and Central Asia region for which data are available.
2) The prevalence in 2016 was higher than the world average of 13.2 percent in 49 of the 50 countries covered, with the exception being Tajikistan, at 12.6 percent.
3) The prevalence was particularly high – more than twice the world average level – in 14 countries: Andorra, Belarus, Bulgaria, Croatia, Czechia, Greece, Hungary, Ireland, Israel, Lithuania, Malta, Spain, Turkey and United Kingdom of Great Britain and Northern Ireland.

Table 3 shows prevalence and trend growth rates for selected countries in the Europe and Central Asia region. Among the 18 countries outside the EU-28 and EFTA, the prevalence of obesity in 2016 was below 20 percent for six and above 20 percent for 12 countries, with one country, Turkey, even breaching 30 percent. The prevalence increased in all 18 countries during both periods (2000–2010 and 2010–2016), by between 1 and 5 percentage points. Trend growth rates during the second period were higher than during the first period for 13 of the 18 countries, but the differences were small in most cases. Overall, the prevalence of obesity has been increasing, and there is some acceleration in the rate of increase. Table 3 also shows prevalence data for 11 countries that joined the European Union in 2004 or later. The overall pattern of change for these countries seems similar to those for the above 18 countries; the prevalence of obesity in these 11 countries

TABLE 3

PREVALENCE OF OBESITY AMONG ADULTS IN SELECTED COUNTRIES OF THE ECA REGION

		Obesity prevalence (%)			Trend growth rate (% per year)	
		2000	2010	2016	2000 to 2010	2010 to 2016
1	Albania	12.8	18.7	22.3	3.8	2.9
2	Armenia	14.4	17.5	20.9	1.9	3.1
3	Azerbaijan	11.8	15.9	19.9	2.9	3.8
4	Belarus	19.9	23.7	26.6	1.7	2.0
5	Bosnia and Herzegovina	13.5	17.0	19.4	2.3	2.3
6	Georgia	14.4	19.0	23.3	2.8	3.4
7	Kazakhstan	13.6	17.6	21.3	2.5	3.2
8	Kyrgyzstan	8.6	11.9	15.4	3.2	4.3
9	Montenegro	16.9	22.1	24.9	2.7	1.9
10	North Macedonia	17.7	21.1	23.9	1.7	2.1
11	Republic of Moldova	14.8	17.5	20.1	1.7	2.3
12	Russian Federation	20.5	23.2	25.7	1.2	1.8
13	Serbia	16.5	20.6	23.5	2.3	2.1
14	Tajikistan	6.6	9.5	12.6	3.7	4.7
15	Turkey	20.5	27.4	32.2	2.9	2.7
16	Turkmenistan	9.6	13.8	17.5	3.6	4.0
17	Ukraine	20.4	23.3	26.1	1.3	1.9
18	Uzbekistan	8.4	11.9	15.3	3.6	4.2
1	Bulgaria	20.0	24.3	27.4	2.0	2.0
2	Croatia	19.2	23.8	27.1	2.2	2.1
3	Czechia	22.1	25.8	28.5	1.5	1.7
4	Estonia	19.1	21.6	23.8	1.2	1.6
5	Hungary	20.8	25.3	28.6	2.0	2.1
6	Latvia	20.8	23.5	25.7	1.2	1.5
7	Lithuania	23.0	25.9	28.4	1.2	1.5
8	Poland	18.6	22.5	25.6	1.9	2.2
9	Romania	17.0	21.0	24.5	2.1	2.6
10	Slovakia	15.9	19.5	22.4	2.0	2.3
11	Slovenia	16.1	19.8	22.5	2.1	2.2

NOTE: The first 18 countries are those in the Europe and Central Asia region outside of the EU-28 and EFTA. The next 11 countries are ones that joined the European Union in 2004 or later. Trend growth rate is the slope (times 100) of the regression of obesity prevalence (in logs) on time trend (or, b*100 in ln Y = a + b * t).
SOURCE: Obesity prevalence data from WHO Global Health Observatory Data Repository [cited March 2019].

increased by around 1 to 3 percentage points during both periods, with some acceleration in growth rates.

The obesity data for the other 21 EU-28 and EFTA countries also were reviewed, though they are not shown in Table 3. These figures also show a prevalence of obesity between 20 percent and 30 percent in all countries. And, as above, the prevalence increased in all 21 countries during both periods. However, and in contrast to the above observations, trend growth rates during 2010–2016 were lower than during 2000–2010 for 19 of the 21 countries, though the differences were small. Interestingly, these observations also apply to four other high-income countries from other regions – Australia, Canada, New Zealand and the United States of America. Could it be that the ongoing increases in adult obesity begin to slow down when per-capita incomes cross a high threshold?

The relationships among poverty, overweight and obesity are not so clear and vary depending on the general income level of the country (FAO,

IFAD, UNICEF, WFP and WHO, 2019). In one study, Egger *et al.* (2012) examined the relationship between per-capita gross domestic product (GDP) and obesity, using a large sample of cross-sectional data from 175 countries. They found a close positive relationship between income and obesity at lower levels of income but that levelled off at higher levels. Moreover, in a subsample of wealthy countries (with a per-capita GDP of more than USD 30 000), those with lower income inequalities had lower average obesity prevalence, which means that the average income threshold itself would depend on income distribution within a country. A systematic review of obesity shows that the relationship between socio-economic status and obesity appears to be positive for both men and women in low-income countries and that people who are more affluent or who have higher educational attainment tend to be more likely to be obese (Dinsa *et al.*, 2012). While the evidence indicates that in middle- and high-income countries, overweight and obesity are linked to lower socio-economic status among women, no such association is observed among men (Newton, Braithwaite and Akinyemiju, 2017).

A further study will be needed to explore the drivers of the rising obesity for the two groups of countries. Furthermore, a more detailed analysis of those countries in which the trend growth rate has diminished more substantially is in order to determine good practices in reducing adult obesity. ■

1.3 THE MULTIPLE BURDENS OF FOOD INSECURITY AND MALNUTRITION AND THE OUTLOOK FOR MEETING THE 2030 GLOBAL TARGETS

Table 4 puts together prevalence estimates for 10 indicators discussed earlier for 18 countries of the four Europe and Central Asia subregions

TABLE 4
PREVALENCE OF MAIN FOOD SECURITY AND NUTRITION INDICATORS IN SELECTED COUNTRIES OF THE ECA REGION

		FIES								
	PoU	Severe	Mod+Sev	Stunting	Wasting	Child overweight	Low birth weight	Anaemia	Adult obesity	Exclusive breast feeding
Albania	6.2	11.1	38.6	11.3	1.6	16.4	4.6	25.3	22.3	36.5
Armenia	4.3	4.0	34.3	9.4	4.5	13.7	9.0	29.4	20.9	44.5
Azerbaijan	<2.5	-	-	17.8	3.2	14.1	7.3	38.5	19.9	12.1
Belarus	<2.5	-	-	-	-	-	5.1	22.6	26.6	19.0
Bosnia and Herzegovina	<2.5	1.1	9.2	8.9	2.3	17.4	3.4	29.4	19.4	18.2
Georgia	7.9	7.6	34.5	-	-	-	6.1	27.5	23.3	-
Kazakhstan	<2.5	1.9	9.3	8.0	3.1	9.3	5.4	30.7	21.3	37.8
Kyrgyzstan	7.1	5.1	23.9	12.9	2.8	7.0	5.5	36.2	15.4	40.9
Montenegro	<2.5	2.1	12.0	9.4	2.8	22.3	5.5	25.2	24.9	16.8
North Macedonia	3.2	3.2	13.2	4.9	1.8	12.4	9.1	23.3	23.9	23.0
Republic of Moldova	-	2.8	25.4	6.4	1.9	4.9	5.0	26.8	20.1	36.4
Russian Federation	<2.5	-	-	-	-	-	5.8	23.3	25.7	-
Serbia	5.7	1.6	11.7	6.0	3.9	13.9	4.5	27.2	23.5	12.8
Tajikistan	-	9.6	29.6	17.5	5.6	3.3	5.6	30.5	12.6	35.8
Turkey	<2.5	-	-	9.9	1.9	11.1	11.7	30.9	32.2	30.1
Turkmenistan	5.4	-	-	11.5	4.2	5.9	4.9	32.6	17.5	58.3
Ukraine	3.5	-	-	-	-	-	5.6	23.5	26.1	19.7
Uzbekistan	6.3	-	-	-	-	-	5.3	36.2	15.3	-

NOTE: All prevalence data shown here are already reviewed above. A hyphen ("-") indicates that data are not available.
SOURCE: FAO, UNICEF and WHO.

other than the European Union Member States (EU-28) and European Free Trade Association (EFTA) countries. The purpose is to highlight the multiple burdens of hunger and malnutrition.

Both the prevalence of stunting and of overweight in children younger than five years of age are relatively high for about half of the countries covered (Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Montenegro and Turkey). This is an indication of the presence of the double burden of malnutrition. Several of these countries also have high prevalence for the three indicators of food insecurity, most notably Albania, Kyrgyzstan and Tajikistan. The multiple burdens become apparent when these cases are related to the prevalence of anaemia, adult obesity and exclusive breastfeeding. Unlike with the indicators for food insecurity and wasting, most countries in Table 4 have relatively high levels of adult obesity and anaemia and poor levels of exclusive breastfeeding. For example, only three of the 14 countries with data have a prevalence of exclusive breastfeeding above the global average of 42 percent, while for anaemia, all 18 countries have a prevalence above the European Union average of 19 percent.

Given the current state of various forms of malnutrition and their recent trends, what are the prospects for reaching the targets set by the 2030 Agenda for Sustainable Development? Global Nutrition Reports track prospects for individual countries for a number of nutrition and health indicators. Table 5 summarizes this assessment for 18 countries of the four subregions other than the EU and EFTA based on the 2018 Global Nutrition Report (Development Initiatives, 2018). For the three child malnutrition indicators, assessments were unfortunately limited to only 6-8 of the 18 countries for lack of data to compute recent trends. The results show that, for stunting, four of the six countries assessed are on course (Armenia, Kazakhstan, Kyrgyzstan and Turkey) while no assessment was made of some with relatively high prevalence in recent years (Albania, Tajikistan, Turkmenistan and Georgia). For wasting, all eight countries assessed are on course to meet the 2030 target. For overweight, only three of the five assessed are on course (Armenia, Kazakhstan and Serbia) while the status of two others, Azerbaijan and Kyrgyzstan, were no progress or worsening.

TABLE 5
PROGRESS TOWARDS ACHIEVING VARIOUS MALNUTRITION TARGETS BY 2030

Indicators	Assessed status			
	On course	Off course but some progress	No progress or worsening	No data/not estimated
Stunting in children younger than five years of age	Armenia, Kazakhstan, Kyrgyzstan, Turkey	Serbia	Azerbaijan	No data for others
Wasting in children younger than five years of age	Armenia, Azerbaijan, Kazakhstan, Montenegro, Kyrgyzstan, Turkmenistan, Serbia, Turkey			No data for others
Overweight in children younger than five years of age	Armenia, Kazakhstan, Serbia		Azerbaijan, Kyrgyzstan	No data for others
Anaemia		Tajikistan, Uzbekistan	Other 16 countries	
Exclusive breastfeeding	Armenia	Kazakhstan, Tajikistan	Kyrgyzstan, Serbia	No data for others
Adult obesity			All 18	

NOTE: Assessment was limited to the 18 countries in Europe and Central Asia outside the EU-28 and EFTA.
SOURCE: Based on the Global Nutrition Report 2018 dataset on "country, region, and global nutrition profiles," made available at the GNR website: https://globalnutritionreport.org/nutrition-profiles/

For anaemia and adult obesity, assessments were made for all 18 countries and the status determined was no progress or worsening trend, except for two countries for anaemia, Tajikistan and Uzbekistan which are off course but with some progress. For exclusive breastfeeding, assessment was made for five countries of which only Armenia is on course.

Thus, overall, it is mainly for wasting that a large number of countries are on course to meet the 2030 target. For countries in the EU and EFTA subregions, no assessments were made for under-five indicators and exclusive breastfeeding for lack of data (or could be because of very low prevalence for the former three indicators). In the case of anaemia and adult obesity, the assessment finds "no progress or worsening" for all 30 countries assessed. These rather disappointing results for this region also mirror those reported in the *2018 Global Nutrition Report* from other regions. Globally, it was found that of the 194 countries assessed, 24 were on track for stunting, 37 for wasting, 38 for child overweight, 31 for exclusive breastfeeding but none to achieve the adult obesity and anaemia targets.

Concluding remarks

The main points in the presentation in this part of the report may be summed up as follows:
1) On the prevalence of undernourishment (PoU), or chronic hunger, prevalence is found to be relatively low in most countries of this region, above five percent for seven countries only. While the PoU rates are low, their rates of decline have virtually halted in recent years and even slightly reversed in several countries, thus posing risks for the attainment of the 2030 goal of Zero Hunger. In the Caucasus and Central Asia, where more countries have higher prevalence of undernourishment, the rates have remained persistent during the past five years (at roughly 3.3 percent in the Caucasus and 5.6 percent in Central Asia).
2) On experience-based measures of food insecurity, the new data show that the prevalence of severe food insecurity in the Europe and Central Asia (ECA) region as a whole was 1.9 percent in 2018, with notably higher rates since 2014 in the Western Balkans and Turkey. In contrast, the prevalence at the moderate or severe level can be not negligible – 11 percent in the region, 6.3 percent in EU-28, and between 3.5 percent and 27.9 percent in other subregions. Both the prevalence rate and the number of food insecure persons have persisted around these levels since 2014, showing no trend of improvement. Thus, a sizable number of the population in the ECA region continue to experience lack of access to safe and diversified foods of the right quantity, which the moderate or severe food insecurity indicator seeks to capture. The new indicator, at a moderate level of severity, reveals that even in high-income countries, a sizable portion of population have difficulty regularly accessing nutritious and sufficient food. More than 6 percent of the population in EU-28 suffer from food insecurity at the moderate or severe level, according to the data.
3) Many countries in the region continue to have relatively high prevalence of various forms of malnutrition, with a majority of countries experiencing multiple forms of malnutrition. Given recent rates of progress, many countries risk not meeting the 2030 targets.
4) Among various forms of malnutrition, overweight and obesity are significant health concerns in the ECA region. The prevalence of adult obesity is not only relatively high – between 20 percent and 30 percent in 2016 – but also has been rising. Also worrisome is that the rate of increase has been higher during recent years (2010–2016) than earlier (2000–2010), with the exception of 17 countries – mostly European Union Member States from Western Europe and the EFTA – where increases have marginally slowed in recent years. This could be an indication that the rate of increase in obesity tends to level off and decelerate when per-capita income crosses some high threshold, as increases in income are associated with higher education, rising awareness, better living conditions, more physical activity, and healthier diets. ■

VORONEZH, RUSSIAN FEDERATION
Central market offers customers a wide variety of fruit and vegetables.
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PART 2
FOOD SECURITY AND NUTRITION: DRIVERS AND DETERMINANTS

PART 2

FOOD SECURITY AND NUTRITION: DRIVERS AND DETERMINANTS

This part of the report presents analyses on two selected topics that are closely related to food security and nutrition: i) the persistence of inequalities among population subgroups in key food security and nutrition outcomes as well as in their drivers; and ii) public investment in agriculture. The former is closely linked to the 2030 Agenda for Sustainable Development's goal of ending hunger and all forms of hunger and malnutrition by "leaving no one behind." The latter is linked to one specific target of the 2030 Agenda, Target 2.a, to increase public investment in agriculture to enhance productive capacity. These are among the several immediate, underlying and structural determinants and drivers of food security and nutrition. ■

2.1 SOCIO-ECONOMIC INEQUALITIES IN FOOD SECURITY AND NUTRITION OUTCOMES

There has been an upsurge globally in interest on inequalities, both on outcomes such as poverty, food insecurity and malnutrition, and on their drivers. Several recent studies have documented these outcomes and sought to understand why inequalities across socio-economic groups seem to persist over time. Illustrative studies include Ahrens *et al.* (2014) on overweight and obesity among European children; Loring and Robertson (2014) on obesity inequities in Europe; Bredenkamp *et al.* (2014) on child undernutrition; Falkingham *et al.* (2012) on inequalities in child and maternal health outcomes in Europe and the Commonwealth of Independent States subregion; Perez-Escamilla *et al.* (2018) on nutrition disparities; Van de Poel *et al.* (2008) on socio-economic inequality in malnutrition in developing countries; and Yang *et al.* (2018) on socio-economic inequalities in anaemia. One reason for this increased interest is the principle set by the 2030 Agenda for Sustainable Development of leaving no one behind.

There is a consensus in the literature that economic and social inequalities slow down or impede the rate of progress on the reduction of poverty, food insecurity and malnutrition. Studies have shown that the rate of progress is faster in societies that are more equitable (reviewed in FAO, IFAD, UNICEF, WFP and WHO, 2019).

The part of the progress in poverty reduction as a result of high economic growth is offset by worsening inequality.

This could be the reason for faster reductions in food insecurity and malnutrition in the previous decades, even in countries with high inequalities. But when growth is slower, as it has been in recent years and is projected to be in the coming years, inequalities could virtually offset the impact of economic growth. That is the risk of not heeding the role of inequalities. Understanding inequalities in outcomes for specific population subgroups identified by various socio-economic factors is thus essential for designing appropriate policies and targeted interventions to reach the target groups. This understanding is also valuable for making progress in other Sustainable Development Goals, such as those on poverty, shared prosperity and health.

This subsection reviews, by way of illustrating the growing concerns with inequalities, two sets of data on the extent of inequalities in outcomes in the Europe and Central Asia (ECA) region. One is outcomes on the three

forms of malnutrition among children younger than five years of age (stunting, wasting and overweight) based on statistics generated through demographic and health surveys. The second dataset illustrates how equitable the growth of income in recent years has been, based on recently published data by the World Bank on shared prosperity, which compares the growth in income or consumption of the bottom 40 percent of the population relative to the growth of income of the entire population.[8] The section concludes with a brief synthesis of some recent studies on inequalities in the ECA region.

Inequalities in prevalence of three forms of malnutrition among children younger than five years of age

Most demographic and health surveys report prevalence estimates for malnutrition among children younger than five years of age by a number of socio-economic factors – notably, the sex of the child, the place of residence (rural or urban), wealth, maternal education, and the area of the country in which the child lives. These data are available in the Joint Nutrition Estimates from UNICEF, the World Health Organization and the World Bank (updated in May 2019) for 12 to 15 of the 18 countries of the four ECA subregions outside the EU-28 and EFTA.

Globally, differences in the prevalence of stunting and wasting ***by sex*** tend to be fairly small, with the prevalence somewhat higher among males than among females (FAO, IFAD, UNICEF, WFP and WHO, 2018). This is also the case for the four ECA subregions (outside the EU-28 and EFTA) that are covered in the analysis. The prevalence of stunting is higher among males in 11 of the 13 countries, but the gaps are small – over 2 percentage points in just two cases – while for wasting, the gaps are below 1 point in either direction for 10 of the 13 countries. While adult obesity has been higher among females than among males (for the WHO aggregate for Europe, as noted in Part I of this report), the prevalence of overweight among children younger than five years of age is higher among males in 11 of the 13 countries, with gaps of 2 percentage points or more in five cases. Compared to five to eight years back, the gaps have mostly narrowed, including for overweight.

By ***place of residence***, the prevalence of stunting and wasting is higher among rural children than among urban children in most cases, consistent with the fact the incidence of income poverty and food insecurity tend to be higher in rural areas (Black *et al.*, 2013; Fox and Heaton, 2012). However, the differences are fairly small in the ECA region in a large majority of cases, especially for wasting. For stunting, the gaps were higher by 5 percentage points in just three countries (Armenia, Azerbaijan and Turkey). Likewise, the gap was 2 percentage points or more only in Armenia, where the gap was 2.6 points. In contrast, the prevalence of overweight was higher among urban children in 11 of the 13 countries, with large gaps (5 points or more) in three countries: Bosnia and Herzegovina, Montenegro and North Macedonia. The data show the gaps in prevalence of all three forms of malnutrition mostly narrowing in recent years, and, even better, this has been taking place with faster reductions among rural children, including for overweight.

Maternal education is an important underlying determinant of child malnutrition for a number of reasons. More educated mothers tend to have a range of advantages for child nutrition and growth, such as better knowledge of child health and nutrition needs, higher incomes, greater say on household expenditure, better living conditions sanitation-wise, and so on (Ruiz *et al.*, 2016; Paciorek *et al.*, 2013).

Data on two categories of education are used here: "none and primary" and "secondary and higher." As expected, the prevalence is higher for the lower education subgroup in nine of the ten countries for which data are available for stunting and in eight countries for wasting (Table 6). The gaps are large in three countries for stunting (over 10 points for Kyrgyzstan and Serbia and 8.4 points for Armenia) and in two countries for wasting (Kazakhstan and Tajikistan). For overweight, in contrast, the prevalence is higher in higher-educated families in seven of the ten countries, with larger gaps of 5 points or more in Kazakhstan and North Macedonia, while in Armenia, the prevalence is much higher for the lower-educated subgroup.

The reasons that overweight should be higher in families with more-educated mothers deserves analysis for specific countries and communities, because both the contexts and the role of various confounding drivers may vary considerably.

For adult obesity, one well-documented observation is that in high-income countries, prevalence is often higher among low-income families because they tend to consume cheaper energy-dense foods with high levels of fat and/or sugar. In developing countries, overweight tends to be higher among higher-income families due to increasing intakes of energy-dense foods with high levels of fat and/or sugar (see Loring and Robertson, 2014, along with the discussion below).

TABLE 6

PREVALENCE OF THREE FORMS OF MALNUTRITION AMONG CHILDREN YOUNGER THAN FIVE YEARS OF AGE, BY LEVEL OF MATERNAL EDUCATION, IN SELECTED COUNTRIES OF THE ECA REGION

	Survey year	Stunting			Wasting			Overweight		
		None & primary	Secondary & higher	Difference	None & primary	Secondary & higher	Difference	None & primary	Secondary & higher	Difference
Albania	2017	13.1	9.6	3.5	1.9	1.3	0.5	15.8	17.3	-1.5
Armenia	2016	17.3	8.9	8.4	5.7	4.4	1.3	24.4	13.0	11.4
Bosnia and Herzegovina	2012	9.3	8.8	0.5	2.7	2.2	0.5	15.3	18.0	-2.8
Kazakhstan	2010	12.9	13.1	-0.2	7.2	4.0	3.2	6.3	13.5	-7.1
Kyrgyzstan	2014	26.5	12.9	13.6	1.3	3.0	-1.7	8.3	6.9	1.4
Montenegro	2013	13.1	8.7	4.4	4.1	2.5	1.6	22.8	22.2	0.5
North Macedonia	2011	6.2	4.1	2.0	2.8	1.2	1.6	8.5	15.0	-6.5
Serbia	2014	15.0	4.5	10.4	3.9	3.9	0.0	12.1	14.2	-2.1
Tajikistan	2012	27.8	26.6	1.2	12.8	9.6	3.2	4.7	6.9	-2.3
Turkey	2013	12.3	7.3	4.9	2.0	1.6	0.4	9.1	13.4	-4.3

NOTE: Surveys report maternal education levels in four categories (none, primary, secondary and higher) as well as for the two combined categories reported in the table.
SOURCE: UNICEF-WHO-World Bank's Joint Nutrition Estimates database, May 2019 update.

