



Food and Agriculture  
Organization of the  
United Nations

# THE FUTURE OF FOOD SYSTEMS IN EUROPE AND CENTRAL ASIA

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## 2022–2025 AND BEYOND





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2022-2025 AND BEYOND

Required citation:

FAO. 2022. *The future of food systems in Europe and Central Asia 2022-2025 and beyond*. Rome.

<https://doi.org/10.4060/cc1546en>.

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ISBN: 978-92-5-136754-4

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# ACKNOWLEDGMENTS

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The report "*The future of food systems in Europe and Central Asia 2022-2025 and beyond*" has been prepared by a team of experts led by Eugenia Serova (National Research University Higher School of Economics, Moscow) Attila Jambor (Corvinus University of Budapest) and Diana Kopeva (University of National and World Economy, Sofia) under the overall guidance of Raimund Jehle, Regional Programme Leader, FAO Regional Office for Europe and Central Asia. The report does not reflect an official position of FAO.

The team from the National Research University, Higher School of Economics has prepared the trends in food, agriculture and rural development in Caucasus, Central Asia and Eastern Europe. Diana Kopeva has prepared the section drivers, challenges and opportunities of food, agriculture and rural development in the Western Balkans. Attila Jambor prepared the section drivers and opportunities of food, agriculture and rural development in the European Union. Eugenia Serova and Attila Jambor synthesized the regional priority areas for action in the future.

The report benefited valuable comments and review during and after a consultation meeting organized on 27 August. We would like to thank particularly, Dr. Zvi Lerman, Dr. Thomas Herzfeld, Ms. Judith Hitchman, Dr. Vardan Urutyan, Dr. Viktor Lagutov, Dr. Ewa Halicka, Mr. Vladimir Chernigov, Mr. Boban Ilic, Ms. Laura Tarrafa, Dr. Sergei Kiselev, Dr. Csaba Csaki, Ms. Ramona Duminicioiu, Mr. Gagik Sardaryan, Mr. Jijyan Vrej, Dr. Leon Gorris, Ms. Elene Shatberashvili, Dr. Sophia Davidova, Dr. William Meyers, Mr. Frank van Holst, Ms. Aida Jamangulova, Dr. Aziz Karimov for their instrumental inputs and review of the report.

Special thanks for the technical contributions to Eran Raizman, Daniela Mangione, Mary Kenny, Tania Santivanez, Zsuzsanna Keresztes, Nvard Loryan, Elmira Nessipbayeva, Pedro Arias, Carmen Arguello Lopez, Sherzod Umarov, Morten Hartvigsen, Robert van Otterdijk, Khurshid Norov, Aron Thuroczy, Carolina Starr, Dono Abdurazakova, Gordana Kozhuharova, Jose Valls Bedeau, Dinara Rakhmanova, Norbert Winkler, Kitti Horváth, Bianka Laskovics, Katalin Ludvig, Gayane Nasoyan, LanHuong Nguyen. They reviewed the chapters and provided comments and suggestions.

Finally, many thanks to David Hallam for the technical review and editing and Matthew Anderson for his editorial support. Nacho Ramirez was responsible for the design of the report. Erzsebet Illes, Aron Thuroczy and Iana Melnik provided overall coordination of the process.



# EXECUTIVE SUMMARY

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1. FAO has developed a new Strategic Framework 2022 – 31, which was approved by the 42nd Session of the FAO Conference in July 2021. The Strategic Framework supports the 2030 Agenda for Sustainable Development. In order to provide inputs to the corporate process, the Regional Office for Europe and Central Asia initiated a regional process in 2020 to review and identify trends and challenges in the region, building on the past good practices.
2. The document provides a comprehensive analysis of the future of the food systems in Europe and Central Asia based on a qualitative review of the literature and information available at the time of drafting. Specific attention will be given to (i) economic growth; (ii) natural resources and climate change; (iii) rural development; (iv) agri-food trade and policies; (v) innovation and digitalization; (vi) food systems developments; (vii) food and nutrition security; (viii) food safety. It summarizes them by Subregions and has a specific focus on the European Union and derives regional priorities for action for the future in the Region.
3. The report covers the situation up to mid-2021 and does not include later developments in the region.
4. Population and income growth, urbanization, and changing food preferences are challenging the world's food systems to deliver adequate supplies of safe and nutritious foods. Agricultural production and trade have risen to meet that challenge, but degradation of natural resources, climate change, failing markets, weak policy choices and the COVID-19 pandemic multiply the difficulties.
5. The environmental, economic and social sustainability of food systems and their performance in providing healthy diets for all are matters of global concern. In the Europe and Central Asia (ECA) Region, the differences in food systems between the sub regions means that finding context specific solutions and actions is essential. In spite of these specificities, the general need for more sustainable food systems is crucial.
6. Economic growth is one of the key drivers for the achievement of the SDGs, including those related to food security and poverty reduction. The ECA Region enjoyed healthy economic growth until 2019 but GDP fell dramatically in 2020 as a result of the COVID-19 pandemic. Current forecasts of post-COVID-19 economic growth in the Region are highly uncertain but most experts do not expect GDP levels to recover to pre-pandemic levels before 2022.
7. The growing global demand for food and pressure from growing populations puts additional stress on existing natural resources. Climate change exacerbates the fragility of natural resources through the increased frequency and severity of extreme weather events. Food systems are confronted with an urgent need to improve sustainability through reduction of greenhouse gas emissions, climate change adaptation and mitigation, better management and conservation of natural resources and conservation of resources.
8. The Region's agricultural systems are already seriously affected by climate change through increased temperatures, greater crop water demand, more variable rainfall, and weather extremes.

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<sup>a</sup> Western Balkans countries

<sup>b</sup> Central Asian countries

The Region is increasingly exposed to intensifying weather patterns (e.g. WB<sup>a</sup> prone to severe flooding and CA<sup>b</sup> - to droughts).

9. The policy response to climate change has been limited in most WB countries. In many instances, comprehensive adaptation strategies for improving the resilience and adaptability of agricultural systems to climate change are missing in practice, as are public funds. Policy interventions are predominantly reactive, aimed at reducing the consequences and negative effects of weather extremes. Agricultural policies, on the other hand, often focus on production rather than on building resilience.
10. The European Union clearly has the influence to persuade the Region to produce in a more environmentally friendly way. Agri-food products produced in unsustainable ways will fail to meet European Union demand and standards and therefore result in reduced market opportunities. Therefore, the climate change mitigation and adaptation efforts are of key importance to the ECA Region.
11. While there has been significant progress towards the eradication of extreme poverty in the Region, the problem of poverty still exists. Average incomes are typically lower in rural than in urban areas and poverty has a strong gender dimension. The urban-rural income gap is a serious issue in the Region, particularly in CA countries, where the access of rural population to social services is limited.
12. Migration and remittances make a major economic contribution to many of the economies of the Caucasus, CA and EE Region. Restrictions on labour migration during the 2020 COVID-19 pandemic and consequent reductions in income opportunities for labour migrants have led to dramatic reductions in remittances, contributing to poverty growth in rural areas.
13. As for the agricultural trade, import tariffs have generally been reduced or removed under multilateral trade liberalization or the proliferation of regional and bilateral trade agreements.
14. The disruption to agricultural trade caused by the COVID-19 pandemic has led to an apparent increased interest in protectionism and reliance on self-sufficiency in food systems. Problems in food shipments and panic buying made food supplies uncertain in net food importing countries, and led to a temporary rise in food prices.
15. The European Union is the major market for the Region's agri-food exports but the European Union is also a strong competitor on global markets. Trade relations with the European Union are also formalised in many cases by trade or other broader agreements. Both entail some degree of harmonisation with European Union policies and standards. The achievement of more sustainable food systems, including sustainable diets and reducing food loss and waste, now dominates European Union policy.
16. Continuing with the transformation of food systems, it is important to say that it needs to promote innovation and productivity enhancement to improve livelihoods but in such a way that smallholders and especially women and youth are included (principles of LNOB<sup>c</sup>).
17. Modern food systems are entering a fundamentally new stage of technological development based on the introduction of "smart" solutions. Digitalization is seen as a key enabler of agricultural and rural development through improved information and communication processes and other digital technologies. In the non-EU countries of the ECA Region, the scope for digitalization is still lagging behind the OECD countries in terms of internet penetration, digital skills, affordability, and returns over investment for smallholders. It is important to develop the relevant knowledge and expertise so that farmers can use them effectively.
18. The impacts of COVID-19 on the introduction of innovative technologies and development of agriculture have highlighted existing problems in the Region's food systems. On-line technologies which were obligatory during lockdowns are likely to stay in place, changing the character of future food systems dramatically.