With so few data points for both periods (just five to six countries), a conclusion cannot be drawn with confidence. For this small sample, the outcomes are mixed for all three forms of malnutrition. For wasting, the gaps narrowed in three countries (Armenia, Montenegro and North Macedonia) but did not widen in the other two. For stunting, the gaps narrowed in three countries (Bosnia and Herzegovina, Montenegro and Turkey) and widened in Armenia and Serbia. For overweight, the gaps narrowed in Serbia and Turkey but widened in Armenia, Bosnia and Herzegovina and Montenegro. The good news is that, aside from these changes in gaps, the prevalence for both stunting and wasting fell in almost all countries for both categories of education. For overweight, however, the outcome was not as desired, with the prevalence rising

markedly among lower-educated groups in Armenia and Montenegro and among higher-educated groups in Montenegro and Turkey.

Table 7 shows prevalence estimates for children in families falling under the lowest and richest ***wealth quintiles*** (measured based on the possession of a variety of household assets). As expected, the prevalence is higher among Q1 (the lowest quintile) than among Q5 (the richest quintile) in 11 of the 13 countries for stunting and eight of the 13 for wasting. The absolute gaps between Q1 and Q5 were relatively high – about 8 percentage points or more in five countries for stunting. For wasting, the gaps were relatively high in few countries – for example, over 3 points in three countries (Armenia, Azerbaijan and North Macedonia) – but there also were two cases, Serbia and Tajikistan, in which the prevalence was notably higher among Q5 than among Q1. In contrast to the prevalence estimates for stunting and wasting, the prevalence of overweight was higher among Q5 than among Q1 in ten of the 13 countries, and by 5 points or more in four countries (Bosnia and Herzegovina, Montenegro, North Macedonia and Turkey).

Prevalence data is available for two periods for these 13 countries. Table 7 lists the most recent year for each country, while the earlier period for each refers to a year five to eight years earlier. Among these 13 countries, the stunting rate fell in 12 countries for Q1 and in ten countries for Q5, narrowing the gaps in ten countries and by 5 points or more in five (Albania, Bosnia and Herzegovina, Montenegro, Tajikistan and Turkey). For wasting, too, the prevalence fell in almost all countries for both quintiles, with the gaps narrowing in eight countries. As for overweight, the prevalence fell from the first year to the next in ten countries in the case of Q1 – and by 5 points or more in five countries (Albania, Bosnia and Herzegovina, Kazakhstan, Kyrgyzstan and North Macedonia). In contrast, the prevalence of overweight fell by 5 points or more in just one case, Albania, for the Q5

TABLE 7
PREVALENCE OF THREE FORMS OF MALNUTRITION AMONG CHILDREN YOUNGER THAN FIVE YEARS OF AGE, BY WEALTH QUINTILES, IN SELECTED COUNTRIES OF THE ECA REGION

	Survey year	Stunting (%)		Gap	Wasting (%)		Gap	Overweight (%)		Gap
		Q1	Q5	% points	Q1	Q5	% points	Q1	Q5	% points
Albania	2017	17.1	9.2	7.9	2.6	0.2	2.4	14.7	17.4	-2.7
Armenia	2016	12.0	5.9	6.1	6.1	3.0	3.1	16.8	8.5	8.3
Azerbaijan	2013	27.9	15.8	12.1	3.9	0.9	3.1	17.3	14.4	2.9
Bosnia and Herzegovina	2012	10.1	10.3	-0.3	1.9	2.7	-0.8	13.6	20.7	-7.0
Kazakhstan	2015	10.3	6.2	4.1	3.0	2.9	0.0	7.7	12.5	-4.8
Kyrgyzstan	2014	17.7	10.7	7.0	3.1	3.3	-0.2	6.2	9.2	-3.0
Montenegro	2013	4.7	8.6	-4.0	3.5	2.2	1.2	15.8	25.5	-9.6
North Macedonia	2011	7.2	2.0	5.2	3.5	0.6	3.0	4.3	14.2	-9.9
Republic of Moldova	2012	11.4	2.7	8.7	1.7	1.8	0.0	2.9	6.6	-3.7
Serbia	2014	13.6	4.1	9.5	1.3	5.2	-3.9	16.4	12.8	3.6
Tajikistan	2017	21.5	17.2	4.3	4.9	8.4	-3.4	1.6	5.7	-4.1
Turkey	2013	18.7	4.7	14.0	1.6	0.2	1.4	7.6	14.8	-7.2
Turkmenistan	2015	15.5	11.4	4.1	5.2	3.8	1.4	4.8	5.4	-0.7

NOTES: Q1 refers the first, or lowest, wealth quintile, and Q5 refers to the fifth, or richest, quintile, with the gaps shown being Q1 minus Q5. Prevalence is given in percent, and gaps or differences between Q1 and Q5 are given in percentage points.
SOURCE: UNICEF-WHO-World Bank's Joint Nutrition Estimates database, March 2019 update.

subgroup. As a result, the gaps between Q1 and Q5 narrowed considerably in many countries. This – reductions for Q1 associated with reduced gaps – should be seen as a win-win for the overall progress in this area.

Prevalence data are also compiled by ***geographic regions*** within a country, for three or four larger regions in some countries and for more regions in others. For the review here, minimum and maximum prevalence estimates were identified for the reported regions. The minimum rates are mostly from a country's capital city or a coastal region, while for the maximum an average prevalence was computed based on data for the three regions with the highest rates. The data show that the gaps by regions could be much higher than the gaps by other socioeconomic factors. For stunting, the gap by region exceeded 5 percentage points for ten of the 13 countries, with the gap being higher than 10 points in two (Armenia and Tajikistan). For wasting, the gaps exceeded 3 points in eight countries, with over 5 points in four countries. Gaps by region are more pronounced for overweight, exceeding 5 points in nine of the 13 countries and exceeding 10 points in six of those countries. Note that the gaps by regions could be much more pronounced than those by rural and urban places of residence because of the averaging of several regions, in the latter case.

Inequalities in the prevalence of adult obesity and other forms of malnutrition

In addition to these three forms of malnutrition among children younger than five years of age, several studies have been published on inequalities in other forms of malnutrition, such as adult obesity, anaemia among women of reproductive age, and underweight children.

For example, a study by Loring and Robertson (2014), commissioned by the WHO Regional Office for Europe, finds that the prevalence of adult obesity in Europe was rising fastest among those in the lower categories of the socio-economic profile, with education and living and working conditions identified as prominent factors. Adults in low socio-economic groups were considered to be almost two times more likely to become obese than others. Likewise, a study by Ahrens *et al.* (2014), based on data from the IDEFICS (Identification and prevention of dietary- and lifestyle-induced health effects) surveys in Europe among children from 2 to 10 years old found a negative gradient with social position, with population groups belonging to low-income and/or lower-education levels showing the highest prevalence of obesity. One broad pattern seems to be a higher prevalence of obesity among lower- and middle-income groups in high-income countries, while the opposite is the case in low-income countries (Mazzocchi *et al.*, 2014). In the meantime, more recent data seem to be pointing to a rapidly increasing and already higher prevalence of obesity in rural rather than in urban areas in all high-income countries; the rate of change in many low- and middle-income countries is such that the levels of overweight and obesity in rural areas will soon match, if not exceed, those in urban areas (Popkin, 2019).

The 2018 *Regional Overview of Food Security and Nutrition in Europe and Central Asia* (FAO, 2018a) reported some statistics that showed large differences in anaemia among women. For example, based on data from UNICEF surveys in Tajikistan, the prevalence ranged between 20 and 30 percent in some regions of the country. The study by Perez-Escamilla *et al.* (2018) using cross-country data found that in all income groupings, including upper-middle countries, children in households in the poorest wealth quintile had the highest prevalence of anaemia. Thus, overall, socio-economic inequalities seem to be both widespread and a crucial driver of most forms of malnutrition across both lower- and higher-income countries.

Shared prosperity – how pro-poor has been economic growth in the region in recent years?

The World Bank has recently started monitoring progress on "shared prosperity" based on the growth of income or consumption expenditure (income growth, in short) of the bottom 40 percent of the population (the B40) as an additional indicator for eliminating extreme poverty by 2030 (World Bank, 2018a). The data in the World Bank's *Poverty and Shared Prosperity 2018: Piecing Together the Poverty Puzzle* report are drawn from periodic surveys of national living standards. Shared prosperity is realized when the income growth of the B40 is positive.

Also defined is a "shared prosperity premium" (SP premium) that is defined as the income growth of the B40 minus the income growth of the entire population; thus, the SP premium is positive when the B40 income growth exceeds the income growth of the entire population. The 2018 report updates these estimates for 91 countries and paints a mixed, albeit moderately positive, picture for the B40. For the global sample, incomes of the B40 grew in 70 of the 91 economies, with the B40 also experiencing a positive SP premium in more than half of the 91 countries.

In World Bank's country groupings, 17 European Union Member States in Western Europe and three European Free Trade Association countries are placed under the "rest of the world" region, while 11 EU Member States from Central and Eastern Europe and 15 EU Member States from the rest of the ECA region are grouped in the Europe and Central Asia region. For the latter region, the B40 real income growth during 2012–2017 was 2.22 percent per year, which exceeded the real income growth rate for the entire population (2.07 percent), resulting in a positive SP premium of 0.15 percentage points. In the former region, both the B40 income growth and the SP premium were negative. Thus, the result was positive for the relatively lower-income countries of the ECA region but not for others.

Table 8 shows these data for 15 countries of the four ECA subregions other than the EU-28 and EFTA. In ten of the 15 countries, growth was positive both for the B40 and for the entire population. For some countries, the B40 growth rate was quite high. The SP premium itself was

TABLE 8

SHARED PROSPERITY: EXPENDITURE OR CONSUMPTION GROWTH OF THE BOTTOM 40 PERCENT RELATIVE TO THE ENTIRE POPULATION, IN SELECTED COUNTRIES OF THE ECA REGION

	Period	Income or expenditure growth (% per year) of		Shared prosperity premium (% points)
		Bottom 40 %	All population	
Armenia	2012–2017	1.76	3.22	-1.46
Belarus	2012–2017	1.09	0.52	0.58
Bosnia and Herzegovina	2011–2015	-0.45	-0.79	0.34
Georgia	2012–2017	4.48	3.76	0.72
Kazakhstan	2012–2017	-0.02	-0.56	0.55
Kosovo	2012–2017	2.36	1.89	0.47
Kyrgyzstan	2012–2017	0.86	0.79	0.06
Montenegro	2009–2014	-2.73	-2.27	-0.46
North Macedonia	2010–2015	6.07	2.55	3.52
Republic of Moldova	2012–2017	2.61	0.97	1.64
Russian Federation	2010–2015	1.62	0.48	1.15
Serbia	2012–2015	-1.70	-0.88	-0.83
Tajikistan	2009–2015	2.30	3.58	-1.28
Turkey	2011–2016	2.53	3.47	-0.94
Ukraine	2011–2016	-0.83	-0.67	-0.16

NOTES: The shared prosperity premium is the income growth of the bottom 40 percent (B40) income minus the income growth of the entire population. References to Kosovo shall be understood to be in the context of UN Security Council Resolution 1244 (1999).
SOURCE: Table 2.1 of the World Bank's 2018 report *Poverty and Shared Prosperity 2018: Piecing Together the Poverty Puzzle*. https://openknowledge.worldbank.org/bitstream/handle/10986/30418/9781464813306.pdf

positive in nine countries and negative in six, with higher SP premiums in North Macedonia, Republic of Moldova and the Russian Federation. On the other side, the SP premium was most negative in Armenia (almost -1.5 percentage points), followed by Tajikistan and Turkey. These countries had negative SP premiums despite positive B40 growth rates because the B40 growth rates were lower than the rates for each country's entire population. Bosnia and Herzegovina and Kazakhstan had negative B40 growth rates, but those rates were lower than the negative growth rates for the entire population, so their SP premiums were positive.

Not shown in Table 8 are the positive B40 growth rates in nine of the 11 European Union Member States from Central and Eastern Europe, with very high rates for Bulgaria (7.5 percent), Czech Republic (6.7 percent) and Estonia (6.2 percent). However, the SP premium was positive in just four of those 11 countries. Overall, while the B40 have benefitted considerably in recent years, shared prosperity premiums are relatively small. As for the 17 EU-28 and three EFTA countries covered, the overall picture is one of weak income growth of the B40 and of lower SP premiums.[9] Among these 20 countries, B40 growth was positive in 11, with a growth rate of 1 percent or more in only four countries. Unlike the case as shown in Table 8 for 15 countries of the four ECA subregions, the SP premium in the 17 EU-28 and three EFTA countries did not exceed 1 percentage point in a single one of the countries. The World Bank report remarked that these rich economies with very low prevalence of extreme poverty are finding that income growth of the B40 is growing slowly, stagnating, or even losing ground, and, on average, incomes of the B40 contracted 0.3 percent per year in the period 2010–2015.

Income growth rates of the B40 and for all populations are strongly correlated (+0.86), which implies that for the B40 to benefit, the overall income growth must also be strong. Indeed, in many countries, the B40 growth rates were relatively low because the overall growth rates were weak. The World Bank study also stressed that the B40 population lived disproportionally in rural areas, underlying the continued importance of the growth of agriculture and rural economies – even in the ECA region, which is relatively better off income-wise than many countries in other regions of the world. Also important is that the study found that the SP premium, averaged across all countries, was slightly lower in recent years than during 2008–2013. This is worrisome, given the recent slowdowns in the progress towards better food security and nutrition in almost all indicators. Evidence from the 2019 global *The State of Food Security and Nutrition in the World* report shows that even middle-income countries – predominantly present in the ECA region – may experience an increased prevalence of undernourishment when economic slowdowns or downturns are observed. Global outlooks project that these trends might continue, risking the achievement of SDG 2 indicators on eliminating all forms of malnutrition by 2030. (FAO, IFAD, UNICEF, WFP and WHO, 2019).

The importance of considering inequalities in policies and targeted interventions in poverty, food insecurity and malnutrition

The above reviews of statistics on inequalities in outcomes drive home the importance of considering inequalities in the design of policies and targeted interventions. Some forms of inequalities are relatively visible, but others could be difficult to unravel, such as those linked to social exclusion and ethnicity.

Some recent studies have contributed to further understanding the nature of inequalities in Europe. One recent World Bank study (Bussolo *et al.*, 2019) dwelled on the question of why opinion surveys, notably the results of the 2016 round of the Life in Transition Survey (LiTS) in Europe, revealed perceptions of higher and rising inequality despite the fact that the region has relatively low inequality based on income (vertical inequality), with the Gini coefficient of income distribution falling somewhat during 2008–2013 in roughly half of the countries surveyed.
In explaining this, the World Bank study argued that the situation is not as rosy when it comes to horizontal inequalities between groups based on factors such as birth cohort, occupation, place of residence, regional location, age, gender, ethnicity and others. In addition, the concentration of income and wealth has been rising lately, while the share of labour income in the gross domestic product has been falling markedly in

many countries. These factors may explain the perceptions held by surveyed people that were not reflected in the data on vertical inequality. Thus, the study concluded, policy and programme responses need to address distributional tensions across groups rather than focusing only on income inequality among *individuals*.

The results on the progress towards narrowing the gaps among socio-economic groups are mixed in the case of malnutrition among children younger than five years of age, with persistent gaps especially marked for geographic regions, wealth levels and maternal education. The prevalence of obesity among adults is rising faster among those in the lower categories of socio-economic profiles, notably those based on living and working conditions and education. The state of shared prosperity – the growth of income of the bottom 40 percent of the population – is mixed; it is better, on average, in countries in the ECA subregions in which the prevalence of poverty, food insecurity and malnutrition is higher than in richer subregions where prevalence estimates are lower. However, state of shared prosperity is worse than in some other regions of the world.

In ***summing up this subsection,*** the main points observed may be summarized as follows:

- There is a recognition in the literature that socio-economic inequalities slow down or impede the rate of progress on the reduction of poverty, food insecurity and malnutrition, risking the 2030 Agenda for Sustainable Development's goal of leaving no one behind. Significant socio-economic inequalities continue to exist in most societies, even in high-income countries.

- For this reason, an increasing number of studies globally document inequalities in outcomes. The data reviewed show that inequalities in prevalence of stunting, wasting and overweight are fairly low by sex of the child and by rural–urban place of residence but are relatively high by maternal education, wealth and geographic region. But it seems that more recent global data are pointing towards rapid increases in overweight in rural areas, too (Popkin, 2019). The good news is that the gaps are narrowing in most cases, with prevalence among disadvantaged subgroups falling similarly to prevalence in the better-off subgroups. On the other hand, prevalence of adult obesity is rising faster among those in the lower categories of socio-economic profiles, notably based on living and working conditions and education.

- Shared prosperity, measured using the growth of income of the bottom 40 percent of the population, was negative in recent years in countries in Western Europe and the European Free Trade Association, but positive (a positive outcome), on average, in the rest of the ECA regions in which the prevalence of poverty, food insecurity and malnutrition is higher.

- Recent studies in the region point to horizontal inequalities between groups based on factors such as birth cohort, occupation, place of residence, regional location, age, gender, ethnicity and others. These factors may explain the perceptions held by surveyed people that were not reflected in the data on vertical inequality. One of these studies (Bussolo *et al.*, 2019) concluded that policy and programme responses need to address distributional tensions across groups rather than focusing only on income inequality among individuals.

Overall, policy-makers and development practitioners in food and agriculture, nutrition, health and the environment need to recognize the negative role that inequalities play in influencing outcomes. Inequalities always should be taken into consideration in the design of policies, programmes and targeted interventions. Identifying the sources of inequalities also requires some investment in data and analysis; the data and studies reviewed above have shown their worth. ■

2.2 PUBLIC EXPENDITURES ON AGRICULTURE[10]

Adequate public investment in agriculture is essential for attaining several goals under the 2030 Agenda for Sustainable Development – notably, ending all forms of hunger, promoting sustainable agriculture, doubling agricultural productivity and the incomes of small-scale

farmers, implementing resilient agricultural practices, and maintaining genetic diversity. A specific target, Target 2.a, has been adopted under Sustainable Development Goal 2 on ending all forms of hunger and promoting sustainable agriculture. Target 2.a is to "increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries."

This section assesses public expenditure on agriculture in the Europe and Central Asia region, based on statistics maintained by FAO. Since 2012, FAO has collected data on government expenditures on agriculture through a questionnaire sent to most governments. The questionnaire was jointly developed with the International Monetary Fund, using the classification of the functions of government (COFOG). "Agriculture" refers to COFOG Group 042, which includes agriculture, forestry and fishing. Based on these and other data, FAO has developed the agriculture orientation index of central government expenditures on agriculture as an indicator for the purpose of monitoring Target 2.a.

Public spending on agriculture as a share of total government expenditures

One commonly used indicator to measure the political will to support agriculture is the budget share that a government allocates to agriculture. While there is no specific share that is formally agreed upon, 10 percent is frequently used by analysts. Spending at least 10 percent of the national budget on agriculture was the target committed to by African governments in 2003 in the Maputo Declaration on Agriculture and Food Security in Africa.[11]

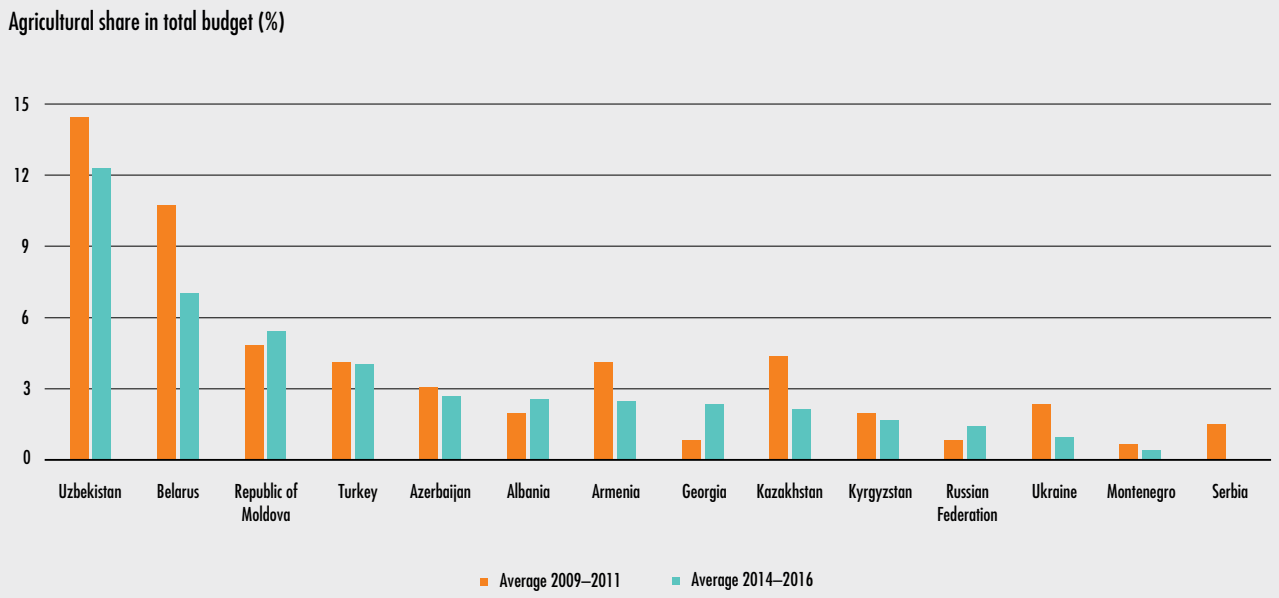
Globally, the data show that agriculture's share of central government expenditure (FAO collects spending data for central governments only) has fluctuated around 1.6 percent between 2001 and 2017. Among regions, this share has been highest in the Asia and the Pacific region, where it was in the 3.03–3.85 percent range between 2001 and 2017. That region is followed by Africa, where the share has progressively declined from 3.66 percent in 2001 to 2.30 percent in 2017, despite the 10-percent target set in the Maputo Declaration. The developed regions, as aggregated in FAO statistics – which regions include high-income countries in Europe – have allocated the lowest share, which has fluctuated around 1 percent. Interestingly, in the aftermath of the world food price crisis in 2008, the share rose in all regions except for Europe.

Figure 10 shows for 14 countries of the four ECA subregions other than the EU-28 and EFTA the average budget shares of agriculture in 2009–2011 and 2014–2016. The latest year for which data are available for most countries is 2016. In 2014–2016, the ratio exceeded 10 percent only in Uzbekistan. It was between 5 and 10 percent in two other countries (Belarus and Republic of Moldova), and between 2 and 5 percent in five others. The simple average for the covered countries was 4 percent in 2009–2011 and 3.5 percent in 2014–2016. The data further show that the share fell between the two periods in nine of the 13 countries, with marked declines of 3.6 percentage points in Belarus and of 2.2 percentage points in Kazakhstan and Uzbekistan. On the other hand, the ratio increased notably in Georgia, by 1.6 points. Overall, agriculture has received relatively low allocations of total central government budget, and there has been in recent years a tendency for those shares to decline.

Similar data for the 11 European Union Member States that have acceded since 2004 show, on the whole, lower budgetary shares on average than for the 13 countries in Figure 10, the simple average in 2014–2016 being 2.3 percent for the former and 3.5 percent for the latter. Note that the EU Member States also receive funds from the EU budget in the framework of the EU common agricultural policy in addition to countries' state budgets for agriculture. Among the 11 EU Member States, the top share was 3.9 percent for Croatia, and lowest was 1.3 percent for Slovakia. Shares were between 2 percent and 4 percent for six countries and below 2 percent for five others.

How does the Europe and Central Asia region compare with others on this indicator? For Africa, the latest data for 44 countries given in the Africa

FIGURE 10
SHARE OF CENTRAL GOVERNMENT BUDGETS SPENT ON AGRICULTURE, 2009–2011 AND 2014–2016, IN SELECTED COUNTRIES OF THE ECA REGION



NOTE: Agriculture includes the forestry, fishery and hunting subsectors.
SOURCE: FAOSTAT.

Agriculture Status Report 2018 show that only five countries had a share above 10 percent, while eight others were between 6 and 10 percent and 20 were below 4 percent. In the Asia and the Pacific region, the 2010–2014 data for 19 countries show that the share was 10 percent or more in three countries, between 5 and 10 percent in three countries, and below 5 percent in 12 others. So, while the share in the ECA region is somewhat on the lower side, the overall picture does not seem to be markedly different from other regions.

Public spending on agriculture relative to the size of the agricultural sector

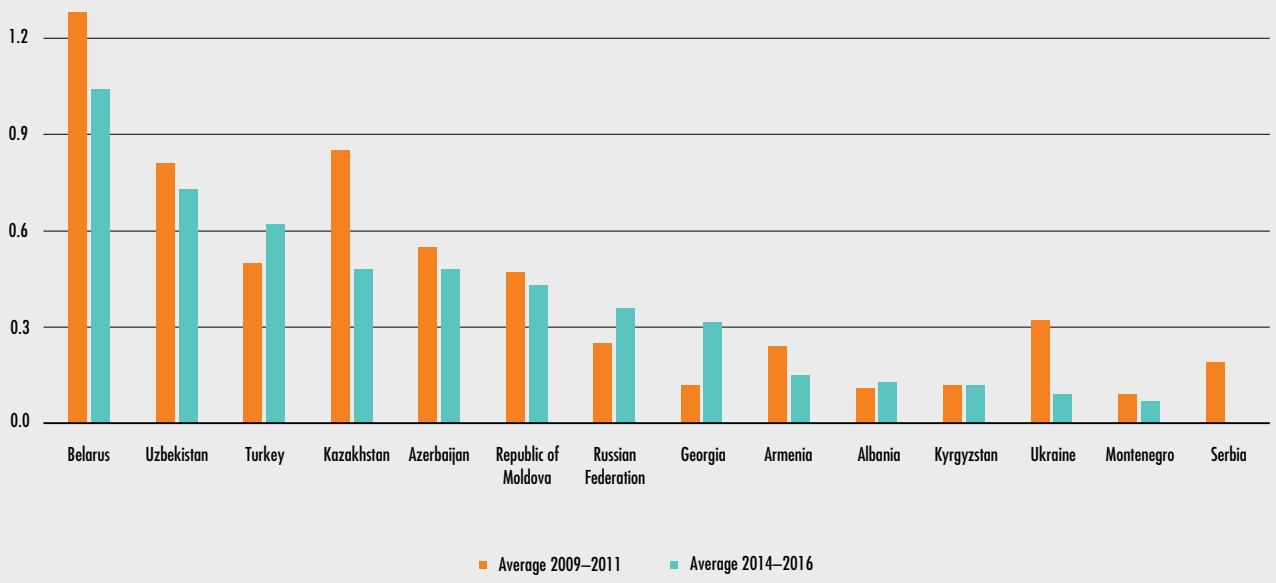
The 10-percent share (or another similar target) can only be arbitrary, and there is no such target formally recognized globally. For the 2030 Agenda for Sustainable Development, the indicator chosen is the agriculture orientation index (AOI) (SDG Indicator 2.a.1), which is a ratio of two shares – the percent of total central government expenditures spent on agriculture and the share of agriculture in the total gross domestic product. Thus, the AOI aims to measure the extent to which spending on agriculture is commensurate with the weight of the sector in the economy. An AOI greater than 1 reflects a higher orientation, or priority, towards agriculture. An AOI below 1 reflects a lower orientation. FAO's data show that the global average value of the AOI has consistently declined – from 0.42 in 2001 to 0.26 in 2017 – with the value remaining below 0.5 for most global regions during this period.

Figure 11 presents AOI values for selected Europe and Central Asia countries, averaged for 2009–2011 and 2014–2016. The data show that the AOI was below unity – that is, government spending on agriculture fell short of the importance of the sector – in almost all countries. The simple average for the 13 countries was about 0.40 in 2014–2016. Only one country, Belarus, had an AOI just above unity (1.05), while the AOI was between 0.5 and 1 in two others (Turkey and Uzbekistan), between 0.3 and 0.5 in five countries, and below 0.3 in five others. Moreover, the AOI was lower in the second period in eight of the 13 countries – though notably so for just three (Belarus, Kazakhstan and Ukraine) – while the ratio also rose markedly in three others (Georgia, Turkey and the Russian Federation).

Being a ratio of two shares, the AOI could vary with changes in the numerator or the denominator, or both. For example, budgetary shares fell markedly in all three countries in which the AOI fell notably, but in Ukraine there also was an increase of 3 percentage points in agriculture's share in the gross domestic product, which had the effect of lowering the AOI further. In Georgia and the Russian Federation, where the AOI rose notably, the main reason was a markedly increased budgetary share with minimal changes in the agricultural GDP. In Turkey's case, the reason for the notable increase in AOI was mainly a larger reduction in the GDP share.

In contrast to this subgroup of countries, the agriculture orientation index was higher in the subgroup of 11 countries that acceded to the EU since 2004. While 10 of the 13 countries in the former subgroup had an AOI lower than 0.5 in 2014–2016, this was the case in just two of the 11 EU Member States, with a simple average AOI

FIGURE 11
AGRICULTURAL ORIENTATION INDEX (AOI) IN SELECTED COUNTRIES OF THE ECA REGION



NOTE: Agriculture includes the forestry, fishery and hunting subsectors.
SOURCE: FAOSTAT.

of 0.75, more than twice the average of 0.36 in the former 13 countries. While still notably higher in the 11 countries that have recently acceded to the EU, the AOI in 2014–2016 was lower than in 2009–2011. This decline was due to reductions in budgetary shares and to changes in agriculture's share in the GDP, which remained similar in some countries but also increased slightly in five of the 11.

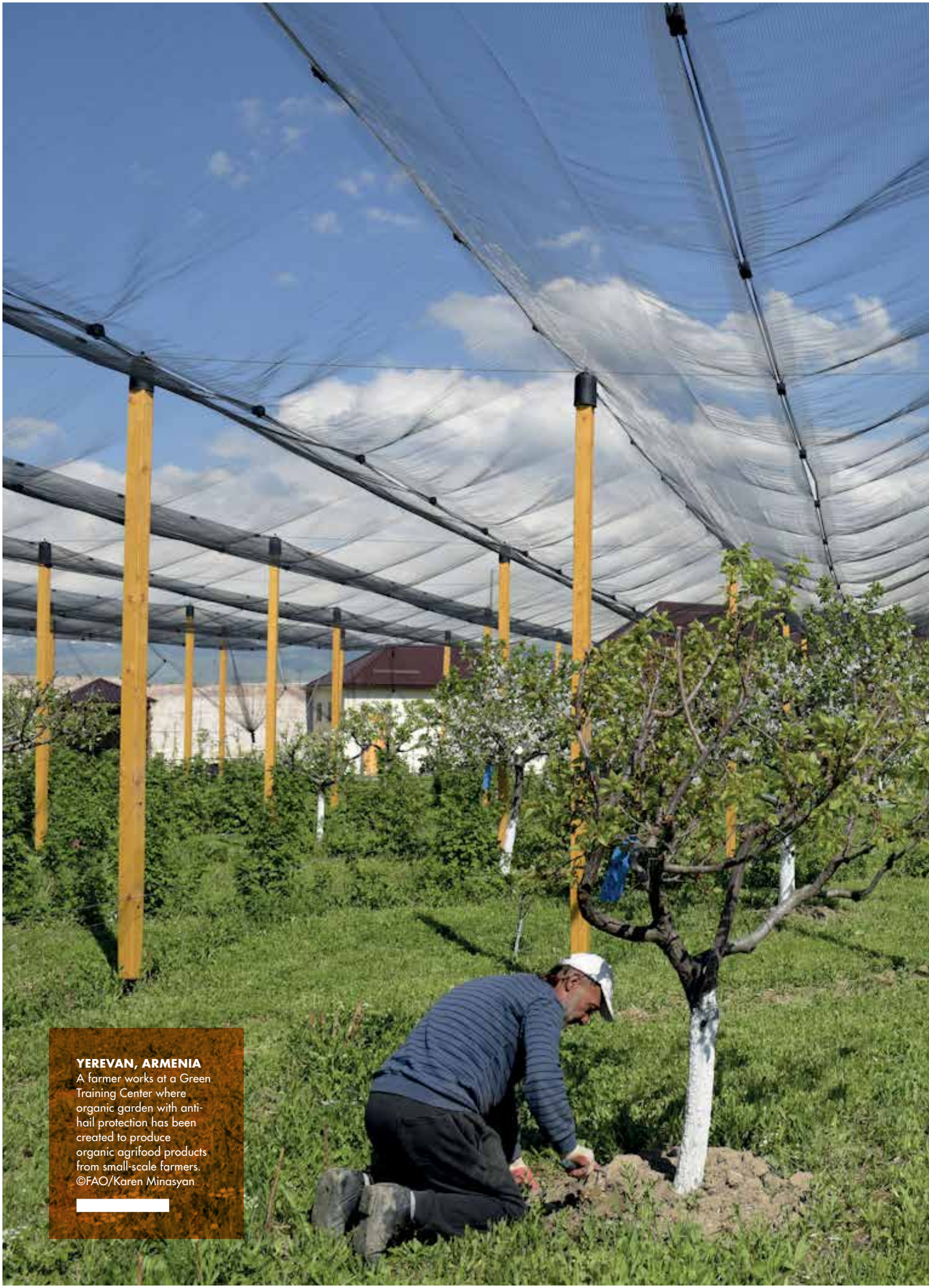
What if agricultural budget shares were to be based on agriculture's share in employment rather than in the economy?

The agricultural budget share in the AOI is related to agriculture's share in the gross domestic product, the idea being that a country with a larger GDP share ought to spend more on agriculture. For medium- and higher-income countries, agriculture's GDP share is typically low, but many of them continue to have a much larger share in employment (see the section on structural transformation in Part III of this report). The consequences of this mismatch are lower farm incomes, higher rural poverty, and associated gaps in food security and nutrition indicators between rural and urban areas.

Therefore, it could be argued any country with a much higher employment share relative to its income share ought to be paying more attention to agriculture and rural sectors (in terms of higher public spending) than the level that would be indicated by the AOI. In other words, the AOI would be based on employment share in the denominator rather than the income share. A "what if" exercise computing agricultural spending relative to total government spending but using employment share in the denominator shows, as expected, higher levels of spending for countries with larger gaps between the shares. This would not affect the results for countries where the two shares are similar. In the ECA subregions covered, this was the case for five to seven countries.

In ***summing up this subsection***, while the bulk of the investment in agriculture will come from the private sector, most notably from farmers, government investment is crucial for providing essential public goods and services that the private sector does not. Public investment, on the other hand, is crucial to stimulating private-sector investment that is supportive of the SDGs, such as in access to affordable healthy diets, youth employment, environmental sustainability and more. Increasing investment in agriculture is also one of targets adopted by the 2030 Agenda for Sustainable Development for which the AOI is used for monitoring progress. The 2030 Agenda does not set a specific target for AOI but calls for increasing investment. A review of public spending based on the AOI has shown that agriculture is being accorded a "lower orientation" (the value of the AOI is less than 1) in almost all countries in the ECA region, indicating under-investment relative to the sector's importance to the economy. The data also shows that the value of the AOI has been falling, rather than increasing, as called for in the 2030 Agenda. Furthermore, the AOI is lower, on average, in those countries in which the prevalence of hunger and malnutrition are higher. The messages that come out of this brief review are clear: There is a need to raise the AOI by spending more on agriculture in order to respond more effectively to poverty, hunger and multiple forms of malnutrition, and to help farming become more sustainable and resilient. This is even more true for economies in which agriculture's share in employment is still markedly higher than the share in gross domestic product.

In addition to ensuring adequate levels of investing, ensuring investment quality is equally crucial. There is a consensus among development experts that more spending is desirable on general services and rural development, notably on rural infrastructure, agricultural research and extension services, and technology development. This theme has recurred in several recent studies in the region that have quantified various ways in which agriculture is being supported, either indirectly through food and trade policies or directly through budgets.[12] The World Trade Organization Agreement on Agriculture also places no limits on – and thus implicitly encourages – spending on general services and rural development measures. Indeed, these also are the areas advocated for in the food systems and agro-ecology frameworks, given the challenges in food security, nutrition and the environment. These issues are discussed in Part III of this report in the context of reorienting policies and support measures in support of the goals set in the 2030 Agenda for Sustainable Development. ■



YEREVAN, ARMENIA
A farmer works at a Green Training Center where organic garden with anti-hail protection has been created to produce organic agrifood products from small-scale farmers.
©FAO/Karen Minasyan

PART 3
STRUCTURAL TRANSFORMATIONS OF AGRICULTURE, FOOD SYSTEMS AND FOOD POLICY IN EUROPE AND CENTRAL ASIA

PART 3

STRUCTURAL TRANSFORMATIONS OF AGRICULTURE, FOOD SYSTEMS AND FOOD POLICY IN EUROPE AND CENTRAL ASIA

The region has come a long way since the early 1990s in terms of the transformation of the structure of the economies, land use, agricultural production, food consumption patterns, the evolution of diets, trade, and food and agricultural policies. In the meantime, the 2030 Agenda for Sustainable Development has set ambitious targets that cover many areas; among them are eliminating extreme poverty, hunger and all forms of malnutrition and ensuring the sustainable use of natural resources.

What happens to agriculture is crucial for this vision of development because, notably in countries with relatively high levels of rural poverty, this is the sector that supports the livelihoods of the bulk of the poor, food insecure and malnourished population (World Bank, 2016) and is closely linked to the goals on environment, ecosystems and climate change.

Agriculture also provides raw materials and sustains the large agro-industry subsector. Most countries in the world are engaged in the 2030 Agenda for Sustainable Development, and there is a shared understanding of what needs to be done. The challenge is to reorient current policies and practices in support of the Sustainable Development Goals.

This thematic section of *The State of Food Security and Nutrition in Europe and Central Asia* for 2019 contributes to further understanding these issues and challenges. The presentation is divided into two broad subsections. The first part takes stock of the structural transformation of the overall economy during the past three decades and looks at changes in the evolution of food and agricultural production, in food consumption patterns and diets, and in trade systems and policies. With this background, the second part addresses the question of what is needed to transform agriculture and food systems so that they are supportive of the goals and targets set in the 2030 Agenda for Sustainable Development.

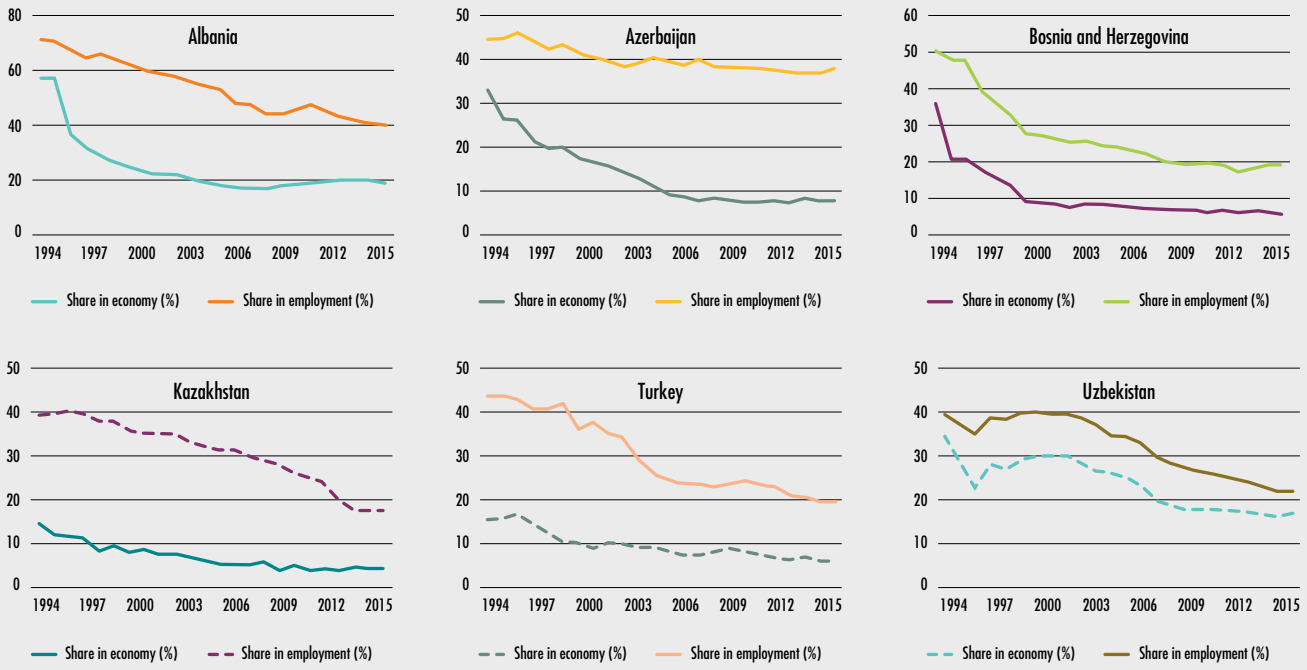
The overall goal is to create sustainable food systems and to address the growing overweight and obesity epidemic. Sustainable food systems not only provide safe, nutritious food that is accessible to all, but also limit cheap and processed food that is high in sugar and saturated fats. A food systems approach and the principles of agro-ecology are key building blocks of sustainable food systems. ■

3.1 CHANGES IN THE OVERALL STRUCTURE OF THE ECONOMY, AGRICULTURAL PRODUCTION AND FOOD CONSUMPTION PATTERNS

Structural transformation of the economies in the ECA region

One of the stylized or established outcomes of the process of economic growth is secular declines in agriculture's share in the economy (gross domestic product) and employment. The difference between the two shares is an indicator of the rural–urban income gap and conveys an important message on the success of the process of the transformation. Timmer and Akkus (2008) call this gap the "sectoral Gini coefficient" that indicates the inequality of

FIGURE 12
TRENDS IN THE SHARES OF AGRICULTURE IN ECONOMY AND TOTAL EMPLOYMENT IN SELECTED COUNTRIES OF THE ECA REGION, 1994–2017 (%)



SOURCE: Based on data from the World Bank's World Development Indicators.

incomes between those engaged in agriculture and the rest of the economy. The rural–urban income gap is a significant part of a country's income inequality. In their study, based on data for 86 countries, they found that this gap accounted for 20 to 30 percent of the variation in the overall Gini coefficient for that sample of countries.

The study by Timmer and Akkus provides some insights into the process of structural change. One is that the income gap – labour productivity in non-agriculture minus that in agriculture – tends to increase during the early stages of economic growth, with consequences for poverty, food insecurity, and more. A second insight is that the turning point at which labour productivity in agriculture begins to approach and exceed that in non-agriculture has been found to be steadily rising since the mid-1960s. In other words, the growth process itself has become progressively less successful in integrating low-productive agricultural labour into the rest of the economy. The relative stagnation in rural poverty over the past two decades in many countries has been attributed, in part, to this increasing difficulty in integrating the two sectors (Ravallion *et al.*, 2007).

Farm polices such as those that support producer price and income have their roots in the worsening sectoral income gaps, when policy-makers felt compelled to respond. One common response was using trade policy – import protection – to raise domestic farm prices. It is for this reason that agricultural protection is said to be a child of the growing income inequality between the sectors during the structural transformation (Anderson and Swinnen, 2008; Timmer and Akkus, 2008).

Structural transformation in the ECA region

Figure 12 shows trends in the agriculture share in GDP and employment for six countries in ECA region illustrates a number of patterns of the structural transformation from 1994 to 2017 in the ECA region. These show how the gaps between agriculture's share in employment and agriculture's share in the gross domestic product (GDP) can narrow or widen over time as the two shares go through secular declines. In Azerbaijan, for example, the two shares seem to diverge gradually from the beginning, with the gap widening continuously. According to one study (Gharleghi and Popov, 2018), in economies such as Azerbaijan, oil booms could sharply reduce agriculture's share in the GDP as the

share of non-agriculture shoots up, but the same does not happen to the employment share when booms occur in sectors that do not employ many. This creates large gaps that could persist for years. In Turkey, the graph shows agriculture's share in employment falling faster than its share in the GDP as the gap narrows over time. Uzbekistan shows an interesting pattern, too, with both shares trending up together from 1997 to 2002 rather than following the typical pattern of declines.

Table 9 summarizes for the 18 countries in the region that are not in the EU-28 or EFTA key structural transformation indicators – namely, the average values of the two shares and their gaps for three periods. The table shows that even for recent years, 2011–2017, the gaps are large in many countries – over 30 percentage points in Georgia, Azerbaijan and Tajikistan and between 15 and 30 points in five others. However, the gaps are below 10 percentage points in seven countries. As shown in the graphs, the paths taken could vary markedly. In Georgia and Azerbaijan, the value-added shares fell quickly while employment shares lingered at high levels, leading to large gaps. In Tajikistan, on the other hand, the gap was large at the beginning, in 1994–2000, and it continued that way over time,

TABLE 9
SHARE OF AGRICULTURE IN ECONOMY AND EMPLOYMENT OVER TIME IN SELECTED COUNTRIES OF THE ECA REGION

	Value added share (%)			Employment share (%)			Gaps: Employment share - VA share (% points)		
	1994–2000	2001–2010	2011–2017	1994–2000	2001–2010	2011–2017	1994–2000	2001–2010	2011–2017
Georgia	26	13	8	53	53	44	26	39	36
Azerbaijan	22	9	5	44	39	37	22	30	32
Tajikistan	28	21	22	60	56	53	32	35	31
Albania	37	19	19	66	52	43	29	33	24
Armenia	-	-	17	49	41	36	-	-	19
Republic of Moldova	26	15	12	48	38	31	22	23	18
Kazakhstan	11	7	5	39	32	21	28	26	17
Kyrgyzstan	39	28	15	52	38	29	14	11	15
Turkey	14	9	7	41	28	22	28	19	15
Serbia	19	11	7	30	24	20	11	13	13
Bosnia and Herzegovina	19	8	6	40	24	19	21	16	12
North Macedonia	11	10	9	22	20	18	11	10	8
Ukraine	13	9	10	21	19	17	8	10	7
Uzbekistan	28	25	17	38	34	24	10	10	7
Russian Federation	6	4	4	13	10	7	7	5	3
Belarus	14	9	7	21	14	10	7	5	2
Turkmenistan	22	17	9	23	18	10	1	2	1
Montenegro	-	9	8	12	8	6	-	-0.4	-1

NOTE: The value-added share refers to the share of the value added by agriculture to the GDP. The employment share, similarly, refers to employment in agriculture relative to total employment. The gaps are computed as differences between the two shares. The countries are sorted based on gaps between the shares in 2011–2017. Shares are given as percentages of the total. A hyphen ("-") indicates no data. The table lists the 18 selected countries in the ECA region.
SOURCE: Computed with data from the World Bank's World Development Indicators.

as there were only small declines in both shares. According to Gharleghi and Popov, the slow pace of the decline in the employment share in many countries was due to the collapse of the industrial sector after transitions to markets in the early 1990s while the services sector, which expanded considerably, was not sufficiently labour intensive to absorb surplus labour from agriculture.

On the whole, the gaps between shares remained high despite marked reductions in the GDP share. In three countries with very small gaps (Belarus, the Russian Federation and Turkmenistan), the gaps were already below 10 percentage points to start with, and subsequently employment shares fell by half between the first and third periods. Belarus and Turkmenistan are good examples of the transformation being associated with similar declines in both shares and thus a closing of the gaps in two decades or so.

In the EU-28 and EFTA, of the 30 countries with data, the gaps in 2015–2017 were 5 percentage points or more in just six countries: Romania (20 points), Greece (8.9 points), Poland (8.4 points) and Croatia, Lithuania and Portugal (5.1 points). The gaps fell markedly in several countries from the 1999–2001 period to 2015–2017, mainly due to large declines in employment shares, as the GDP shares already had been low for many years. For example, the gap fell from 11.6 points to 4.2 points in Latvia, 10.3 to 5.1 in Croatia, and 13.3 to 5.1 in Lithuania. In Romania, the gap fell from 32 points to 20 points, which is still relatively high, as the employment share was at a fairly high 24 percent in 2015–2017.