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<sup>c</sup> Leaving No One Behind

19. COVID-19 has also shown the advantages of living outside big cities and one of the possible consequences of that could be some reverse migration of the population from urban to predominantly rural areas. This would significantly increase demand for e-services in rural and will present a new challenge for technological progress in rural areas and rural development.
20. Development of food systems in the Caucasus, CA and EE<sup>d</sup> Region changed drastically at transition from being centralized, government controlled and supply-driven to being private enterprise and market-led whereby producers responded to changing consumer demands in terms of the range and qualities of products on offer. Increasing integration of national food systems into regional and global value chains has broadened the range of foods on offer, how it is produced and how it is delivered to final consumers.
21. A major issue facing the food systems of the Caucasus, CA and EE Region is how to integrate smallholder producers into the rapidly developing value chains and ensure their access to markets. Smallholders and family farms predominate in farm structures and are key contributors to ensuring food security and nutrition throughout the Region except for Russian Federation, Ukraine, Belarus and Kazakhstan.
22. Economic contraction due to COVID-19-related lockdown measures has posed a particular threat to smaller producers, processors, retailers, and service providers in food value chains. The initial closure of farmers' markets affected their ability to sell their products. Changes in demand and consumer behavior during the pandemic have also affected smallholder farmers disproportionately.
23. Beyond the introduction of urgent measures to preserve family farmers' health and ensure the safety of their production, it is urgent to adopt mitigation actions that provide social protection where necessary, assist farmers in dealing with debts incurred, ensure access to basic goods and farm inputs and keep markets, transport and distribution working safely so that family farmers continue supplying fresh food to their communities and local food systems and play their role in revamping local economy in the recovery phase.
24. The European Commission undertook a far-reaching review of every aspect of European Union food systems to provide a comprehensive framework for future agricultural and food policies - the Farm to Fork Strategy. The strategy addresses the challenges of creating sustainable food systems that are fair, healthy and environmentally friendly, robust and resilient, and that ensure sufficient supplies of healthy food at affordable prices for citizens. It pays particular attention to reduction of food losses and waste which is seen as central to achieving sustainability.
25. The Caucasus, CA and EE countries recognize the importance of food security in their national security policies. However, in a number of countries, the concept of food security is still primarily viewed as 'food self-sufficiency'.
26. In the countries of the ECA Region, there are already initiatives that innovate, robotize and digitize approaches and technologies implemented along food value chains, seeking to improve food availability and food information to consumers, resilience and sustainability of value chains, and governance of food safety and other requirements. While food systems innovate and transform to address food security challenges, climate change and value chain resilience, it is important that appropriate food safety measures are implemented, an adequate enabling environment is provided for food businesses to comply, and scientific risk assessments are completed in a timely manner for any new technologies.
27. The report concludes with regional priority areas for action in the Region and emphasizes the support to smallholders and the need to formulate effective policies, promotion of digital innovation. It highlights the food systems transformation through exploring new markets promoting value chain development and considering all three dimensions of sustainability. It stresses the promotion of sustainable natural resource management and sustainable production including mitigation and adaptation to climate change as well as giving attention to reduction of all forms of malnutrition.

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<sup>d</sup> Eastern Europe countries



## ARMENIA

Worker putting packaged cheese on the shelf of the cold room in an Armenian cheese factory.  
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# **INTRODUCTION AND BACKGROUND**

1. Since 2010, all of FAO's work has been guided by a Strategic Framework prepared for a period of ten to 15 years and reviewed every four years. FAO has developed a new Strategic Framework 2022–31<sup>1</sup> and a Medium-Term Plan for 2022–25 and Programme of Work and Budget 2022–23<sup>2</sup> in the context of global and regional trends and challenges in the areas of FAO's mandate. The new strategic framework was approved in July 2021 by the 42nd.