The Timmer and Akkus study based on data for 86 countries showed that, after controlling for the effect of real per-capita GDP, lower employment shares were associated with higher relative agricultural prices (measured in terms of trade for agriculture over non-agriculture, using data on the GDP deflators). The view held by Timmer and Akkus was that governments in many countries were deliberatively keeping the terms of trade higher to cushion the labour adjustment process during the transformation. This was done prominently in several Asian countries but rarely elsewhere. In the authors' regression analysis, the estimated coefficient of the terms of trade was three times larger in the Asian sample than in the non-Asian sample.

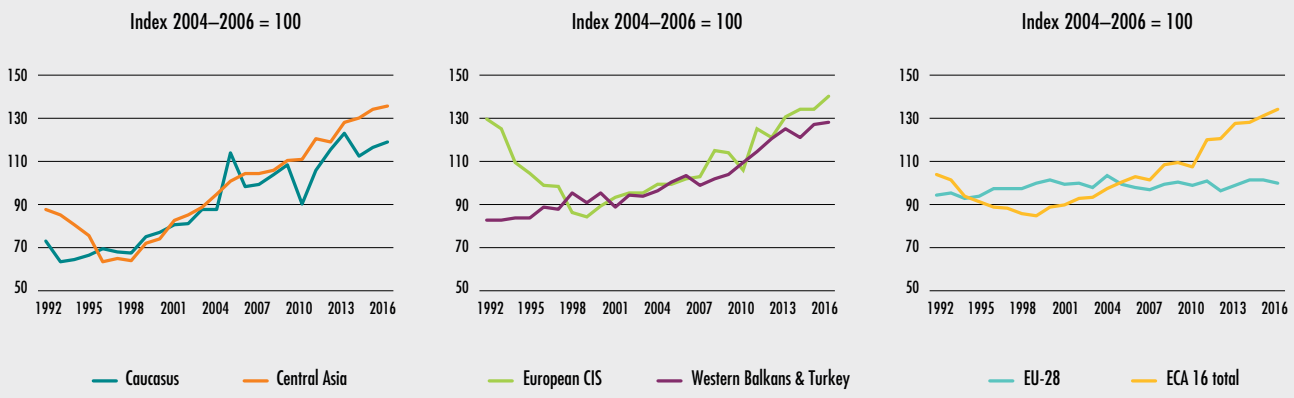
The transformation of food and agricultural production

This subsection briefly reviews some structural changes taking place in agricultural production. One, it documents overall trends in agriculture during 1992–2016 for Europe and Central Asia subregions. Two, it reviews changes in the composition of agricultural output. Three, it reviews the evolution of productivity based on cereals yield. And four, it synthesizes some views on the importance of supporting small farmers in the region. Understanding the evolution of agriculture in these areas is pertinent to discussions on the goals and targets of the 2030 Agenda for Sustainable Development, notably those directly related to the frameworks of food systems and agro-ecological approaches to farming (discussed below). For example, a sustainable food systems framework calls for a diversified agriculture that provides diverse and nutritious foods that constitute a healthy diet 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 on Sustainable Development Goal Target 2.4 for sustainable agriculture.

Transition declines, recovery and growth, and slowdown

A general pattern of the evolution of agricultural growth in the region (other than in Western Europe) is the "transition decline" during the early years after 1990, followed by a period of recovery and growth and then by indications of slowdowns in recent years in some subregions and countries. Figure 13 shows that the transition declines were most prominent in the European Commonwealth of Independent States but also in Central Asia. During 1992–1999, the trend growth rates were negative in 11 of the 16 countries other than in the EU-28. The graphs show fairly robust growth since around 1999. The trend growth rate per year during 1998–2016 was highest at 3.8 percent in Central Asia, with 2.8 percent recorded in the Caucasus and European CIS and 2 percent in the Western Balkans and Turkey. The evolution of output in the European Union has been very different – essentially flat throughout the period, with a trend growth rate of only 0.2 percent per year during 1992–2016.

FIGURE 13
EVOLUTION OF AGRICULTURAL PRODUCTION INDICES IN ECA SUBREGIONS



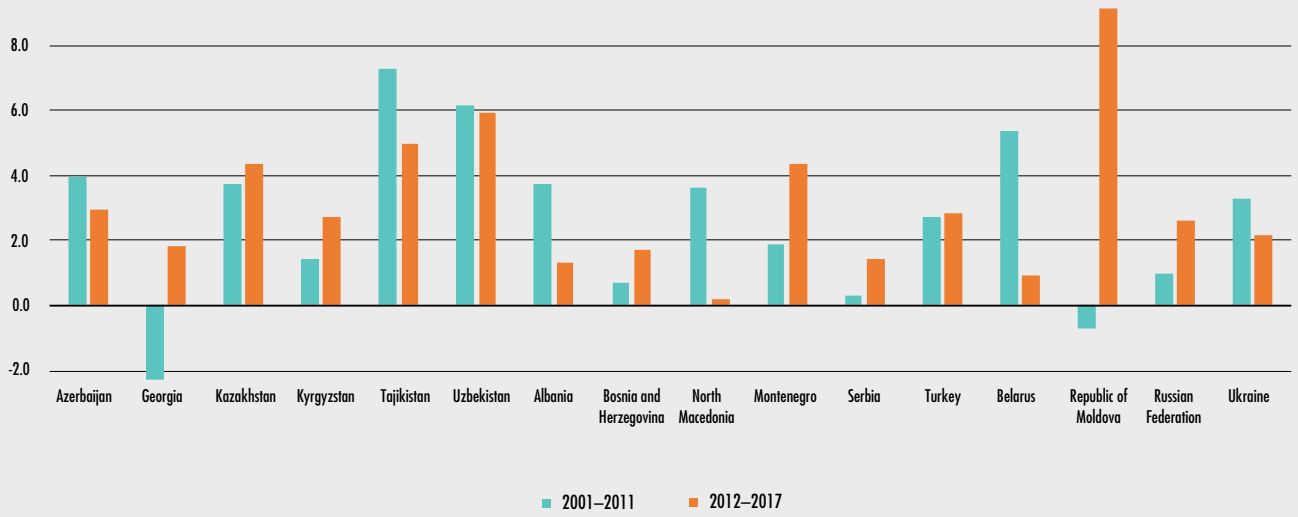
NOTES: Indices are computed from FAO data on the value of agricultural production in 2004–2006 constant prices.
Source: FAO.

The data also show several countries experiencing slowdowns in the rate of growth in recent years. The simple average of the annual percentage changes in the index in 2014–2016 was lower than in 2010–2013 in all four subregions but most notably in the Caucasus (4.1 percent per year in 2010–2013 versus -0.9 percent per year in 2014–2016) and in the Western Balkans and Turkey (4.7 percent in 2010–2013 and 0.9 percent in 2014–2016). Moreover, the livestock subsector has slowed down more than the non-livestock subsector, especially in Central Asia and the European CIS. The global The State of Food Security and Nutrition in the World report finds that economic slowdowns – similar to those that some countries in the ECA region experience – tend to contribute to the increase of hunger and different forms of malnutrition in middle-income countries and in countries in which income and wealth inequality are higher. Increases in inequality may be mostly associated with malnutrition, while more complex inequality patterns are associated with obesity. Trade conflicts and climate shocks as experienced in the ECA region also may undermine efforts to provide access to affordable and healthy food for some populations, further enhancing food insecurity in the region and globally.

The FAO index captures changes in the value of production at the farm level but not beyond that. But a picture somewhat similar to that above emerges for many countries, even with data for agriculture as a whole, value-added in agriculture and agricultural GDP (AGDP). Figure 14 shows this for 16 countries of the region, comparing average trend growth rates of the AGDP during 2001–2011 and 2012–2017. The AGDP growth rates were lower by 1 percentage point or more in recent years for six of the 16 countries (Albania, Azerbaijan, Belarus, North Macedonia, Tajikistan and Ukraine).

By subregion, the slowdown was large in the Caucasus (5.6 percent during 2001–2011 and 2.7 percent during 2012–2017), with a slight lapse in the Western Balkans and Turkey, a slight increase in Central Asia, and larger improvement

FIGURE 14
TREND GROWTH RATES OF AGRICULTURE VALUE-ADDED, 2001–2011 AND 2012–2017, IN SELECTED COUNTRIES OF THE ECA REGION



NOTES: Computed from agriculture value-added series in millions USD in constant 2010 USD. Trend growth rates are given in percent change per year.
SOURCE: Computed with data from the World Bank's World Development Indicators.

in the European CIS. Turkey and the Russian Federation together account for 73 percent of the total AGDP of the 16 countries. The growth rate improved markedly in the Russian Federation and was slightly higher for Turkey. Excluding these two economies, the AGDP growth rate for the remaining 14 countries together was slower by 1.4 percentage points during recent years, compared to the previous decade.

It is a matter of grave concern that agricultural growth might be slowing down, and further analysis is needed to determine the subsectors and products that may be suffering and thus to identify the drivers of the slowdown and respond appropriately.

Aside from the slowdowns, the production trends in Figure 13 also show increased fluctuations in recent years, especially notable for the Caucasus and European CIS subregions. There is growing evidence across the world that climatic shocks have been more frequent now than earlier, causing production growth to be more volatile (FAO, IFAD, UNICEF, WFP and WHO, 2018). There also could be other reasons, such as disruptions to trade.

Changes in the composition of agricultural output

How is the composition of agricultural output changing in the region? The information that follows highlights key changes since 1992, based on FAO statistics, in the value of production (in 2004–2006 constant prices). This review is based on average values for three periods – 1992–1994, 1999–2001 and 2014–2016 – and trend growth rates during the 1990s (referred to below as "period one," or the "first period") and during the 2000s (referred to as "period two," or the "second period").

Cereals: The combined value of output in 2004–2006 constant prices of the two main cereals, wheat and maize, increased markedly during the first period (1990s), following the transition declines in the early 1990s. During the second period, production growth rates were higher in more recent years (2010–2016) than during 2000–2009 in three subregions – the Caucasus, EU-28 and, most notably, European CIS – while growth rates were similar for both subperiods in Central Asia and in the Western Balkans and Turkey. Despite increases in the value of output, the combined share of wheat and maize of the total agricultural output was lower by 5 points in 2014–2016 (share of 13 percent) than in 1999–2001 (share of 18 percent) in Central Asia, by 3 points in the Caucasus and by 2 points in the Western Balkans and Turkey. The share increased by 5 percentage points in the European CIS, to a 15-percent share. In the meantime, the share of the rest of the cereals fell somewhat in the European CIS but rose in the Caucasus and Central Asia. Overall, with the exception of the European CIS subregion, there was a trend towards slowdown in the growth of the two main cereals and towards increases in other cereals, the net effect being that the composition of output (the share of cereals in total agriculture) fell somewhat.

Fruits and vegetables: Outputs of fruit grew phenomenally between 1999–2001 and 2014–2016 in two subregions, with an annualized growth rate of 4.1 percent in the Caucasus and of 8 percent in Central Asia. Growth rates also were between 2 percent and 3 percent in the other three subregions. As a result, fruit's share of the total agricultural output increased by about 5 percentage points in both the Caucasus and Central Asia (from 22 percent to 27 percent in the Caucasus and from 6 percent to 12 percent in Central Asia). This – the increased share of fruit – is a welcome change for better health and nutrition outcomes in the population as well as for diversifying farming in the region. The data on the apparent consumption of fruit and vegetables (see Section 3.1.3) show markedly higher intakes in recent years in most countries of these subregions.

Central Asia also witnessed the highest annualized growth rate for vegetables, 7.8 percent, as the value of output increased from USD 1.4 billion in 1999–2001 to USD 4.4 billion in 2014–2016, raising the share of vegetables in total output from 8 percent to 14 percent between the periods. Vegetable output also increased robustly in the European CIS, in the Caucasus, and in the Western Balkans and Turkey. Overall, the transformation taking place in fruit and vegetables is in the direction sought by food systems and agro-ecology frameworks, both of which are discussed later in this report.

Meat, milk and other livestock products: The value of all livestock products in recent years was about USD 162 billion in the European Union and USD 80 billion in the rest of the ECA region (other than the EFTA countries), with shares of total agricultural output being 49 percent and 45 percent, respectively. Between 1999–2001 and 2014–2016, the value of livestock products grew the most in Central Asia, from USD 7 billion to USD 13 billion (annualized growth rate of 5.9 percent), with positive annualized growth of 2.1 percent in the European CIS, 4 percent in the Western Balkans and Turkey and 2.8 percent in the Caucasus. There was no growth in the EU-28. The share of livestock in total output fell by 5 percentage points, from 50 percent to 45 percent, in the European CIS while other subsectors, notably grains, grew.

The share of meat in total livestock output in recent years was between 40 percent and 60 percent, while milk was between 26 percent and 44 percent. The value of meat production rose between 1999–2001 and 2014–2016 in all subregions except for in the EU-28. It rose by 4.2 percent per year in the Western Balkans and Turkey, by 3.4 percent per year in the European CIS, by 2.7 percent per year in Central Asia, and by 2.7 percent per year in the Caucasus. Output growth slowed considerably in Central Asia in recent years compared to the first ten years after 2000, but not in other subregions. As for milk, the trend growth rate between the periods was notably high in all subregions except for in the European CIS. As a result of these trends, the most notable change between the two periods in the share of meat and milk in total agricultural output was a decline of around 10 percent for milk in the European CIS with a similar rise in the share of meat. Overall, the share of meat rose and the share of milk fell in all other subregions but Central Asia.

Cotton: Harvested areas of cotton have undergone significant changes throughout the region during the past 20 years. Large reductions have taken place in Kazakhstan, Tajikistan, Turkey and Uzbekistan. These trends continue. During 2010–2017, trend growth rates in cotton were negative for all the main producers, with relatively high rates in Kazakhstan, Kyrgyzstan and Tajikistan. Some governments in the region also have adopted strategies and policies for diversification away from cotton. This seems to be working. Another reason for the declines could be lower profitability. The trend growth rate of yields between 2010 and 2017 were positive for all major producers except for Turkmenistan, while there was a deceleration for Kyrgyzstan relative to the previous decade.

Cereal production in the region is largely and increasingly driven by higher yields rather than area growth

Measuring productivity trends is not easy for many agricultural activities, including fruit and livestock production. For this reason, yield rates of cereals or other crops are often used for assessing trends in land productivity. During the transition declines of the 1990s, cereal yields suffered across the region in large part due to widespread shortages of essential inputs. Trends were negative for eight of the 16 countries in the four subregions other than the EU-28 and the EFTA, while cereal yields grew robustly (2.7 percent per year) in the European Union (the EU-15, then). Following the transition declines, yields improved across the region during 2000–2010. As a result, cereal yields for the 16 countries combined grew at a rate of 2.2 percent per year during 2000–2010 (Table 10). The performance improved further during recent years. There was a setback in 2012 when yields fell by between 15 and 25 percent in almost half of the 16 countries. Furthermore, average yield rates for the most recent three years, 2015–2017, were higher than for 2009–2011 in 15 of the 18 countries, with large increases for major cereal producers, the Russian Federation, Turkey and Ukraine. Thus, the region has performed well in raising production via higher yields.

TABLE 10
AVERAGE YIELD AND TREND GROWTH RATES OF CEREALS IN THE ECA REGION

		Average yield (MT/ha)			Trend growth rate (% per year)			
		1992–1994	1999–2001	2015–2017	1992–1999	2000–2010	2011–2017	2011–2017 excl. 2012
1	Armenia	1.7	1.7	2.8	-0.21	3.14	-2.56	0.27
2	Azerbaijan	1.8	2.4	3.0	-0.09	-0.48	3.17	5.87
3	Georgia	1.9	1.9	2.2	0.34	-0.44	-0.55	5.29
4	Kazakhstan	1.1	1.2	1.3	-3.18	-0.32	1.14	4.31
5	Kyrgyzstan	2.4	2.7	3.1	0.40	-0.49	3.90	3.19
6	Tajikistan	0.9	1.3	3.4	4.87	7.47	4.56	3.26
7	Turkmenistan	2.4	2.2	0.9	-3.95	-6.29	-6.35	-9.20
8	Uzbekistan	1.8	2.8	4.6	5.34	4.52	-0.20	0.02
9	Albania	2.5	3.0	4.8	2.89	4.03	-0.16	0.01
10	Bosnia and Herzegovina	3.6	3.2	4.3	0.33	3.93	3.74	1.83
11	Montenegro	-	-	3.2	-	-	0.92	-0.74
12	North Macedonia	2.5	2.6	3.2	3.22	3.20	-0.54	-1.50
13	Serbia	-	-	5.0	-	-	0.92	-0.79
14	Turkey	2.1	2.2	3.2	0.67	2.11	1.39	2.28
15	Belarus	2.6	1.8	3.4	-7.06	4.70	0.53	2.57

TABLE 10
(CONTINUED)

		Average yield (MT/ha)			Trend growth rate (% per year)			
		1992–1994	1999–2001	2015–2017	1992–1999	2000–2010	2011–2017	2011–2017 excl. 2012
16	Republic of Moldova	3.0	2.3	3.1	-2.18	1.57	4.11	3.18
17	Russian Federation	1.6	1.7	2.7	-2.02	2.09	5.67	6.46
18	Ukraine	3.0	2.3	4.4	-6.12	2.31	4.36	6.55
	Caucasus	1.8	2.1	2.9	0.17	0.54	2.21	5.26
	Central Asia	1.2	1.4	1.7	0.69	0.42	0.47	2.06
	Central Asia without Kazakhstan	1.9	2.5	2.8	2.25	2.13	-1.38	-2.09
	Western Balkans and Turkey	2.1	2.3	3.5	0.80	3.34	1.46	1.68
	Western Balkans without Turkey	2.9	3.0	4.8	2.14	5.24	1.47	-0.53
	European CIS	1.9	1.8	3.1	-2.72	2.43	4.58	5.78
	European CIS without Russian Federation	2.9	2.2	4.2	-5.95	2.60	3.88	5.93
	All 18 countries	**1.8**	**1.8**	**2.9**	**-1.07**	**2.21**	**3.47**	**4.53**
	EU-28	4.1	4.6	5.4	2.68	1.06	1.37	1.29

SOURCE: Computed with FAOSTAT data.

A decomposition of the change in production between the periods 1999–2001 and 2015–2017 into contributions of area and yield show that bulk of the contribution was from yield growth. For the 16 countries together, the contribution of yield was 85 percent. For the EU-28, the entire increase in production was due to yield, as farmed area declined over the years. The situation was similar in the Western Balkans and Turkey subregion, largely due to Turkey, where the cropped area fell and left the full contribution coming from higher yields.

Supporting smallholders and family farms for their multiple benefits

Poverty, social vulnerability and other difficulties prevent rural communities from fulfilling their role as important building blocks of food security (FAO, 2016a). Society as a whole tends to undervalue the potential of family farming[13] to produce quality goods and services and contribute to economic, environmental and social sustainability.

After the collapse of the Soviet Union in the early 1990s, newly independent states underwent transformation from planned economy towards market economy. In most of these countries, land reforms were among the core reforms implemented and have led to the dismantling and privatization of collective farms and to the emergence of numerous farm operators and landowners.

At present, out of the 17 FAO programme countries in the region,[14] the large majority have farm structures dominated by smallholders and family farms. These countries have either farm structures fully dominated by smallholders or dualistic farm structures with large number of small farms on one side and small number of large corporate farms on the other side (FAO, forthcoming).

In almost all programme countries, 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 and divided into three to five land plots are,

for obvious reasons, not conducive to commercially oriented agriculture and represent an important major constraint for agricultural development. A main concern, then, is that the farm structure does not significantly develop, as has been experienced in many other countries in which farms gradually become larger and where land market dynamics impact changes in farm structure.

One study by Lerman and Sedik (2009) reviewed production and productivity trends for these farms in Tajikistan and Uzbekistan and made two findings:

- The recovery of agricultural production was driven to a considerable extent by productivity increases (intensive growth) and only to a smaller extent by changes in the use of inputs and resources (extensive growth).

- The bulk of the productivity changes that contributed to the overall growth came from individual rather than from corporate farms. The authors also claimed that these findings should be mostly valid for the rest of the post-Soviet countries.

During 2017 and 2018, FAO conducted country studies on the needs and constraints of smallholders and family farms in seven ECA countries (Albania, Armenia, Georgia, Kyrgyzstan, Republic of Moldova, North Macedonia and Tajikistan) as part of a regional project (TCP/RER/3601).

In the seven study countries, definitions of farms, holdings and farmers are not well-developed. In most countries, there is only a formal statistical definition in place. However, for the purpose of policy implementation, some countries have developed their own definitions of family farms and/or smallholders. These definitions differ from country to country, making it difficult to make comparative analyses.

Yet, there is a debate in policy circles among supporters of large corporate farms and of smallholders.[15] One side supports larger farms on the grounds of economies of scale, while the other side supports smaller and family farms, claiming multiple benefits, including higher productivity. For example, the study by Lerman and Sedik refers to a number of country case studies for Ukraine, Republic of Moldova and the Russian Federation, as well as for the United States of America; all of these countries demonstrate that large (corporate) farms do not outperform small (family) farms.

While this is not the place to review the extensive comparative studies on small versus large farms, the truth usually lies somewhere in the middle, and viewing agriculture only from the perspective of productivity and general economic expediency would be too narrow. Agriculture produces not only commodities but also livelihoods, cultures, ecological services and more, and as such, the products of farming cannot be treated in the same way as other goods (Rosset, 1999).

Small and family farms are known to have a number of advantages over larger farms when it comes to the key concerns addressed in this report, such as reducing poverty, hunger and malnutrition; promoting healthy diets; and rendering agriculture more environmentally friendly and resilient to shocks (HLPE, 2013).[16] While small and large farms will continue to coexist and play out their respective roles, one question that needs to be asked is whether the current constellation of policies is supportive of small farms or is generating disincentives. This is an empirical question and deserves analysis because the answer could be crucial for multiple targets and goals of the 2030 Agenda for Sustainable Development. The underlying premise is that, given the multiple benefits, it is desirable that small farms should not be penalized by policies, explicit or economy-wide, but instead offered additional incentives as a reward for the multiple benefits they generate. Doing that would be consistent with the desired reorientation of agricultural policies for food security and nutrition.

Many of these issues are being reviewed in-depth under an FAO umbrella programme in the ECA region on empowering smallholders and family farms for improved rural livelihoods and poverty reduction (Regional Initiative 1). This Regional Initiative is aimed mainly at eliminating rural poverty, improving the resilience of rural populations – especially smallholders and their contributing family workers – and promoting inclusive growth for rural economies »

TABLE 11

SHARE OF FAMILY FARMS OF THE TOTAL PRODUCTION IN SELECTED COUNTRIES OF THE ECA REGION[1]

	Armenia	North Macedonia	Georgia	Kyrgyzstan	Republic of Moldova	Tajikistan
Crop production						
Total grain, of which	99.1	84.6	91.9	100.0		60.3
Wheat			84.7	94.0	15.7	63.1
Barley		93.8	97.3	95.0		
Corn/Maize		78.0	94.6	98.0	67.2	46.1
Rice		89.1		97.0		64.4
Oilseeds		59.5		92.0	15.0	
Sugar beet				92.0		
Potatoes	99.6		99.0	99.0	85.7	49.7
Grapes	97.7	68.8	85.8	97.0	73.6	41.1
Fruit	99.8	87.4	98.2	94.0	55.6	41.9
Cotton				94.0		82.0
Tobacco		99.8		100.0		
Vegetables	99.3	97.1	94.4	99.0	81.6	47.3
Haricot beans			99.8			
Melons			100.0			73.1
Citruses			99.0			
Tea leaf			80.0			
Livestock - herd size						
Cattle	99.2	98.0	99.2	99.0	95.0	6.0
Pigs	93.0	81.0	91.0		56.0	
Sheep	98.9	96.0	96.3	100.0	97.0	13.1
Goats		98.1			99.0	
Horses	100.0	99.8	50.8	99.0	99.0	20.5
Poultry	54.8	76.9	98.4	86.0		6.8
Beehives		99.6			98.0	5.9
Livestock - production						
Meat total						3.5
Beef and veal	99.7		96.2	99.0	60.6	
Pig meat	98.3		61.6	100.0	0.0	
Sheep meat	100.0		99.9	100.0	0.0	
Poultry meat	33.0		33.8	82.0	0.0	
Eggs	69.2	40.3	29.5	72.0	57.0	2.3
Honey			93.5	74.0	0.0	6.2
Cow milk	99.2	95.0	98.8	99.0	95.0	3.7
Sheep and goat milk		97.3		99.0	0.0	
Sheep wool	99.4	95.4	98.1	100.0	97.6	13.2

NOTES: Blank cells could indicate a lack of data or a lack of output for the specific product. Shares are given as a percentage of the total national output.
SOURCE: Based on country studies under an ongoing FAO project in the ECA region under Regional Initiative 1, Empowering Smallholders and Family Farms for Improved Rural Livelihoods and Poverty Reduction.

[1] FAO proposes to define small-scale food producers using a combination of two criteria – namely, the physical size of the food producer, as expressed by the amount of operated land and number of livestock head in production, and the economic size of the food producer, as expressed by its revenues. These criteria are applied in relative terms:

1. Physical size: Operate an amount of land falling in the first two quintiles (the bottom 40 percent) of the cumulative distribution of land size at national level (measured in hectares) and operate a number of livestock head falling in the first two quintiles (the bottom 40 percent) of the cumulative distribution of the number of livestock per production unit at national level (measured in tropical livestock units, or TLUs).
2. Economic size: Generate annual economic revenue from agricultural activities falling in the first two quintiles (the bottom 40 percent) of the cumulative distribution of economic revenues from agricultural activities per production unit at national level (measured in purchasing power parity dollars).

» through the sustainable use of natural resources and the development of commercial family farms. The work focuses equally on sustainable production and social, economic and environmental aspects.

Recent surveys and studies by FAO (FAO, forthcoming) on the needs and constraints of smallholders and family farms in the abovementioned seven countries (Albania, Armenia, Georgia, Kyrgyzstan, Republic of Moldova, North Macedonia and Tajikistan) under Regional Initiative 1 reveal that family farms account for large shares of outputs for most agricultural products (Table 11). For example, over 90 percent of the outputs across the crop and livestock subsectors were produced by smallholders in Armenia, Georgia, Kyrgyzstan and North Macedonia. In Armenia, almost 100 percent of plant-based products and 92 percent of animal husbandry products are produced by family farms.

The FAO studies also show that the structure of agricultural production in most countries underwent extensive changes over the last two decades following the transition declines. Such changes were mostly driven by the need for expanded domestic production for enhancing food security, but also influenced by newly established trade regimes, including customs unions. However, despite the recorded growth, overall sustainable production and productivity gains were undermined by factors that discriminated against smallholders in areas such as access to land and other resources, inputs and services, support from research and extension, and finance.

Transformations in food consumption patterns and transition to healthy diets

The transformation of food consumption patterns in this region, reviewed in this subsection, mirrors that taking place in many other countries and subregions around the world, driven by such common factors as large increases in food production, trade and investment liberalization, urbanization, changes in lifestyles, and income growth. Yet, concerns are being expressed about current trends in the quality of diets. For example, the Global Burden of Disease Study 2017 (GBD 2017 Diet Collaborators, 2019), published in early 2019, concludes that poor diets are responsible for more deaths than any other risk factor in the world. An estimated one in five deaths globally, or roughly 11 million deaths, can be attributed to poor diets, according to the study. Also published in early 2019, the EAT-Lancet Commission on Food, Planet, Health report concluded that malnutrition in all its forms – including obesity, undernutrition and other dietary risks – is the leading cause of poor health globally (EAT-Lancet Commission, 2019). These and many other similar reports point to unhealthy diets as being central to the challenges of food insecurity and malnutrition.

Most of what follows in this subsection reviews the evolution for the Europe and Central Asia region of the availability for consumption[17] of a number of food items and subgroups, four of them crop-based (fruits, vegetables, vegetable oils and pulses) and four animal-based (red meat, poultry, fish and milk). These are among the foods prominent in the literature on healthy diets. As the main purpose of the transformation of food systems and consumption patterns is the pursuit of healthy diets, what follows first summarizes the current understanding of what constitutes a healthy diet.

What is a healthy diet?

A diet is a set of a many individual food items from various food groups, such as from cereals, legumes, foods from animal sources, vegetables and fruits. The exact make-up of a diversified, balanced and healthy diet differs across subregions, countries and societies based on such factors as availability, traditional food habits, and preferences. In the WHO Healthy Diet factsheet,[18] a healthy diet for adults is said to contain fruits, vegetables, legumes (lentils, beans, etc.), nuts and whole grains such as unprocessed maize, millet, oats, wheat and brown rice (WHO, 2015). The WHO guideline also recommends specific levels, such as at least 400 g of fruits and vegetables a day, less than 10 percent of total energy intake from free sugars, and less than 30 percent of total energy intake from fats (unsaturated fats preferred over saturated fats). The guideline is also specific that industrial trans fats (found in processed food, fast food, snack food, fried food, frozen pizza, pies, cookies, margarines and spreads) are not part of a healthy diet.

Two recent reports on this subject, both published in early 2019, are more specific on the constituents of a healthy diet. The Global Burden of Disease Study 2017 (GBD 2017 Diet Collaborators, 2019) quantifies optimal intake levels for several key food subgroups and nutrients. Optimal levels (and a range) are specified for 15 dietary risk factors – diets low in fruits, vegetables, legumes, whole grains, nuts and seeds, milk, fibre, calcium, seafood omega-3 fatty acids and polyunsaturated fats; and diets high in red meat, processed meat, sugar-sweetened beverages, trans fatty acids and sodium. Note that the identified optimum depends on dietary risk factors and is not necessarily valid in all cases. Dietary risk factors were identified based on published scientific studies on the links between food consumption and health risks, mainly derived from studies conducted in high-income countries.

For each of the 15 dietary risk factors, the study also assesses the gaps between the optimal and actual intake for 21 subregions of the world, including four from the ECA region: Western Europe, Central Europe, Eastern Europe and Central Asia. It finds that intakes of all 15 dietary elements were suboptimal for almost every subregion; no subregion achieved the optimal amount of all 15 dietary factors, and not one dietary factor was consumed/obtained in the right amounts in all 21 subregions of the world. The largest shortfalls in optimal intake were found for nuts and seeds, milk, and whole grains. In parallel with this suboptimal food consumption, the daily intake of all foods and nutrients classified as "unhealthy" by the GBD study exceeded the optimal level globally, with the largest excesses noted for sugar-sweetened beverages, processed meat, sodium and red meat. All of these findings, on both suboptimal intakes and excesses, also apply to the four ECA subregions – the one exception being that the intake of vegetables was found to be optimal in Central Asia. Likewise, the report of the EAT-Lancet Commission on Food, Planet, Health developed global scientific targets for the consumption of specific food subgroups in the form of a safe range, considering both human and planetary health (environment and climate change, for example).

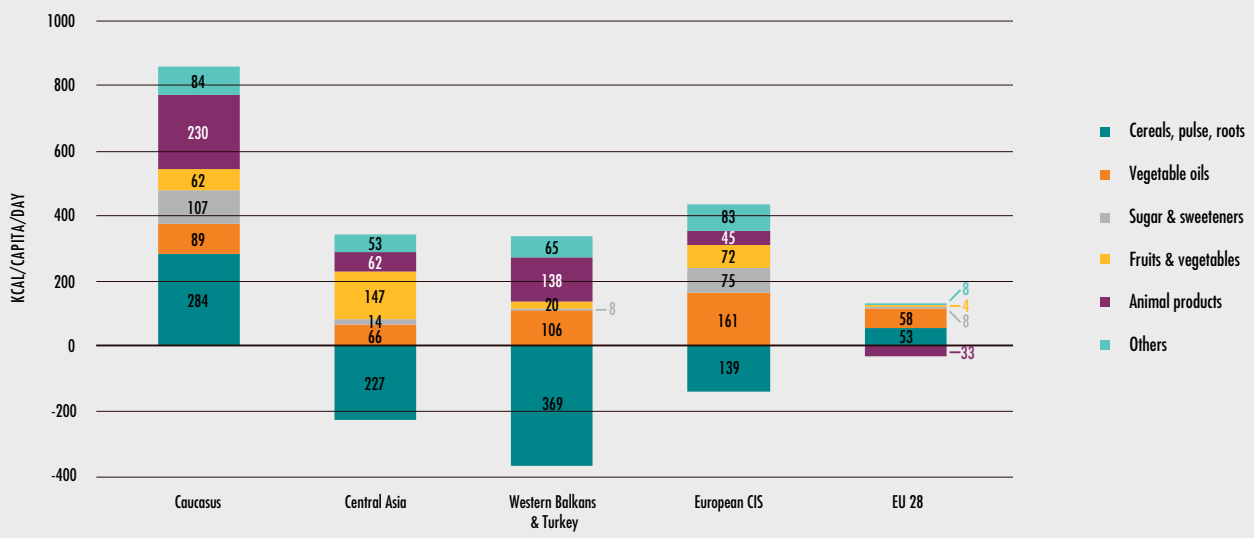
Setting specific intake levels for individual food items is fraught with uncertainties, as this depends on the robustness of the links between intake levels and health effects, which are not easy to ascertain. The above two studies were published recently and, at the time of the writing of this report, were yet to be commented on and assessed by the wider research community. Such studies are useful references for further analysis of healthy diets at the subregional, country and local levels, including for developing national dietary guidelines.

The evolution of the availability for consumption of selected prominent crop- and animal-based food items and food subgroups

Unlike in many other subregions of the world, food inadequacy at the national level was not an issue in the Europe and Central Asia region even in the early 1990s, except for six or seven countries, mainly in the Caucasus and Western Balkans subregions. Of the 18 countries in the ECA subregions other than the EU-28 and EFTA, the number of countries with national average total dietary energy supply (DES) below 2 500 kcal was seven in 1992–94, five in 1999–01 and only one in 2011–13 (and even this could be a data issue). On the other hand, the total DES was over 3 000 kcal in nine of the 18 countries in 2011–13. These high levels of DES are reflected in very low prevalence of undernourishment. The average total DES for the EU-28 was 3 310 kcal in 1992–94 and 3 407 kcal in 2011–13.

What has changed is the composition of diets. Figure 15 shows changes between 1992–1994 and 2011–2013 in the share of dietary energy supply from various food groups. In the case of the European Union, changes were minimal, as the dietary transition had already matured by the early 1990s. In three other subregions, the data show that DES from animal-based foods increased much faster than from crop-based sources in most countries. As a result, the share of DES from animal-based foods increased in most countries of the region. The share of cereals and starchy foods has fallen, which is more than offset by increases in the share of other foods. There were notable increases for vegetable oils in all subregions, by between 60 kcal and 160 kcal per day. Likewise, the shares of fruits and vegetables and of sugar and sweeteners also increased, but not similarly in all subregions. The large increase in the share of fruits and vegetables in Central Asia is a positive development for the evolution of healthy diets.

FIGURE 15
CHANGES IN FOOD ENERGY AVAILABILITY BY FOOD GROUP IN THE ECA REGION BETWEEN 1992–1994 AND 2011–2013



SOURCE: Based on FAO Food Balance data.

What follows takes stock of the changes over the past three decades in the availability for consumption of eight food items or subgroups: fruits, vegetables, vegetable oils, pulses, milk, red meat, poultry and fish. These are foods prominent in discussions on healthy diets. Table 12 presents availability levels in average daily grams per capita (g per day, in short) for the periods 1992–94, 1999–01 and 2011–13. The latest year for which food balance data is available for most countries is 2013. Also shown are two rows of population-weighted averages. One is for all 18 countries (ECA-18). As just three countries – the Russian Federation, Turkey and Ukraine – together account for over 70 percent of the total (ECA-18) population, weighted averages are also shown for the other 15 countries (ECA-15) after excluding data for these three countries. The last row of figures shows the averages for the 28 Member States of the European Union (EU-28).

Overall, there have been large increases for all subgroups in most of the countries in Table 12. As a result, availability has been more diverse, which seems to be particularly the case for countries in the Western Balkans and Turkey. On the other hand, countries in Central Asia generally have lower average availability of fruits, vegetables and fish, while those in the Caucasus subregion have poor levels of availability of meat, fish and pulses. These trends point to the need for more efforts towards raising the availability of several food items through nutrition-sensitive policies in both the production and trade areas.

Fruits and vegetables are very important for a healthy diet. The WHO-recommended desirable daily intake of fruit and vegetables combined is at least 400 g. The Global Burden of Disease Study 2017 and the EAT-Lancet Commission report provide guidelines for fruits and vegetables »

TABLE 12

EVOLUTION OF THE AVAILABILITY FOR CONSUMPTION IN SELECTED ECA COUNTRIES OF PROMINENT FOOD SUBGROUPS

	Fruits			Vegetables			Vegetable oils			Pulses		
	1992–1994	1999–2001	2011–2013	1992–1994	1999–2001	2011–2013	1992–1994	1999–2001	2011–2013	1992–1994	1999–2001	2011–2013
Albania	85	193	379	396	433	683	22	19	19	11	13	14
Armenia	139	126	284	332	349	912	3	10	24	-	-	-
Azerbaijan	221	164	203	157	284	468	4	6	8	-	0.0	3
Belarus	113	78	188	217	261	407	13	26	51	-	-	0.1
Bosnia and Herzegovina	66	78	252	369	402	528	5	19	20	20	12	18
Georgia	181	126	122	192	215	155	4	11	19	1	0.2	0.1
Kazakhstan	33	36	224	155	256	544	18	24	57	1	0.3	2
Kyrgyzstan	45	61	80	163	357	411	16	7	17	1	8	10
Montenegro	-	-	391	-	-	653	-	-	24	-	-	18
North Macedonia	201	270	272	441	511	543	14	33	45	13	17	14
Republic of Moldova	188	151	147	280	262	248	12	10	35	2	1	2
Russian Federation	101	95	191	202	241	306	18	26	37	7	3	5
Serbia	-	-	236	-	-	288	-	-	18	-	-	19
Tajikistan	74	46	85	285	190	449	28	21	28	0.5	1	7
Turkey	334	308	344	584	684	659	48	52	64	37	35	36
Turkmenistan	81	106	153	257	254	416	29	23	22	-	-	-
Ukraine	96	75	162	241	279	449	25	25	35	12	8	4
Uzbekistan	77	95	231	381	312	712	35	33	29	-	0.1	0.1
Weighted avg. (all 18)	138	131	221	287	339	456	24	30	40	11	9	11
Weighted avg. (excl. 3)	99	97	204	267	293	517	19	22	31	2	2	5
EU-28	260	262	277	313	336	307	47	50	54	9	9	7

	Milk			Red meat			Poultry			Fish		
	1992–1994	1999–2001	2011–2013	1992–1994	1999–2001	2011–2013	1992–1994	1999–2001	2011–2013	1992–1994	1999–2001	2011–2013
Albania	555	676	826	53	62	130	8	20	36	2	8	14
Armenia	233	259	553	45	41	83	6	17	38	3	3	10
Azerbaijan	270	240	405	31	33	57	10	12	28	9	6	6
Belarus	616	547	441	168	143	164	31	24	78	3	27	42
Bosnia and Herzegovina	297	426	478	32	38	52	11	12	40	1	6	12
Georgia	198	383	396	51	56	41	6	17	35	12	3	29
Kazakhstan	406	563	779	157	104	140	13	10	49	10	9	15
Kyrgyzstan	453	543	573	116	103	82	8	3	13	0	2	6
Montenegro	-	-	923	-	-	184	-	-	41	-	-	32
North Macedonia	282	306	427	63	53	52	24	34	50	8	11	15

TABLE 12 (CONTINUED)

	Milk			Red meat			Poultry			Fish		
	1992–1994	1999–2001	2011–2013	1992–1994	1999–2001	2011–2013	1992–1994	1999–2001	2011–2013	1992–1994	1999–2001	2011–2013
Republic of Moldova	385	373	418	80	39	61	19	17	45	3	13	35
Russian Federation	332	397	461	132	87	125	28	28	71	41	50	63
Serbia	-	-	407	-	-	112	-	-	29	-	-	19
Tajikistan	229	141	147	30	23	67	1	0.2	8	1	0.2	1
Turkey	409	347	501	34	31	42	22	27	52	22	22	17
Turkmenistan	337	370	380	81	86	147	7	5	11	16	6	10
Ukraine	401	424	418	122	68	80	20	15	64	21	35	41
Uzbekistan	415	376	363	65	54	90	6	3	5	3	1	2
Weighted avg. (all 18)	369	396	464	103	70	95	21	22	54	26	31	36
Weighted avg. (excl. 3)	388	412	462	88	70	100	12	10	29	5	7	13
EU-28	618	640	648	179	175	164	47	54	61	54	58	62

NOTES: The phrase "Weighted avg. (excl. 3)" refers to the population-weighted averages for 15 countries after excluding data for three countries – the Russian Federation, Turkey and Ukraine – which together account for 70 percent of the total (ECA-18) population. Thus, these two rows reflect better changes in ECA-15 together. The phrase "Weighted avg. (all 18)" refers to weighted averages for all 18 countries together. Averages in each of the three-year periods 1992–94, 1999–01 and 2011–13 are shown in daily grams per person.
SOURCE: FAOSTAT Food Balance data (food availability for human consumption).

» separately. For fruits, the target for a reference healthy diet is 200 g (target range 100–300 g) in the Lancet report, and in the GBD study, 250 g (optimal range of 200–300 g) is given as the optimal intake in diets. For vegetables, the recommendations are 300 g (with a range of 200–600 g) and 360 g (optimal range of 290–430 g) in the two studies, respectively.

The data in Table 12 show that availability has improved considerably in most countries. Using 200 g as a threshold for fruits, availability exceeded this level in 1999–01 in just two (North Macedonia and Turkey) of the 16 countries that existed at the time but in ten of the 18 countries by 2011–13. Likewise, for vegetables, using 300 g as a threshold, seven of the 16 countries exceeded this mark in 1999–01, and 15 of 18 countries exceeded it by 2011–13. While availability looks much improved in recent years, the 2017 GBD study finds that intakes (based on consumption surveys) of both fruits and vegetables fall well short of optimal levels in diets low in fruits and vegetables in all four ECA regions of the 2017 GBD study, with one exception being Central Asia, for vegetables. Further future analysis at the country level should clarify how national average availability relates to actual intake.

For **fish,** national average daily availability in 2011–13 was below 20 g in 12 of the 18 countries covered. Availability increased since 1999–01 in 14 of the 16 countries with data for both periods, with large rises in Armenia (though from a very low base), Belarus, Georgia and Republic of Moldova. Overall, availability in the ECA region is fairly low relative to availability in some other regions of the world. In the Asia and the Pacific region, for example, availability averaged 104 g in Oceania, 95 g in East Asia and 91 g in South East Asia but only 18 g in South Asia. Fish availability has been rising in nine of the 16 ECA countries in Table 12 between 1999–01 and 2011–13. Moreover, the share of fish in combined fish and meat consumption is also relatively low in this region (between 10 percent and 25 percent, compared to almost 50 percent in Asia and the Pacific).

In the EAT-Lancet Commission's 2019 report,[19] 28 g of fish daily is suggested as a target for a reference healthy diet, with a range of 0–100 g. The range goes up to 100 g because scientific studies show that high intakes of fish are strongly associated with good health outcomes. The data in Table 12 show that only six of the 18 countries had availability exceeding 28 g in 2011–13.

The recommendation in the GBD 2017 report is limited to seafood omega-3 fatty acids and not to the intake of fish as a whole. Fish have an important place in agriculture- and food-based approaches to food security and nutrition in the ECA region.

This region has relatively high levels of the availability of **milk** for human consumption in most countries. In 2011–13, barring one case of a very low level, daily availability ranged between 363 g in Uzbekistan to 923 g in Montenegro, with a weighted average of 464 g. Indeed, availability was already high in 1999–01 in most countries, and there were further increases by 2011–13 – markedly so in Albania, Armenia, Azerbaijan, Kazakhstan, North Macedonia and Turkey. There is no WHO guideline on the desirable intake level of milk. In the GBD 2017 study, optimal intake is set at 435 g per day (optimal range of 350–520 g), including non-fat, low-fat, and full-fat milk but excluding soy milk and other plant derivatives. In the EAT-Lancet Commission study, the range for dairy foods in whole milk or equivalent is set at 0–500 g per day, with the mid-point of 250 g (about one glass of milk per day) being the reference target. Thus, to the extent that average availability also reflects average intake, milk consumption in most ECA countries seems to be within the range recommended in dietary guidelines.

The availability of both **red meat** (mainly beef, pork and lamb/mutton) and **poultry** rose markedly between 1999–01 and 2011–13. But this was much more so for poultry; while the availability of red meat in the 18 countries as a whole rose from 70 g to 95 g (a compound growth rate of 2.6 percent), the availability of poultry more than doubled, from 22 g to 54 g (a compound growth rate of 7.9 percent). As a result, the share of poultry in total meat rose markedly across the region, from 24 percent to 36 percent in ECA-18 as a whole.

In the EAT-Lancet Commission's 2019 report, the target range for red meat is from 0 g to 28 g daily, with the mid-point of 14 g used as a reference target. For poultry, the range is 0g to 58 g, with 29 g as the mid-point target level. In the GBD 2017 report, where the risk factor considered is diet high in red meat, the optimal level of intake is determined to be 23 g (optimal range of 18g to 27 g). No similar target is assessed for poultry. The data for the 18 ECA countries covered here show that, for red meat, availability in 2011–13 exceeded 28 g in all 18 countries, markedly so in many of them. As for poultry, availability is mostly between 30 g and 60 g, below the 58 g upper range in the EAT-Lancet Commission study for all but two of the countries covered. One notable exception is a substantially lower level of availability in four countries, all of them in Central Asia.

The main conclusion of this review is that while virtually all countries in the region made impressive gains during the past three decades in increasing the availability of diverse foods through production and trade, there remain questions about the quality of current diets. As indicated in the GBD 2017 report, based on food consumption surveys, for each of the 15 risk factors identified, intakes of all 15 dietary elements were suboptimal for all subregions (one exception was vegetables in Central Asia), and intakes of all foods/food groups and nutrients classified as "unhealthy" by the GBD study exceeded the optimal level globally and in all four ECA subregions.

Despite the overall impressive progress made in availability and diversity, the data also show significant differences across subregions and countries. Aside from this picture at the national average level, there may also be considerable inequities in consumption across population groups and regions within countries. These considerations call for intensifying efforts towards nutritive-sensitive agricultural and food policies as well as interventions targeted at vulnerable population groups and regions. Increasing access to affordable healthy diets should be taken seriously, and actions should be initiated towards comprehensive food system interventions that promote healthy diets. Closely linked to this transformation is the impact on the environment of current food consumption patterns. These are the concerns addressed in the next section.

Generating essential statistics and analysing them are equally important. Food consumption surveys[20] are often sparse and inadequate, and the picture that is most often painted is based on FAO data on average availability. The question raised several times above is to what extent the two sources paint the same picture. Besides undertaking more frequent

food consumption surveys, selective country case studies to understand the extent to which the FAO data proxy actual intakes would help considerably in the articulation of food policies related to production, trade and targeted interventions.