2. FAO's Strategic Framework seeks to support the 2030 Agenda for Sustainable Development through the transformation to more efficient, inclusive, resilient and sustainable agrifood systems for better production, better nutrition, a better environment and a better life, leaving no one behind. The four betters represent an organizing principle for how FAO intends to contribute directly to SDG 1, SDG 2 and SDG 10 and to support the achievement of



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the broader SDG agenda, which is crucial for attaining FAO's overall vision. The betters reflect the interconnected economic, social and environmental dimensions of agrifood systems.

3. Twenty-one programme priority areas will guide FAO on filling critical gaps and putting in place the conditions needed to drive the changes that ultimately will contribute to the achievement of the selected SDG targets.

4. In order to provide regional input into the corporate process, the FAO Regional Office for Europe and Central Asia (REU) initiated a regional process in July–August 2020 to review and identify trends and challenges in the region, building on past good practices. In 2012–13 and 2016–17, corporate strategic thinking processes (STPs) and related regional processes were used to review FAO's Strategic Framework. The STPs resulted in a much more focused set of priorities and a monitoring framework for measuring the results and impact of FAO's work. These were reflected in the Medium-Term Plans (MTPs) for 2014–17<sup>3</sup> and 2018–21.<sup>4</sup>

5. The overall objective of the regional process was to facilitate the incorporation of regional specificities into the review of the Strategic Framework and preparation of the MTP 2022–25. In this regard, the process provided substantive inputs for the “Results and Priorities for FAO in the Region” (ERC/20/5)<sup>5</sup> document submitted to the 2020 Regional Conference for Europe and Central Asia (ERC) on 2–4 November 2020. In particular, it identified the special problems of the respective subregions and reviewed the regional priority areas of work for FAO.

6. The regional process helps linking country demands and global issues under a regional umbrella, focusing on challenges best tackled at the regional level. It ensures that regional specificities are clearly reflected in FAO's work on such priority issues as nutrition and climate change, guided by the Sustainable Development Goals (SDGs). It also provides a good basis for FAO to address synergies across SDGs, facilitating discussions on

how to manage trade-offs, promote the development of partnerships and facilitate resource mobilization.

7. The regional process identified key regional trends and the challenges they pose at regional and national levels, and hence the key regional themes of focus for FAO. This comprehensive overview discusses immediate trends in the timeframe of 2022–25 and provides a perspective on the medium term and beyond.

8. The current document provides a descriptive but comprehensive analysis of the future of food systems in Europe and Central Asia, based on a qualitative review of the literature and information available at the time of drafting. In this context, the food system approach ensures that the economic, social and environmental dimensions of sustainability for the sector are considered.



**ARMENIA**

Women harvest potatoes in thick fog on the outskirts of Martuny.  
© Johan Spanner/ for FAO



# **REGIONAL MANIFESTATION OF GLOBAL TRENDS**



9. Population and income growth, urbanization and changing food preferences are challenging the world's food systems to deliver adequate supplies of safe and nutritious foods at prices that people are willing and able to pay. Agricultural production and trade, including through global value chains, have risen to meet that challenge with some success, at least for some, but degradation of natural resources, climate change, failing markets and weak policy choices multiply the difficulties involved. Widespread poverty and food insecurity persist even in wealthy countries. Elements of all these global trends are evident in the countries of the Europe and Central Asia region and will continue to influence the regional picture. However, such is the diversity of these countries, from the small developing countries of Central Asia to high-income candidates for European Union membership, that while all are making progress, some lead while others lag.

This chapter describes the key global trends – and their regional manifestations – that are shaping the future of food systems in Europe and Central Asia. Among the many aspects of these global trends, this report identifies seven as being crucially important to the achievement of the SDGs by 2030: economic growth; natural resource constraints and climate change; social and poverty issues; agrifood trade and policies; food systems structural transformation, innovation and digitalization; challenges of food security and nutrition; and the increased role of food safety. The relative importance of each of these aspects and the consequent policy priorities vary from one part of the region to another. Future developments in relation to each of these aspects and their interdependencies and how these will impact food systems in the Europe and Central Asia region are uncertain and difficult to predict. The widespread damaging effects of the health and economic crisis provoked by the COVID-19 pandemic illustrate that uncertainty and show the difficulties involved. The difficulty of predicting such events and their effects points to the importance of building food systems that are resilient.