Changes in the structure of trade and in non-tariff measures for food and agricultural products

Trade and food security and nutrition

The role of trade in food security and nutrition is attracting the increasing attention of development practitioners in different disciplines. The 2014 Rome Declaration on Nutrition of the Second International Conference on Nutrition (ICN2) called for trade policies to be conducive to fostering food security and nutrition for all. The ICN2 Framework for Action recommends that countries identify opportunities to achieve global food and nutrition targets through trade and investment policies. The 2030 Agenda for Sustainable Development has identified trade as a cross-cutting means for development and has called for countries to enhance policy coherence for sustainable development. Furthermore, "trade and investment for improved nutrition" is one of the action areas of the Work Programme for the UN Decade of Action on Nutrition (UN Decade of Action on Nutrition Secretariat, 2019).

Trade is credited in many countries with lifting millions of people out of poverty and food insecurity and putting them on the path to prosperity. But there is no guarantee that this is always the case, as trade often creates both winners and losers, and outcomes vary across countries and communities (FAO, 2006; Bineau and Montalbano, 2011; McCorriston *et al.*, 2013). Trade contributes to improving nutrition by inter alia providing a more stable supply of diverse foods essential for healthy diets. But trade can also have negative impacts on nutrition by facilitating easier access to foods high in energy, fats, sugars and/or salt, which are associated with obesity and non-communicable diseases. Therefore, trade policies can be both coherent and incoherent with nutrition goals. It is for this reason that the ICN2, the United Nations System Standing Committee on Nutrition and the 2030 Agenda for Sustainable Development stress the word "coherence" in the sense that trade policy should be coherent with goals for food security and nutrition (UNSCN, 2016a).

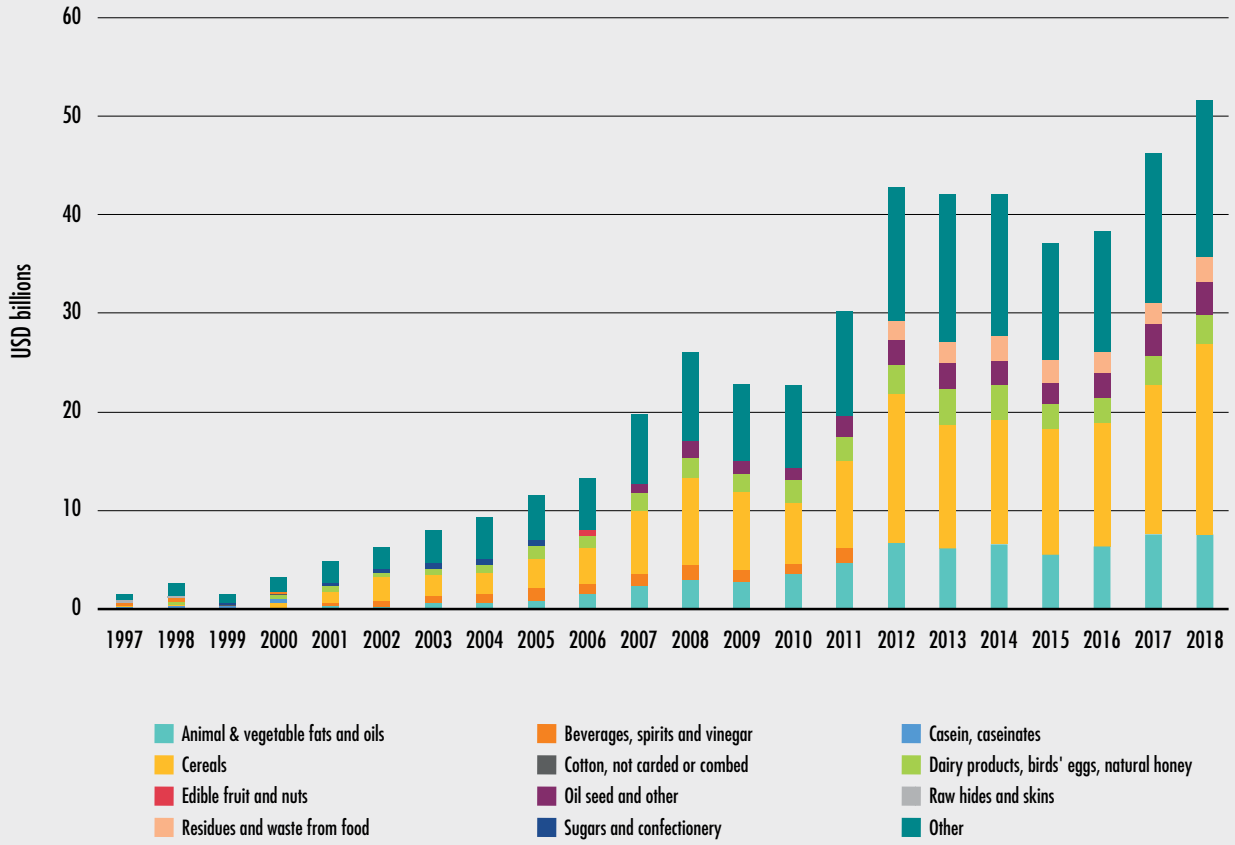
This subsection reviews two topics that contribute to our understanding of the linkages between trade and food security and nutrition: 1) agrifood trade development in post-Soviet countries, covering the period 1996–2018; and 2) the state of non-tariff measures (NTMs) in some Europe and Central Asia subregions, based on findings from recent in-depth country studies on NTMs undertaken by the United Nations Economic Commission for Europe (UNECE).

Agrifood trade development in post-Soviet countries in 1996–2018[21]

Over the past two decades, the trading system and trade environment in post-Soviet countries have changed significantly. Trade development ranks high on the reform agenda of the ECA countries with economies in transition, as a prerequisite for achieving income diversification through inter alia increased specialization in high value-added products. This strategic orientation finds its best expression in the proliferation of regional cooperation arrangements as a stepping stone for global integration. Prominent among such arrangements are the Eurasian Economic Union (EAEU), association agreements with the European Union, and a growing emphasis on anchoring trade reforms in the WTO-administered multilateral trading system. These agreements are complemented by preferential market access arrangements, including under the Generalized System of Preferences schemes with Canada, Japan, Norway, Switzerland, Turkey and the United States of America.

Total agrifood exports from the covered post-Soviet countries have grown rapidly from 1997, reaching in current USD 51 billion in 2018 (Figure 16). Growth was steady until 2012, after which exports stagnated and even fell in 2015 and 2016 but picked up again in 2017 and 2018. A number of factors impacted the slowdown between 2012 and 2016, including global and regional slowdowns in economy and trade, financial crises, trade tensions in the region, and fluctuations in currency values.

FIGURE 16
AGRIFOOD EXPORTS BY MAIN PRODUCT GROUPS IN POST-SOVIET COUNTRIES, 1997–2018



NOTES: Figures are given in billions of current USD.
SOURCE: Based on data downloaded from World Integrated Trade Solution (WITS).

The rapid growth of agrifood exports has not been accompanied by large changes in the composition of products. Cereals, oils and fats continue to command the largest share, around 50 percent. The European Union used to be the major export destination for agrifood products from post-Soviet countries, with a share of 40 percent in 1997, but after some fluctuations, the share has levelled off at 20 percent in 2018. However, for some countries (for example, Georgia, Republic of Moldova and Ukraine), shares are higher as a result of the free trade agreement signed between those countries and the EU (FAO, 2017b). Intra-trade among the post-Soviet countries also has been high, reaching almost 50 percent of total agrifood exports in some years. Since 2009, there has been some trade diversification with new or returning trading partners, such as China, India, Iran (Islamic Republic of), Turkey and others.

Agrifood imports also have increased significantly from 1997 to 2018, contributing to large improvements in the availability of diverse foods (Figure 17). Unlike with exports, however, imports have had high variability. Imports soared to their highest level of over USD 60 billion in 2013 but fell sharply to USD 40 billion in 2016, the same level as in 2009. According to the current state of aggregation of the data, the region as a whole was a net importer of agrifood products between 1997 and 2016 but has been a net exporter since 2017.

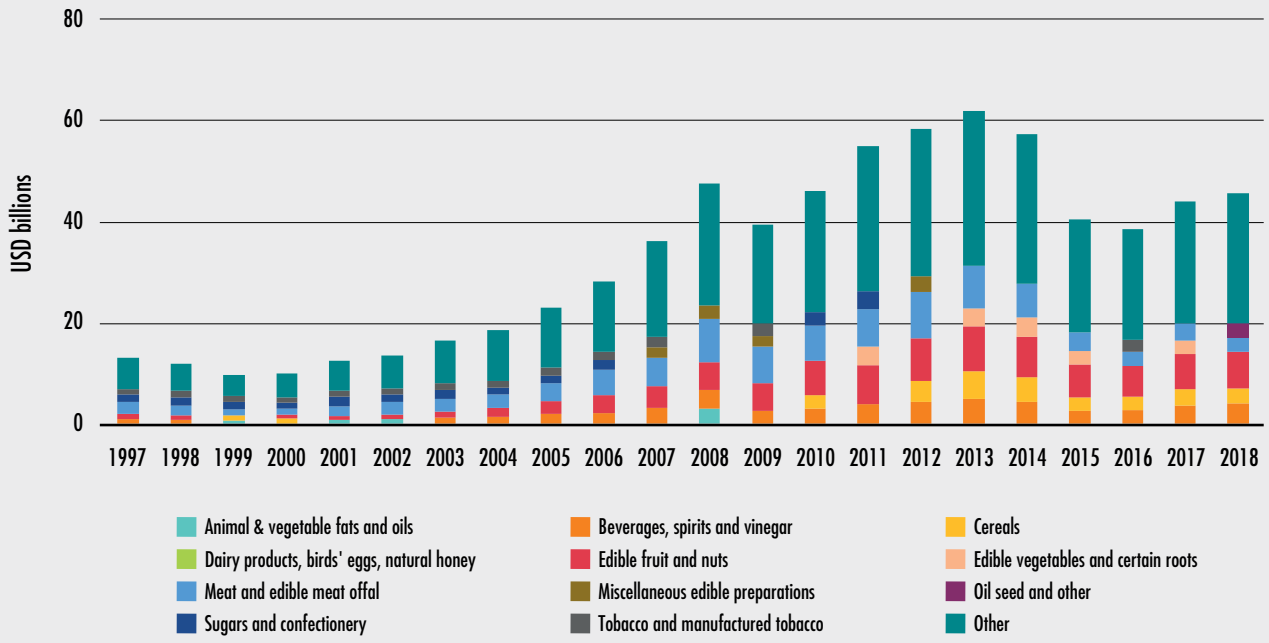
The recent declines in imports in current USD values seem to be driven by a number of factors, notably weak currencies in post-Soviet countries (as a result of oil price drops in earlier years) and import substitution policies introduced by some countries. The main imported agrifood products are meat, fruits and nuts, dairy

products, eggs and honey, and beverages and spirits. Argentina and the European Union have been stable exporters of agrifood products to the region during 1997–2018, accounting for, on average, a 10-percent share of total agrifood imports (Argentina) and a 30-percent share (European Union). The United States of America was among the top five agrifood suppliers until 2014, as were China and Turkey.

Among the reasons for the changing geographical structure of agrifood trade in post-Soviet countries is continued tensions among the key trade players in the region, which have been elevated since 2015. These tensions led to the imposition of import bans by the Russian Federation as an anti-sanction measure on the imports of some agrifood commodities from a number of countries, including the European Union, and a reciprocal ban on goods from Ukraine. This resulted in a decrease of the share of intra-regional trade and a reorientation of exports towards countries outside the post-Soviet region. Export development strategies and import substitution in agriculture that were put in place in countries of the region, as well as harmonization with international and EU standards, were additional factors driving export diversification. Moreover, high demand from Near East countries and changing dietary patterns in China also have played important roles in changing the geography of agrifood trade in post-Soviet countries in recent years.

In summary, over the past two decades, while the share of agrifood trade in total trade has not changed much, 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). The growth of trade

FIGURE 17
AGRIFOOD IMPORTS BY MAIN PRODUCT GROUPS IN POST-SOVIET COUNTRIES, 1997–2018



NOTES: Figures are given in billions of current USD.
SOURCE: Based on data downloaded from World Integrated Trade Solution (WITS).

took place with large fluctuations – reductions in 2014, 2015 and 2016 and recovery in 2017 and 2018 – due to sharp currency depreciations, trade bans and non-tariff barriers.

While food availability increased and diversified, imports of processed foods and foods high in fat, sugar and/or salt also increased, contributing negatively to nutrition and health outcomes. One area for further study should be the drivers of the growth of these foods and their impacts on malnutrition – obesity in particular – and non-communicable diseases. Furthermore, most countries in the region have implemented or are preparing national strategies and programmes for export development (FAO, 2018c). An FAO review of agricultural trade policies in post-Soviet countries summarizes these strategies and programmes, including national programmes and strategies for the support of agricultural exports, related institutions, main instruments and budgetary financing or export support measures (FAO, 2018c). The evaluation of the impact of these measures might be beneficial for a better understanding of how such policies improve agrifood exports and inform public policy institutions on the allocation of resources to maximize the overall gain in the region.

The state of non-tariff measures in some Europe and Central Asia subregions

This subsection highlights the state of non-tariff measures (NTMs) – a key impediment to the further growth of trade – in the region, based on findings from recent in-depth country studies on NTMs undertaken by the United Nations Economic Commission for Europe (UNECE). The country studies cover Albania, Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Republic of Moldova and Tajikistan.[22] The focus of these studies is on regulatory and procedural barriers to trade, covering all prominent NTMs, including those that impact behind-the-border trade activities. The methodology used in these studies combines surveys of private trade actors, public sector stakeholders and market support institutions, as well as analysis of legislation and trade policies.

The continuous reduction in tariffs, coupled with the proliferation of regional cooperation arrangements, as noted earlier, are creating new growth opportunities for food producers across the globe. This is also the case for the Europe and Central Asia (ECA) region, which is home to expanding cooperation arrangements that offer to agriculture markets zero or close to zero tariffs and deep and comprehensive reductions of NTMs through legislative harmonization.

There are huge potentials for these arrangements to benefit the food industry. However, these potentials remain to be exploited. When it comes to increasing exports of food and agricultural products, statistical evidence suggests that reducing tariffs is insufficient. Enterprises also have to comply with the requirements of NTMs, which tend to be most demanding for agricultural products given the multitude of sanitary, phytosanitary and environmental regulatory concerns inherent in their trade.

Studies from the United Nations Economic Commission for Europe (UNECE) show that these NTMs often result in significant impediments to trade, manifesting themselves as regulatory and procedural barriers that operate throughout the food value chain. These barriers are divided into four clusters corresponding to business processes undertaken by traders during export/import activities, such as fully understanding the regulatory and procedural requirements, obtaining and processing various documents, and ending with clearing customs. Each business process is examined in terms of its consequences for transaction costs as well as for food wasted or lost in the process.

The recommendations emerged from consultations with national stakeholders held jointly with governments and are mostly action-oriented. They cover many NTMs, notably those falling under the following three categories: i) trade facilitation; ii) quality control systems embodied in standardization policies, technical regulations, quality assurance, accreditation and metrology; and iii) trade-related infrastructure, including transport and logistics. One key overriding conclusion reached was that these barriers reflect deep-seated systemic capacity shortfalls at all three levels of institutions – the macro level of policy and legislation, the meso level of institutions, and the micro level of enterprises. For this reason, these barriers need to be addressed by going beyond the required legal compliance with the World Trade

Organization rules (such as with the Trade Facilitation Agreement) by focusing on deep-seated systemic capacity shortfalls at all the three levels.

Table 13 highlights major recommendations, grouped into nine categories: i) transparency measures; ii) documentary requirements; iii) measures on border control; iv) transport infrastructure and logistics; v) technical regulations; vi) standardization; vii) conformity assessment; viii) metrology; and ix) enterprise development for promoting diversification of services provided by market support institutions.

To conclude, the UNECE case studies have shown that with the tariffs at the lowest levels, the anticipated trade expansion is often restricted by NTMs. Unlike tariff regulations, NTMs come in multiple forms and often are opaque, deep-rooted and difficult to measure and thus hard to eliminate. They inflate trading costs both behind and at the border, and they result in considerable loss. Agricultural products are among the most sensitive goods to such trade impediments. Therefore, a great deal of attention is being paid globally to the issue of NTMs, trade costs and trade facilitation. ■

TABLE 13
RECOMMENDATIONS REGARDING REGULATORY AND PROCEDURAL BARRIERS TO TRADE IN SELECTED ECA COUNTRIES

Examples of the issues identified	Recommendations
TRANSPARENCY	
Consolidate existing public- and private-sector consultative mechanisms	Consolidate public-private consultations under one institutional mechanism – for example, as stipulated under Article 23.2 of the WTO Trade Facilitation Agreement – using existing mechanisms that are supported by state agencies
Develop the advance rulings system	Educate traders on information requirements while requesting advance rulings; establish a law on binding advance rulings; make use of information and communications technologies; establish online systems for managing advance rulings
Consolidate information dissemination activities	Consolidate information on regulatory and procedural trade barriers in a single webpage maintained by one state agency; intensify awareness-raising activities to alert traders about the new/revised legislation
DOCUMENTARY REQUIREMENTS AND THE USE OF ELECTRONIC DOCUMENTS	
Reduce red tape	Recognize certificates issued by authorized state agencies and global conformity assessment bodies by waiving
AT BORDER CONTROL	
Consolidate risk management (refine risk assessment parameters, post-clearance audit, Authorized Economic Operators schemes)	Strengthen risk identification and evaluation, the preparation of risk indicators, and the creation of risk profiles; develop holistic trader audits and use findings to adjust the parameters in the risk management system; develop support services to assist enterprises in ensuring complete and full compliance with the Authorized Economic Operators criteria
Strengthen border control agencies (food safety inspection bodies, storage facilities)	Equip food safety inspection bodies with additional laboratories accredited to international standards, and equip the bodies with refrigerated trucks for transporting samples; increase storage facilities for a wider application of separate release from clearance
Reconsider customs valuation practices	Ensure compliance with the WTO Customs Valuation Agreement; adhere, to the extent possible, to this WTO agreement
TRANSPORT INFRASTRUCTURE AND LOGISTICAL SERVICES	
Strengthen the brokerage industry	A proper system for testing, training, licensing, accrediting and monitoring freight forwarders; encourage the establishment of a new customs brokers association
Improve facilities at border crossing points and inland terminals	Focus especially on basic infrastructure for clearing perishable goods, including facilities for physical inspection, refrigeration points for perishable cargo, quarantine facilities at or close to border crossing points, etc.
Improve weighing practices at border crossing points and inland terminals	Equip border crossing points and inland terminals with modern weighing instruments; establish guidelines on weighing and measurement practices; introduce international vehicle weight certificates; equip border crossing points with essential facilities

TABLE 13
(CONTINUED)

Examples of the issues identified	Recommendations
TECHNICAL REGULATIONS	
Strengthen line ministries with additional skills	Accord priority in reform initiatives to creating pools of national experts within line ministries
STANDARDIZATION	
Strengthen national institutes of standards	Open twinning opportunities to learn from more advanced ECA countries; build in-house training services; adopt international best practice and standards
CONFORMITY ASSESSMENT	
Achieve international recognition for national accreditation bodies	Seek the mutual recognition of national accreditation bodies by such global bodies as the EA Multilateral Recognition Arrangement (MLA) and the International Laboratory Accreditation Cooperation (ILAC)
METROLOGY	
Strengthen national systems of metrology	Strengthen the national institutes of metrology via, inter alia, stronger legal metrology, legal requirements for measurement instruments, and traceability of regulated measurements and measuring instruments
ENTERPRISE DEVELOPMENT: PROMOTE THE DIVERSIFICATION OF SERVICES PROVIDED BY MARKET SUPPORT INSTITUTIONS	
Marketing and strategic planning support services	Accord priority to establishing sector-specific market intelligence services, equipping existing enterprise support organizations, and helping companies and producers understand international trade requirements, including quality standards and food safety and phytosanitary requirements
Improve access to finance for enterprises	Consider establishing loan insurance schemes for safeguarding borrowers' loans against default risks by imposing an insurance premium that is shared between borrowing enterprises and the government

SOURCE: Country case studies on regulatory and procedural barriers to trade in selected ECA countries, UNECE.

3.2 APPROACHES AND POLICIES FOR REORIENTING AGRICULTURE AND DIETS TO SUPPORT THE GOALS OF THE 2030 AGENDA

What are the desirable attributes of policies and practices essential for attaining the goals of the 2030 Agenda for Sustainable Development on poverty, food insecurity and malnutrition, on one hand, and the sustainability of production and food consumption on the other? In recent years, answers to these questions have been articulated in various approaches and frameworks. Two approaches in particular are at the forefront of this work: i) a food systems approach; and ii) agro-ecological approaches for sustainable agriculture. The main objective of both of these approaches is to reorient current policies and practices so as to attain key food, nutrition and sustainability goals. The two subsequent subsec-tions introduce the two approaches, while the third subsection discusses some concrete policies, programmes and initiatives.

A food systems approach for transitioning to healthier diets

There is a consensus that such issues as food insecurity, malnutrition, healthy diets, livelihoods and sustainability are best addressed by policies and programmes within a holistic and integrated framework. A food systems approach has been articulated for that. The Second International Conference on Nutrition (ICN2) in 2014 was an important event at which the importance of this approach was recognized. The UN Decade of Action on Nutrition provides all stakeholders with a unique time-bound opportunity, within existing structures and available resources, to strengthen joint efforts to implement the ICN2

BOX 2
ILLUSTRATION OF THE RECOMMENDATIONS IN THE ICN2 FRAMEWORK FOR ACTION

- 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)
- Develop, adopt and adapt, where appropriate, international guidelines on healthy diets. (Recommendation 13)
- Encourage the gradual reduction of saturated fat, sugars, salt/sodium and trans fats from foods and beverages, to prevent excessive intake by consumers and to improve the nutrient content of foods, as needed. (Recommendation 14)
- Explore regulatory and voluntary instruments such as marketing, publicity and labelling policies, economic incentives, or disincentives, in order to promote healthy diets. (Recommendation 15)
- Establish food- or nutrient-based standards to make healthy diets and safe drinking water accessible in public facilities and to encourage the establishment of facilities for breastfeeding. (Recommendation 16).

SOURCE: FAO and WHO (2014). *Framework for Action: From Commitments to Action*. http://www.fao.org/3/a-mm215e.pdf

commitments and recommendations, alongside the nutrition-related Sustainable Development Goals (SDGs). Deliberations on multiple goals and constraints, such as in production and consumption, naturally pointed towards a food systems approach for resolving inherent conflicts and augmenting co-benefits. Subsequently, in 2017, the Committee on World Food Security's High Level Panel of Experts on Food Security and Nutrition prepared a comprehensive report on this subject, Nutrition and food systems (HLPE, 2017), that defined various concepts and outlined the rationale, scope and elements.

The approach outlined in the HLPE report emphasizes the role of diets as a core link between food systems and their health and nutrition outcomes. It calls for looking at things in a holistic way across all four broad categories or functions of a food system: food production; food handling, storage and processing; food trade and marketing; and consumer demand, food preparation and preferences. The interface among the four functions and consumers' diets is the food environment, which has a central role in enabling healthy diets. The approach also takes into account the impacts of agriculture and food systems on sustainability in its three dimensions (economic, social and environmental).

The main challenge is reorienting a given food environment to yield desired outcomes. the FAO document Nutrition-sensitive agriculture and food systems in practice contributes to operationalizing the food systems approach by showing concrete entry points or interventions under each of the above four functions (FAO, 2017d). Food system activities contribute to outcomes in various areas: socio-economic cluster (such as income and employment), food security, nutrition and health, and the environment. Outcomes in some areas can be positive while outcomes are negative in others, and so trade-offs are inherent in proposing new policies and practices. The food systems approach helps to identify these trade-offs and thus contribute to better and more sustainable policies (FAO, 2018i).

What concrete changes are being sought in the food environment?

Elements of a framework for promoting healthy diets are outlined in various recommendations in the ICN2 Framework for Action (FAO and WHO, 2014) (Box 2). The six action areas of the Decade of Action on Nutrition include the ICN2 recommendations, including those on food systems and healthy diets.

Towards translating the ICN2 commitments into actionable country programmes, FAO and WHO organized an international symposium under the umbrella of the UN Decade of Action on Nutrition, held in Rome on 1–2 December 2016, which was followed by five regional symposia organizing during September and December 2017 for discussing the outcomes and sharing region-specific experiences. The regional symposium in Europe and Central Asia was held in December 2017 in Budapest (FAO, 2017b). Inspired by some of the leading examples from the region, the symposium made several recommendations for attaining sustainable food systems, with its two main building blocks of a food systems approach and the principles of agro-ecology. It was stressed that transformative change in food systems – from merely supplying enough food to providing sustainable, high-quality diets for all – is key to improving nutrition and preventing malnutrition in all its forms. The outcomes of the symposium's deliberations are summarized (FAO, 2018f).

Among the recommendations in Box 2 and in the above regional symposia, four areas in particular have attracted the most attention regarding initiatives taken or contemplated by governments: i) supportive policies and public investment; ii) targeted interventions or projects that promote diversified safe foods; iii) taxation of foods that are high in fat, sugar and/or salt, and similar fiscal measures; and iv) awareness-raising campaigns based on education, information and advertising.

The 2017 and 2018 editions of the Regional Overview of Food Security of Nutrition in Europe and Central Asia (FAO, 2017a; FAO, 2018a) reviewed the main policy developments and government initiatives in the ECA region regarding areas (ii), (iii) and (iv) above. Of these, areas (ii) and (iv) are the least divisive, politically. There is more to do in these areas, including upscaling proven successful initiatives. Product labelling and measures that tax foods that contain high levels of fat, sugar and/or salt are somewhat divisive but are gaining momentum across the world. Area (i) – supportive policies and public investment – could be much more divisive, because it could require policy changes and some reallocation of government agricultural budgets. What follows is a brief commentary on the issues.

Incentives provided through polices and direct budgetary support do matter, to some extent, for influencing production levels. There are many examples. In several high-income countries, farm policies, including export subsidies, stimulated the production of a range of food products throughout the 1970s and 1980s until this was curbed, to some extent, after agriculture was brought within the WTO rules. Likewise, crops such as rice and wheat were incentivized and generously supported in various countries in Asia during the Green Revolution. In that process, non-supported foods are disincentivized, which undermines the production and availability of a range of food items such as pulses, minor grains, fruits, vegetables and a variety of indigenous and traditional foods rich in micronutrients (Development Initiatives, 2016; Pingali, 2015; Pinstrup-Andersen, 2015; World Bank, 2014).

Given past experience, there are calls for a similar approach to stimulate the production of foods that are an important part of healthy diets. Full reversal of current price and trade policies and large-scale shifting of public spending are not realistic, but even a neutral playing field on incentives and support should stimulate the production of diverse and nutritious foods, because market demand for them is stronger and will further expand with increased campaigns on healthy diets.

Governments also need to support such diets by rebalancing public spending in agricultural research. According to one World Bank study (2014), only about 5 percent of the total research funding of the CGIAR, the global agricultural research programme, is allocated to legumes, while the CGIAR does not have a research programme on fruits and vegetables. The World Bank study advocates a level playing field in public agriculture support, including through research and development, so that diversified crops that previously had been neglected are made less risky and more profitable to produce, relative to traditionally supported crops and livestock products. This includes support for overcoming technical challenges throughout the supply chains, making the chains more efficient, reducing food loss and waste, and addressing such issues as perishability and food safety. Overall, there is much to be done on policies and public support towards improving food systems.

Agro-ecological approaches for sustainable food production systems

The concept of agro-ecology has developed over decades from the farmer's field – agronomy, mainly – to increasingly embrace all the stages of food systems, from farm to consumer and beyond to global trade, articulating in this process a number of principles that also define the scope of agro-ecology. In extending the agro-ecology approach to food security and nutrition, reference is often made to the current challenges facing food systems, such as food insecurity and undernutrition, in some regions, and including epidemics of obesity in others. Challenges also include risks to sustaining productivity in the long run – due to the degradation of the natural resource base and ecosystems and to the loss of biodiversity – and enhancing resilience in the face of climatic shocks and climate change. The underlying premise is that agro-ecology offers principles for addressing these challenges. Several recent High Level Panel of Experts reports have argued that the global food system is at a crossroads and new directions are needed, including calls for agro-ecology as a counter to business-as-usual industrial agriculture (HLPE, 2017).

Today's food and agricultural systems have succeeded in supplying large volumes of food to global markets, yet they cannot deliver them to all. High-external input, resource-intensive agricultural systems have contributed to deforestation, water scarcity, soil depletion, biodiversity loss, and high levels of greenhouse gas emissions (FAO, 2018j). Despite progress in reducing food insecurity, the multiple burdens of malnutrition – in particular rising overweight and obesity – affects millions of people in the ECA region. Agro-ecology offers an approach to meeting the needs of future generations while ensuring that no one is left behind. With family farmers (including smallholder farmers), indigenous peoples, fisher folks, mountain farmers and pastoralists at its heart, agro-ecology seeks to address the root causes of problems and provide holistic and long-term solutions based on the co-creation of knowledge, sharing and innovation, including the combination of local, traditional indigenous and practical knowledge with multi-disciplinary science (FAO, 2018j).

FAO has been at the forefront of elaborating the concept of agro-ecology and its application to the challenges in food security and nutrition. The first International Symposium on Agroecology for Food Security and Nutrition was held in Rome in 2014, followed by seven regional multi-stakeholder seminars between June 2015 and November 2017. The symposium for the Europe and Central Asia region was held in Budapest during 23–25 November 2016, attended by more than 180 participants from 41 countries (FAO, 2017f). This process continued with the second International Symposium on Agroecology in early April 2018 in Rome.

In the meantime, the High Level Panel of Experts is preparing, upon the request of the Committee on World Food Security (CFS), a comprehensive report titled Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition, which will be presented at CFS Forty-sixth Plenary Session in October 2019 (HLPE, 2019). An open e-consultation on a zero draft of the report, which brought a large number of comments, was held in October and November 2018. The zero draft, the comments and a synthesis of the comments are available online.[23] The HLPE report should further clarify the concept and principles of agro-ecology and offer specific recommendations for governments and others to implement concrete measures.

The seven regional multi-stakeholder seminars brought together more than 1 400 participants from 170 Members in five regions, discussing a range of topics related to agro-ecology, its impact and the challenges it faces. Box 3 summarizes selected common recommendations from these regional seminars.

Most of the suggestions made are not divisive and are generally taken positively by the policy and research community. And agro-ecological practices such as those in Box 3 are not new; one or more of these can be found implemented in most countries around the world. But the main issue is that what is being done currently is not adequate to transition to a dominant agro-ecological production system and make an impact. So, scaling up is the next major challenge. Towards this goal, FAO has led the creation of an international agro-ecology

BOX 3

KEY ISSUES AND COMMON RECOMMENDATIONS ON AGRO-ECOLOGICAL TRANSITIONS IDENTIFIED IN REGIONAL SEMINARS

Based on a review and synthesis of the 160 recommendations made during seven regional seminars on agro-ecology for food security and nutrition, general priority orientations emerged, representing lines of action that contribute to supporting agro-ecology transitions:

- *Strengthening the central role of producers and their organizations in safeguarding, utilizing and accessing natural resources. Ensuring, recognizing, respecting and upholding* small-scale food producers, family farmers and communities, in particular in the rights of women, youth and indigenous and nomadic peoples to land, water, forest, fisheries and genetic resources
- *Fostering collaborative research and innovation and the sharing of experience and knowledge* – developing farmer-led and participatory research and co-innovation; conducting interdisciplinary and transdisciplinary research and filling research gaps; setting up multi-stakeholder cooperation platforms
- *Promoting markets for agro-ecology-based products and services* – supporting short supply chains and innovative markets such as public procurement schemes; raising consumer awareness of the benefits of agro-ecological products, including nutritional quality and health; promoting territorial approaches and the transition to circular food systems
- *Reviewing institutional policy, legal and financial frameworks to promote an agro-ecological transition for sustainable food systems* – developing public policies and initiatives with appropriate funding to support the agro-ecological transition; implementing integrated and coherent food policies; considering the externalities of agriculture and drawing up multicriteria indicators to measure the long-term performance of agro-ecological systems

SOURCE: Based on *Catalysing dialogue and cooperation to scale up agroecology: Outcomes of the FAO regional seminars on agroecology.* (FAO, 2018g). http://www.fao.org/3/I8992EN/i8992en.pdf

partnership initiative, the Scaling up Agroecology Initiative, which was launched in April 2018 at the Second International Symposium on Agroecology. There are many challenges to scaling up. A report by the International Panel of Experts on Sustainable Food Systems (IPES-Food, 2016) points to eight lock-ins that tend to slow or prevent change: 1) path dependency, 2) concentration of power, 3) expectation of cheap food, 4) export orientation, 5) compartmentalization, 6) short-term thinking, 7) "feed the world" narratives and 8) measures of success. Overcoming these lock-ins is particularly challenging in regions and countries where there is a high dependence on external inputs and where input providers and the food chain sector play strong roles. It is also believed that in order for progress to be made, appropriate metrics are needed to monitor progress and to help change the mindset of political leaders and policy-makers (for example, measuring the performance of agriculture more broadly rather than solely on annual changes in yield). Such a metric should factor in all the impacts of agricultural production, such as the long-term effects of production and the internalization of the environmental and social costs that are incurred.

There is an increasing trend in the Europe and Central Asia region in formulating and implementing agro-ecological practices. Box 4 shows selected initiatives on agro-ecology in the region that illustrate the diversity of the ongoing initiatives. More information is available in the report of a regional symposium on agro-ecology in this region (FAO, 2017f).

Currently, 33 of the ECA countries have food-based dietary guidelines (FBDGs) (see Box 5), which can serve to guide a wide range of food and nutrition, health, agriculture and nutrition education policies and programmes, thereby representing a unique opportunity to favourably impact diets and the food system, from production to consumption. Yet, many countries are now moving towards more holistic perspectives by addressing food combinations (meals), eating modalities, food safety considerations, and lifestyle and sustainability aspects in their FBDGs.

France has moved one step further in this area; the National Agroecology Programme of France is perhaps one concrete example of a fully developed programme on agro-ecology. Launched in 2012 and legislated in 2014, the programme seeks to gradually transform »

BOX 4

SELECTED EXAMPLES OF THE DIVERSITY OF AGRO-ECOLOGY INITIATIVES IN THE EUROPE AND CENTRAL ASIA REGION

In **Armenia,** the non-governmental organization Armenian Women for Health and Healthy Environment has actively promoted non-chemical agriculture in different regions of Armenia, with more than 5 000 farmers trained and more than 100 experimental fields and orchards established for practicing agro-ecological farming methods and approaches.

In **Finland,** "agro-ecological symbiosis" is a food and energy production system based on cooperation among food producers and processors. Bioenergy is produced in situ at the farm level, utilizing waste bio-masses from the (re)localized production and processing.

In **Georgia,** the Farmers' House of Georgia has tested an innovative device, a mini plant for biohumus production from local organic waste (manure of various animals, food waste, paper, etc.) processed by earthworms (Eisenia foetida) in three villages of the Kakheti and Kartli regions.

In **Hungary,** the Association for Hungarian Organic Farming (MÖGÉRT / AHOF) works on agro-ecological weed management for organic farmers.

In **Italy,** biodistricts are designed as innovative approaches for sustainable, integrated and participatory territorial development.

In **Kyrgyzstan,** in collaboration with an FAO Regional Initiative project, special attention is paid to small-scale farmers in adopting integrated agro-ecological approaches to the production of nutrient-rich crops, preserving and expanding forest areas.

In the **Republic of Moldova,** the Government directly refers to agro-ecology and agro-ecological zones for up-front information on adaptation planning (climate change trends, impacts and vulnerabilities) in the country's intended nationally determined contributions.

In **Switzerland,** the Biovision Foundation collaborates with experts on a project commissioned by the Global Alliance for the Future of Food, titled "Beacons of Hope." The project showcases common pathways of inspiring initiatives around the world that support the transition towards more sustainable food systems in a holistic way by addressing all dimensions of sustainability.

In **Turkey,** the Nature Conservation Centre develops ecosystem services approaches to enhance the adaptive capacity of agricultural production. The projects include on-site implementations of agro-ecological practices.

In **Uzbekistan,** the Centre for Support of Farmers and Entrepreneurship initiated an agro-ecological adaptation programme in the arid conditions of the Southern Aral Sea region to deal with climate change and water scarcity.

SOURCE: *Web Annex for document ERC/18/2: Sustainable Agriculture and Food Systems in Europe and Central Asia in a Changing Climate.* Document presented at the Thirty-first Session of the FAO Regional Conference for Europe, Voronezh, Russian Federation. http://www.fao.org/3/MW159EN/mw159en.pdf

BOX 5

WHAT DOES FAO DO IN TERMS OF FOOD-BASED DIETARY GUIDELINES?

FAO assists Member Countries in the development, revision and implementation of food-based dietary guidelines and food guides in line with current scientific evidence.[1] FAO also carries out periodic reviews on progress made in the development and use of dietary guidelines, tracking changes in their overall focus and orientation.

More than 100 countries worldwide and 33 countries in the ECA region have developed food-based dietary guidelines that are adapted to their nutrition situation, food availability, culinary cultures and eating habits. In addition, countries publish food guides, often in the form of food pyramids and food plates, which are used for consumer education.

The countries in the ECA region with food-based dietary guidelines are Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Malta, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom of Great Britain and Northern Ireland.

Based on the 2018 Global Nutrition Report,[2] the following countries have no national food-based dietary guidelines developed: Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Serbia, Slovakia, Tajikistan, Ukraine and Uzbekistan.

SOURCE:

[1] For more information, see: http://www.fao.org/nutrition/education/food-dietary-guidelines/en/

[2] For more information, see: https://globalnutritionreport.org/nutrition-profiles/

» farming and agriculture to become based on the principles of agro-ecology. The agro-ecological approach is viewed holistically as a practice and model that combines economic, social and environmental goals. It is said in an official brochure that the programme flows from a shared observation of fact: the issues facing agriculture are, at one and the same time, economic, environmental and social in nature, and they cannot be addressed separately (Government of France, 2016). Box 6 provides a brief on the programme.

BOX 6

KEY ACTION PLANS OF THE AGROECOLOGY PROJECT IN FRANCE

The Agroecology Project in France was launched in 2012 with the aim of encouraging French farmers to adopt agro-ecological practices, with the ambition of 50 percent of farms committed to agro-ecology by 2025. In this process, one important step taken was the inclusion of agro-ecology in a law on the future of agriculture, food and forestry in 2014. It is committed through the law that public policies will promote agro-ecological production systems that combine economic, social, environmental and sanitary performances. The agro-ecology action plan is broad, containing 16 chapters and 70 actions. Each action comes with a timetable, milestones and monitoring indicators. The plan places particular emphasis on the following areas:

Education and training – All agricultural educational and training programmes are being adapted to include knowledge and teachings related to agro-ecology, including the training of teachers.

Involvement of research and development organizations – Research and development organizations are being encouraged to develop new technologies and practices on agro-ecological production systems and to disseminate the innovations in the field. They are encouraged to use the European Innovation Partnership (2014–2020) to strengthen innovation and diffusion in these areas.

Public support and incentives – Public support for agriculture is gradually being reviewed and refocused to providing greater incentives to incentivize agro-ecology practices and agro-ecology-oriented development projects on farms.

Setting up economic and environmental interest groups – New legal tools were created to encourage farmers to join other stakeholders to manage resources at the landscape level in cross-sector "environmental and economic interest groups" (GIEEs, to use the French acronym).

Agro-ecological self-assessment tool – A self-assessment tool has been designed to encourage farmers to reflect on their practices and on possible changes to their systems. This will allow individual farmers to quantify the impacts of their practices and to compare experiences with other farmers.

Regular monitoring and evaluation – Indicators are developed to monitor the progress being made, and the results and impacts are being published in annual reports.

SOURCE: *The Agroecology Project in France. Ministry of Agriculture, Agrifood and Forestry,* from the Government of France (https://agriculture.gouv.fr/sites/minagri/files/1604-aec-aeenfrance-dep-gb-bd1.pdf) and other published materials.

Baseline information from national agro-ecological and land resources information management is the basic requirement for sustainable food systems and agro-ecology programmes and approaches to address malnutrition in the region.

The agro-ecological zoning (AEZ) assessment is a methodology to evaluate the land performances of different agricultural land uses and management practices. It allows for the identification of potential crop productivity and suitability by comparing crop-specific

requirements related to the available soil, terrain and climatic conditions. AEZ systems based on environmental variables identify the suitability for crop farming well. An AEZ assessment identifies areas with similar combinations of limitations and potentials for particular crops or land uses. These areas are established according to the climatic and edaphic requirements of the specific crops, represented as a set of parameters based on elements of ecology, climatology, plant productivity, soil characteristics, agronomy and hydrology. AEZ assessments also can judge the economic suitability of selected crops and carry out policy scenario analyses based on the cost of production and market price information. FAO's ongoing project in North Macedonia[24] is a good example of this area of work (see Box 7).

BOX 7
EXAMPLE OF FAO'S WORK ON AGRO-ECOLOGICAL ZONING ASSESSMENTS

FAO has an ongoing project for the assessment of agriculture production through national agro-ecological zoning (NAEZ), a land resources information management system (LRIMS) and scenario development in North Macedonia.

The main goal of the project is to provide support to the Government of North Macedonia, with a focus on the Ministry of Agriculture, Forestry and Water Economy (MAFWE), for the assessment of agricultural production through establishing national agro-ecological zoning, a land resources information management system, and climate change scenario development based on geospatial technology. The establishment of the NAEZ, LRIMS and scenario development in North Macedonia could be the enabler to support progress in techniques, policy and investment conditions to achieve sustainable agricultural development in the context of climate change.

For this aim, the project team applied the participatory-AEZ approach to develop national agro-ecological zoning for North Macedonia.

This new simple approach, developed by Ece Aksoy, the AEZ expert in the Geospatial Unit of FAO, provides several useful outputs, such as: 1) land resource database; 2) agro-climatic zones; 3) agro-ecological zones; 4) agro-edaphic and biophysical constraints; 5) crop suitability and productivity layers; 6) agro-economic assessments; and 7) agricultural potentials for specific crops.

These elements provide the necessary baseline information and technical support for mapping the required common soil, climate, terrain, and economic criteria for:

- agricultural development planning
- agro-economic assessments of crops
- agro-ecology programme/approaches for selected crops
- climate change impact assessment on agriculture
- land evaluation and land capability
- land-use planning
- sustainable land development and management
- agricultural areas with natural constraints
- disaster risk reduction and management.

SOURCE: Agro-Ecological Zoning Atlas of North Macedonia (FAO, forthcoming).

Reorienting food and agricultural policies to support the goals of the 2030 Agenda

The 2017 and 2018 editions of the Regional Overview of Food Security of Nutrition in Europe and Central Asia (FAO, 2017a; FAO, 2018a) reviewed recent national and regional policies and programmes in the Europe and Central Asia region from the standpoint of the consequences for the four pillars of food security: availability, access, utilization and stability. The policy reviews also covered ongoing innovative pilot initiatives in the region on food

security and nutrition and on environmental aspects. In addition, two recent FAO publications, both titled Review of agricultural trade policies in the Post-Soviet countries, provide excellent and up-to-date reviews of agrifood trade and domestic support policies (FAO, 2017b; FAO, 2018c). They were produced under FAO's Regional Initiative 2 on improving agrifood trade and market integration in Europe and Central Asia.

The main current challenge is to explore how food and agricultural policies can be reoriented to support the goals of the 2030 Agenda for Sustainable Development, essentially towards maximizing their pro-poor impact and making them more nutrition-sensitive (including by ensuring affordability of and better access to healthy diets) and responsive to environmental and climatic challenges. The two frameworks discussed above provide ample guidance for this work. This concluding section focuses on policy reorientation.

Smallholder farms can be competitive with large-scale commercial farms in terms of their production costs. However, they still have limited access to the innovations, technology, knowledge and information needed to enhance productivity and incomes. Small family farmers are exposed to negative shocks such as drought and animal pests and face challenges in accessing input and output markets. As a result, poor and vulnerable households quite often adopt low-risk and low-return livelihood strategies that reduce their income-earning potential. Policy reorientation should stress the need to ensure focus on the most poor and vulnerable and otherwise marginalized groups in rural areas, including through supportive social protection and other risk management measures to facilitate the transition to sustainable practices, or alternatively to exit the sector.

To start with, both the World Trade Organization (WTO) Agreement on Agriculture and the Organisation for Economic Co-operation and Development (OECD) agricultural policy monitoring framework encourage their members to reorient policies in the direction discussed here. The former limits public outlay on what the Agreement calls production and trade distorting measures while placing no such limits on spending on general services and rural development measures. Many countries in the Europe and Central Asia region joined the WTO during the past decade or so and, as a result, considerable reorientation of policies has already taken place. Likewise, one key message in the 2018 OECD monitoring report (OECD, 2018), and also in previous editions of that report, is that it is desirable to shift the focus of agricultural support to general services and rural development, currently at relatively low levels (14 percent of the total support to agriculture, on average, for OECD members), away from measures that provide farm price and income support (currently 86 percent, on average).

Two recent studies provide estimates of agricultural support levels for several non-OECD countries of the ECA region. One is the study by Volk *et al.* (2017), commissioned by the European Union's Joint Research Centre, which covers five countries of the Western Balkans (Albania, Bosnia and Herzegovina, North Macedonia, Montenegro and Serbia). The other is Kožar *et al.* (2016), which covers eight countries (Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Republic of Moldova, Ukraine and the Russian Federation). The study by Kožar *et al.* finds that, in all eight of these countries, budgetary transfers to producers were provided exclusively through production-coupled measures, while the level of support for general services or rural development was in the range of 20 to 40 percent of the total budgetary transfers – and even lower in some countries.

Several conclusions and messages in the 2018 OECD report are pertinent to discussions on desirable policy reorientation in food systems and agro-ecology frameworks and thus for the 2030 Agenda for Sustainable Development (the OECD report also monitors support levels for three non-OECD countries of the region: Kazakhstan, the Russian Federation and Ukraine). Besides suggesting increased support towards general services and rural development, the report recommends reducing or eliminating commodity-specific subsidies so that agriculture is more diversified and resilient to climatic, price and other shocks. It holds that market price support policy is counterproductive to food security, as its policy disproportionally hurts

poorer and vulnerable households. The OECD report disapproves of unconditional support to farmers but encourages payments conditional upon the production of the non-market goods and services sought by society, such as environmental performance.

These suggestions are similar to the desirable attributes of policies in the food systems and agro-ecology frameworks, such as greater orientation towards general services and rural development measures, towards greater diversification of farming, and towards increased support to small farms. These are largely pro-poor measures, superior contributors to healthier diets of farming families and to others through markets, and friendly to environment and sustainability. Hence, they are triple wins. The 2019 Global Food Policy Report also makes a similar argument, calling for rural revitalization by paying increased attention to agricultural and rural issues as one of the most practical ways to address poverty and food and nutrition insecurity and thus to make the greatest contribution to the Sustainable Development Goals (IFPRI, 2019).

Most countries have programmes for rural development and general services for agriculture, as reported to the WTO under the domestic support pillar of the Agreement on Agriculture. This is not the issue. The issue is one of the overall orientation, coherence and scale of the measures, and this is what the food systems and agro-ecology frameworks are calling for. In the literature, there are many examples from across the world of successful policies and measures in these areas. For example, the 2018 OECD report documented that some countries do support agriculture through general services at high levels relative to price and producer support – for example, 71 percent in New Zealand, 54 percent in Australia and 51 percent in Chile. This is in contrast to the 14 percent, on average, among OECD countries and 22 percent in the European Union. Likewise, some of these programmes implemented in Brazil are frequently cited for their success in reducing poverty and improving the quality of diets.

Looking for a blueprint of a complete package with the most desirable attributes identified in food systems and agro-ecology frameworks, the EU's rural development policy seems to come closest, notwithstanding the fact that the budgetary outlay for this pillar is considered to be much lower than for other farm policy measures, according to the OECD report.

The European Union's development policy is aimed at tackling a wide range of economic, environmental and social challenges (see Box 8). Its approach to rural revitalization emerged out of agricultural policy and retains a strong farm focus and links to the EU's agricultural programmes. It is supported by almost EUR 100 billion in funding for 2014–2020, which is about 24 percent of the total EU spending on agricultural and rural policies. Additional funding for rural development is made available through other EU structural and investment funds focused on territorial cohesion policy and fisheries. Actual activities are programmed through multiannual rural development programmes prepared by Member States and by subnational regions. Box 8 highlights a range of selected measures particularly relevant to the broader rural development. Member States and regions select from among 20 different measures set out in legislation to address their own priorities when formulating Rural Development Programmes.

The reference to the EU policy is especially relevant for the ECA region because it not only applies directly to 28 EU Members but also to many other countries in the region, some in the process of accession to the EU and others engaged in dialogues on policies and development. The EU model thus provides a blueprint that is more familiar to most countries of the region and hence easier to adapt.
The EU rural development policy also contains a strong built-in mechanism for monitoring and evaluation, something which is weak in many other similar countries. The main message, then, is that here is a programme package that is well-documented, familiar and with many components that are desirable from the standpoint of the policy reorientation considered essential for attaining the goals set by the 2030 Agenda for Sustainable Development in support of food security, nutrition and the sustainable growth of agriculture.

BOX 8

ILLUSTRATION OF THE RANGE OF THE EU'S RURAL DEVELOPMENT AND ENVIRONMENTAL MEASURES UNDER THE CURRENT PROGRAMMING PERIOD

Key rural development measures

Rural and farm diversification – supports business start-ups and provides investment support for non-agricultural activities to diversify rural economies and improve rural living conditions.

Adding value to farm products – encourages value addition, taking advantage of growing consumer demand for quality products, including geographical indications products, and supporting on-farm processing, direct marketing and short supply chains.

Support for cooperation – supports cooperation and joint actions, such as producer organizations for small producers.

Generational renewal – supports programmes such as reducing the average age of farmers and supporting new generations in adopting sustainable farm practices.

Rural services and infrastructure – supports basic services and village renewal, including setting up or improving local basic services and recreational infrastructure and restoring cultural and natural heritage.

Environmental improvement

For 2014–2020, Member States must allocate at least 30 percent of their rural development budgets to environmental and climate action, including both agri-environment-climate measures (called AECMs) and payments to farmers in disadvantaged farming areas (such as the mountains and high-latitude regions).

Community-led local development

Supports "bottom-up" development initiatives through the LEADER approach (links among rural development actions), emphasizing the role of rural communities in determining their own development trajectories based on the optimal use of local resources.

SOURCE: Matthews, 2019: Europe's experience – Investing in rural revitalization. In 2019 *Global food policy report.* Chapter 9, pp. 78–85. Washington, DC, International Food Policy Research Institute (IFPRI).

The European Union's rural development approach (common agricultural policy beyond 2020) ensures a fairer distribution of payments to farmers and to smaller and medium-sized farms. Member States will be able to offer to small farmers a round sum per year. Member States are allowed to establish financial instruments supporting working capital for young farmers, who often face significant difficulties raising finance, given the high investments and low returns of a farm during the start-up phase.

Leveraging the food system for rural transformation will require engaging in territorial, location-specific approaches in order to break the urban bias in public policies and consider the spatial, social and cultural dimensions of food systems (FAO, 2017d).

Moving from one system to another is neither an easy nor a natural task. Agro-ecological production practices have consequences for income and employment, food availability and access, nutrition and health and the environment. Challenges include the cost-price squeeze for farmers, consumers' dependence on supermarkets, and paradoxical requests that farmers sell high-quality products for low prices. It is important to prove that agro-ecology can be profitable, can go beyond

short-term performance, and benefits society. Identifying measurements for the success of the agro-ecological transformation is another challenge. Beyond yield, the performance assessment of a system should include environmental, economic and social dimensions. There are other lock-ins that prevent changes from traditional food systems to agro-ecology and sustainable food systems, including the concentration of power, export orientation, compartmentalization, and "feed the world" narratives (FAO, 2017f).

As with the reorientation of the food systems approach, moving from conventional farming system to agro-ecological approaches entails a process of identifying and quantifying these trade-offs so that policies are based on sounder evidence. Policies and programmes should be inclusive of and should target the poor and vulnerable.

Summary and main messages

This thematic section analysed, in the first subsection, the structural transformations taking place in countries of the Europe and Central Asia region, covering the overall economy, food and agricultural production, and food consumption patterns and diets. With this background, the second subsection addressed the question: Where do we want to go from here, or what is needed to transition to production systems and consumption patterns that help attain the goals and targets of the 2030 Agenda for Sustainable Development on food security and nutrition? Thus, the focus of the second subsection was on emerging approaches for reorienting policies and practices towards achieving those goals.

The review of the structural transformation of economies showed that several countries of the region still have a much higher share of agriculture in employment than in the economy, which makes it more difficult to reduce rural poverty, food insecurity and malnutrition. Such economies need to provide extra support and incentives for agriculture and rural development, subject to obligations under international agreements and without being unduly distortive of markets.

An increase in agricultural productivity opens opportunities for improving the quality of subsistence consumption and raising farm incomes, with the resulting agricultural growth benefitting small-scale farmers and rural labourers. Non-farm enterprises offer the poor a potential escape route from poverty, since they usually require little capital or training to set up. The extra income from agricultural growth can create demand for these goods and services, creating a virtuous cycle in which agricultural and rural off-farm income grow and sustain each other's growth.

Complementary policies are also needed to create a market for the extra output, especially food, that gets produced. The essence of the problem is that if the extra produce is sold locally, prices must fall because the demand curve is inelastic, implying that the main gains from agricultural productivity growth are transferred to food buyers, not farmers. In that case, there is little or no additional income created for farmers.

The implementation of social protection policies is an equally essential part of such a strategy, as smallholder farmers are, rightly, averse to the risks of adopting new technologies. If institutions and policies exist to protect poor households from the (possibly catastrophic) consequences of risk, the poor could choose more productive techniques, secure in the knowledge that they will not have to starve if the new techniques do not work out.

Following the transition declines during the first half of the 1990s, agricultural production grew robustly across the Europe and Central Asia region. One worrisome recent trend, however, has been slowdowns in the rate of growth of agriculture in several countries, especially in the Caucasus and in the Western Balkans and Turkey subregions, with the livestock subsector slowing more than the crops subsector. Addressing volatility in production trends also is an issue, given the growing incidence of shocks from climate change in addition to economic crises and global and regional disruptions to trade.

The composition of the total value of agricultural production in the region is changing slowly, with larger declines of cotton, smaller shares of

cereals and meat in some subregions, increased shares of milk, and notable increases of fruits and vegetables, which is a welcome development for ensuring access to healthy diets. The cases of cereals and cotton indicate that the policy of crop diversification declared by some governments seems to be working.

Besides being pro-poor, small-scale and family farming is valued for its multiple contributions – to food security, nutrition, healthy diets, environment, and resilience to shocks of the farm sector. Thus, there is a strong case for supporting small-scale and family farms through investments in infrastructure, the generation and dissemination of knowledge and innovation, and proper institutional frameworks.

A growing number of studies on the evolution of diets globally point to three key findings: 1) intakes of nutritious foods and nutrients that constitute a healthy diet have increased during the past three decades, but 2) the level of change falls short of what is essential for addressing nutrition and health challenges while, at the same time, 3) the trend towards increased consumption of foods that are energy-dense and high in fat, sugar and/or salt has been gaining strength. Thus, the diet challenge facing most countries is to improve the consumption of foods that are part of healthy diets while curtailing ones that lead to unhealthy diets.

Towards healthier diets, the ECA region has made good progress in raising the availability for consumption of fruit and vegetables. In 1992–1994, the average availability exceeded the WHO recommended level of 400 g in only about half of the countries in the eastern parts of the ECA region, but by 2011–2013, this mark was exceeded by almost all countries. However, the 2017 Report of the Global Burden of Disease finds that, in the ECA region, the intake of the range of foods/nutrients considered desirable to reduce disease risk falls short of the suggested optimal level of intake for each dietary factor.

While the share of agrifood trade in total trade has not changed much over the past two decades, agrifood trade (both exports and imports) have increased significantly, making contributions to economic growth and food security and nutrition in the post-Soviet countries. While food availability has increased and diversified, imports of processed foods high in fat, sugar and/or salt also have increased. One area for further study should be the drivers of the growth of these foods and their impacts on malnutrition, in particular obesity and non-communicable diseases.

The case studies have shown that, while tariffs are reduced to low levels, promoting expansion and diversity of agrifood trade, anticipated trade expansion is often frustrated by non-tariff measures (NTMs). The case studies have shown that, unlike tariffs, NTMs come in multiple forms and are often opaque and deep-rooted, and thus are difficult to eliminate. Therefore, a great deal of attention is being paid globally to the issue of NTMs. Nine categories of recommendations have been made based on the case studies.

Various complementary approaches are being articulated globally for addressing challenges in relation to food, nutrition, health and sustainability in the context of meeting the goals of the 2030 Agenda for Sustainable Development. The food systems approach looks at all elements of the food system in a holistic way and helps identify opportunities and trade-offs to achieve healthy diets while ensuring economic, social and environmental sustainability. This umbrella approach very often includes agro-ecological approaches.

On food systems, the ICN2 recommendations are for making food and agricultural policies and practices more nutrition-sensitive, promoting the diversification of farming, supporting small-scale and family farms, and incentivizing healthy diets and discouraging unhealthy ones. In recent years, many governments across the world have taken initiatives to analyse the nutrition sensitivity of policies and practices in related sectors such as food, agriculture, education and health, including as part of the global Scaling Up Nutrition movement. Considerable emphasis is placed on demand-side policies such as consumer education to improve dietary choices and healthy lifestyles. Currently, 33 of the ECA countries have food-based dietary guidelines. These are valuable for guiding policy decisions to reshape food systems.

Agro-ecology may be part of a food systems approach by promoting practices that are positives for natural resources, the environment and sustainability with components such as diversification, short value chains, support for the strengthening of small-scale and family farms and institutions, and the provision of general services in rural areas. This was one of the main recommendations of a recently released report on the future of food, farming and countryside in the United Kingdom of Great Britain and Northern Ireland (RSA, 2019).

The need to shift to more healthy diets and sustainable food systems is increasingly evident, but achieving these goals is certainly not simple. To do so, it may be necessary to go beyond nutrition and the environment and to include economic and sociocultural dimensions. There are trade-offs among all objectives of the food systems and agro-ecology, and it is not obvious that all objectives can be achieved. There is a critical role for public policy to assess such trade-offs and to provide incentives and create a good environment for the participation of all smallholders.

There are numerous examples of best practices in the Europe and Central Asia region and across the world, but these need to be scaled up to make an impact. For this, FAO in 2018 led the creation of an international agro-ecology partnership, the *Scaling up Agroecology Initiative.*

Reorienting policies and practices to the desired direction could be challenging in some areas, but not in all cases. One challenging area is to shift the focus of agricultural support to general services and rural development, currently also supported at a relatively low level in the ECA region, away from such policies as supporting farm prices and payments that are conditional on production, which is currently supported at high levels.

The European Union's rural development policy, the second pillar of the common agricultural policy, is a good example of the package of measures for desired reorientation. It contains many measures that address the economic, environmental and social challenges facing agriculture and rural areas, such as diversification, focus on small-scale and family farms, cooperatives, short supply chains, local value addition, rural services and infrastructure, and incentives and payments for environmentally friendly practices.

The roles of agriculture and the rural sector remain unclear, largely due to a limited understanding of the nutritional, health, social and environmental impacts of the current food systems. An in-depth situation and policy analysis for some of the countries in the region, as a basis for planning effective policy responses, is long overdue. The filling of data gaps also should be a priority, as this is a pre-requisite for an in-depth, evidence-based policy analysis. For instance, while the concept of food systems includes such elements as food production, food processing, trade and marketing, food demand and consumer preferences, this report does not cover issues related to food processing (including food handling and storage, labelling, safety and others) due to a lack of appropriate and comparable data. Further data collection and analysis on these missing sectors will be recommended.[25]

Focus also will be given to analysis to examine the potential effects and trade-offs of various policy options throughout the food system, including such cross-cutting issues as gender, social protection, foreign direct investment in the food industry, education and capacity development, inter alia. Good practice and lessons learned will be summarized and disseminated, taking into account the various specificities of the countries in such a diverse region as Europe and Central Asia. ■

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NOTES

1 The following countries are included in various subregions of the Europe and Central Asia region used in this report: the Caucasus (3) – Armenia, Azerbaijan and Georgia; Central Asia (5) – Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan; European Commonwealth of Independent States (CIS) (4) – Belarus, Republic of Moldova, Russian Federation and Ukraine; the Western Balkans and Turkey (6) – Albania, Bosnia and Herzegovina, Montenegro, Serbia, North Macedonia and Turkey; European Union countries (EU-28) – Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom of Great Britain and Northern Ireland; and European Free Trade Association (EFTA) countries (4) – Iceland, Liechtenstein, Norway and Switzerland; and the others.

2 By United Nations Statistics Division classification (https://unstats.un.org/unsd/methodology/m49/): Eastern Europe contains Belarus, Bulgaria, Czechia, Hungary, Poland, Republic of Moldova, Romania, Russian Federation, Slovakia, and Ukraine; Northern Europe contains Åland Islands, Channel Islands, Denmark, Estonia, Faroe Islands, Finland, Iceland, Ireland, Isle of Man, Latvia, Lithuania, Norway, Svalbard and Jan Mayen Islands, Sweden, and United Kingdom of Great Britain and Northern Ireland; Southern Europe contains Albania, Andorra, Bosnia and Herzegovina, Croatia, Gibraltar, Greece, Holy See, Italy, Malta, Montenegro, North Macedonia, Portugal, San Marino, Serbia, Slovenia, and Spain; and Western Europe contains Austria, Belgium, France, Germany, Liechtenstein, Luxembourg, Monaco, Netherlands, and Switzerland. Based on the same classification, Cyprus and Turkey are included in the Western Asia geographic grouping.

3 The SDG framework endorsed by member countries of the UN Statistical Commission in March 2017 and adopted by the UN General Assembly on 6 July 2017 includes indicator for monitoring SDG Indicator 2.1.2: the prevalence of moderate or severe food insecurity ($FI_{mod+sev}$) based on the Food Insecurity Experience Scale.

4 The report did not have a statistical test for the difference. However, the difference may signal societal gender inequalities reflected in access to food.

5 Data are available for more countries, but these data are not yet published, pending authorization from governments following the country consultation process.

6 Prevalence thresholds for wasting, overweight and stunting in children younger than five years of age were established in 2018 for, among other things, interpreting trends, through a WHO-UNICEF Technical Advisory Group on Nutrition Monitoring (TEAM) (de Onis *et al.*, 2018). The thresholds were developed in relation to standard deviations of the normative WHO Child Growth Standards. Prevalence thresholds (given in percentage) for overweight and wasting are identical: < 2.5 (very low), 2.5 to < 5 (low), 5 to < 10 (medium), 10 to < 15 (high), and ≥ 15 (very high). For stunting, the percentage thresholds are < 2.5 (very low), 2.5 to < 10 (low), 10 to < 20 (medium), 20 to < 30 (high), and ≥ 30 (very high).

7 Multivariate analytical framework will be needed in order to identify the key drivers.

8 These differences by gender (and other socioeconomic factors) are simple differences in averages of the two subsamples and do not imply differences in a statistical significance sense; thus, the observed differences may not be statistically different.

9 Data for EU and EFTA members were said to be based on World Bank's regional report, *Living and Leaving: Housing, Mobility and Welfare in the European Union*, 2018.

10 Expenditures on agriculture shall be understood as the sum of government spending focused exclusively on the agricultural sector, without considering other sectors that indirectly affect agriculture (including expenditures related to rural infrastructures, the food industry, etc.). The focus of these figures is on central government expenditures, without considering the budgets of decentralized government bodies. Agriculture and rural development funds are captured as part of the general government account – not as part of the central government account. This approach is strictly sectoral and not yet aligned with the food systems approach. Some parts of this section may capture other expenditures related to agriculture, outside the general government account on agricultural spending. But the section may not capture the overall expenditures on agriculture and rural development, and the presented figures might be underestimated.

11 It could be argued that the spending target of 10 percent is more appropriate for regions such as Africa, with large shares of agriculture in the economy and employment, than for a region like Europe and Central Asia (ECA). Moreover, the World Trade Organization rules also provide greater space for trade-distorting supports in the former countries, but no such limits are placed for most countries in both regions for spending that are non-distorting. In the ECA region, some countries have specified indicators on spending limits or targets. For example, under the Eurasian Economic Union, limits are specified for support measures that have distorting effects on trade. In Ukraine, for the years 2017–2021, the annual budgetary outlay to agricultural producers should be at least 1 percent of the gross output in agriculture.

12 For examples regarding countries in the Western Balkans, take a look at OECD, 2018, and Volk *et al.*, 2017.

13 There are large and small family farms. In the discussion of this sector that follows, the term "family farms" refers to small family farms.

14 The FAO programme countries in Europe and Central Asia are Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Georgia, Kazakhstan, Kosovo*, Kyrgyzstan, Republic of Moldova, Montenegro, North Macedonia, Serbia, Tajikistan, Turkey, Turkmenistan, Ukraine and Uzbekistan. *References to Kosovo shall be understood to be in the context of UN Security Council Resolution 1244 (1999).

15 As discussed in depth in the 2013 report of the High Level Panel of Experts on Food Security and Nutrition (HLPE, 2013), small farms, smallholders or family farms cannot be defined rigidly using criteria such as holding size, income, etc. Appropriate criteria could vary by subregions or contexts. Indeed, defining smallholders and/or family farms could be easier in the case of the most post-Soviet countries as noted above, with three farm types now: large corporate farms, mid-sized peasant farms, and small household plots that survived the Soviet regime (see also Lerman and Sedik, 2009).

16 However, while the relationship between farm size and yield might often be negative, there also typically is a strong positive relationship between farm size and labour productivity, which means that development strategies based on smallholder agriculture may not be forever relevant for agricultural development and structural transformation (Gollin, 2018).

17 All consumption statistics reported in this section refer to apparent consumption derived from FAO Food Balance Sheets as per May 2019 (FAO, 2019b). The Food Balance Sheets refer to "average food available for consumption" (or apparent consumption), which, for a number of reasons (such as waste and losses), is likely to be higher than average food intake or average actual food consumption. Apparent consumption is calculated as production minus non-food uses, minus exports, plus imports, plus or minus stocks.

18 FAO and WHO convened in July 2019 an international consultation on sustainable and healthy diets, at which a group of experts reviewed the concept of diets that support reaching goals of health and well-being while also considering the evidence about economic, social and environmental sustainability. The consultation developed guiding principles for sustainable healthy diets that had not yet been released at the time of the publication of this Regional Overview. The guiding principles for sustainable healthy diets will guide action in the United Nations Decade of Action on Nutrition 2016–2025 and in achieving the Sustainable Development Goals.

19 Unlike the recommendation for fruit and vegetables, no globally accepted recommendation is currently available for fish and other foods reviewed here. However, the recommendations from the 2017 GBD study and the EAT-Lancet Commission report may be taken as valuable reference levels.

20 The mission of the FAO/WHO Global Individual Food Consumption Tool Data Tool is to make publicly available existing quantitative individual food consumption data from all countries around the world, collected through both large nationwide surveys and small scale surveys. See: http://www.fao.org/gift-individual-food-consumption/en/

21 Data note: All the data given here are aggregated by 1012 post-Soviet countries, downloaded from WITS as of 2 July 2019 (based on UNCOMTRADE), with the earliest and latest years available. The countries are Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Republic of

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Moldova, the Russian Federation, Tajikistan, and Ukraine. However, there is some possible omission of data for some countries in some years, due to reporting issues. Data for Turkmenistan and Uzbekistan are not reported in UN Comtrade for the entire period.

Agricultural products, top exported products and top imported products are the top five traded agricultural product goods at the Harmonized System (HS) 2-digit level (except those defined at 4-digit levels in the WTO Agreement on Agriculture). According to the definition of the WTO Agreement on Agriculture, agricultural goods refer to HS chapters 1 to 24 (excluding fish and fish products) and a number of manufactured agricultural products (for further information, see "The Legal Texts: The Results of the Uruguay Round of Multilateral Negotiations," from WTO). This definition does not correspond to the definition of agricultural products presented in the breakdown of merchandise trade by main commodity group (see above).

22 The UNECE country studies are available at the following website: https://www.unece.org/tradewelcome/studies-on-regulatory-and-procedural-barriers-to-trade.html

23 Available at: http://www.fao.org/fsnforum/cfs-hlpe/discussions/agroecology_innovation-v0

24 For more information on the "Assessment of agriculture production through NAEZ and LRIMS and scenario development in the Republic of North Macedonia" project, see: http://www.fao.org/3/i7991e/I7991E.pdf

25 There is an ongoing ISC project in the Europe and Central Asia region titled "Programme support for the role of food systems in the transition of diets and prevention of malnutrition in the ECA region." The results of that project are not yet available.

Working for #ZeroHunger

2019 EUROPE AND CENTRAL ASIA REGIONAL OVERVIEW OF FOOD SECURITY AND NUTRITION

STRUCTURAL TRANSFORMATIONS OF AGRICULTURE FOR IMPROVED FOOD SECURITY, NUTRITION AND ENVIRONMENT

The *Regional Overview of Food Security and Nutrition in Europe and Central Asia 2019* consists of three main sections: 1) an in-depth situation analysis of Sustainable Development Goal 2 Target 2.1 (to end hunger and ensure access to food by all) and Target 2.2 (to end all forms of malnutrition), as well as the state of micronutrient deficiencies; 2) an analysis of the drivers and determinants of food security and nutrition; and 3) a special look at the structural transformations of agriculture, food systems and nutrition.

This edition introduces analysis on the prevalence of moderate or severe food insecurity, based on the Food Insecurity Experience Scale surveys. The new estimates show that the prevalence of food insecurity at the moderate or severe level can be quite high, and that the prevalence is non-trivial even in many relatively high-income countries in the ECA region. Malnutrition is present to varying degrees in all countries in the region, and the prevalence of overweight and obesity is alarmingly high and increasing.

Two important drivers of food insecurity and malnutrition are discussed: socio-economic inequalities and government expenditures on agriculture. The report stresses the importance of considering socio-economic inequalities in the design of food and nutrition policies, programmes and interventions, and it finds that most countries in the region may be under-investing in agriculture relative to the sector's importance in the economy and to food security and nutrition.

This report also analyses the structural transformations taking place in countries of the Europe and Central Asia region, covering the overall economy, food and agricultural production, trade, and food consumption patterns and diets. It also discusses emerging approaches for reorienting policies and practices towards achieving the goals and targets of the 2030 Agenda for Sustainable Development on food security and nutrition. Two frameworks increasingly recognized for this are a holistic food systems approach and agro-ecological practices, which are key building blocks of a sustainable food system.

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