10. The environmental, economic and social sustainability of food systems and their performance in providing healthy diets for all are matters of global concern. Investing in sustainable food systems should deliver food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised.<sup>6</sup>

In the Europe and Central Asia region, the dramatic differences in food systems among the Western Balkans, the European Union countries, the Caucasus, Eastern Europe and Central Asia mean that finding context-specific solutions and actions, including through multistakeholder engagement, is essential. Despite these specificities, the general need for more sustainable food systems is more pressing than ever across all countries of the region and poses challenges for them all.

## II.1. Economic growth

11. The Europe and Central Asia region as a whole has enjoyed rates of GDP growth that are relatively high by international standards. Excluding the high-income countries of the region, GDP growth was 1.7 percent in 2019, compared to 1.6 percent in the European Union. As with population growth rates, GDP growth rates in the dynamic Central Asian countries have been much higher, at around 5 percent per year – and as much as 7 percent per year, in the case of Tajikistan. This compares with growth rates of around 4 percent achieved in South Asia. These recent Central Asian growth rates are high even by the standards of developing and emerging economies, so that even with their higher annual population growth rates of around 2 percent, per capita GDP is still growing by as much as 4 percent per year. The near-zero population growth rates elsewhere in the region mean that even with more modest GDP growth rates, per capita GDP has still shown significant growth.

12. Economic growth is one of the key drivers for the achievement of the SDGs, including those related to food security and poverty reduction. In general, economic growth has been accompanied by improvements in food security.

Food access is the most important determinant of food security in the region. Increased incomes allow access to more food – broadening food choices not only towards higher-value foods, such as livestock products, but also towards address consumer concerns for healthy diets and sustainably produced foods. Such shifts in the structure of food demand translate into new opportunities for the agricultural sector and trade. However, economic growth will not bring about reductions in poverty and food insecurity if it is not shared by all and does not bring about a structural transformation of the economy. Increasing incomes alone are not enough to prevent pockets of enduring poverty, especially in rural areas. Income distribution also is important.

13. Agriculture is a major sector in many of the economies of the Europe and Central Asia region, much more than in the European Union. Nearly a third of the population is rural in the region as a whole, and in Central Asia, it is around half; thus, there is significant reliance on food and agriculture to ensure not only food security but also sustainable growth and export earnings. In the non-European Union countries of the region, agriculture is not only a source of food but also a source of employment for a relatively large share of the population.

The agricultural sector has seen significant growth during the past decades and has made a major contribution to economic growth generally. During the period 2000–2016, gross production value (in constant 2004–06 USD) in the region increased by 16 percent, and per capita production grew by 12 percent, mainly as a result of strong growth in the non-European Union countries. In the Central Asian countries, gross production increased by 87 percent during this period, and per capita production increased by around 50 percent.<sup>7</sup>

14. The Europe and Central Asia region enjoyed healthy economic growth until 2019, but GDP

fell dramatically in 2020 as a result of the COVID-19 pandemic. This triggered a deep economic recession, both globally and in the region. In the first quarter of 2020 in the euro area, GDP contracted by 13.6 percent, while the year-on-year contraction of GDP in the Russian Federation is predicted to be 6 percent,<sup>8</sup> in Ukraine about 8 percent,<sup>9</sup> in Kyrgyzstan 4 percent,<sup>10</sup> and in other countries 5–10 percent.

The current and future performances of the euro area, the Russian Federation and China (first quarter contraction of GDP by 6.8 percent),<sup>11</sup> the major economies of the region, will determine not only the depth of the crisis, but also the recovery of the Europe and Central Asia region in general. Current forecasts of post-COVID-19 economic growth in the region are highly uncertain, but most experts do not expect GDP levels to recover to pre-pandemic levels before 2022.<sup>12</sup> Moreover, besides being major export markets, the Russian Federation and the European Union are the major destination host countries for migrant labour from the Europe and Central Asia region. Remittances have been an important source of income for migrants' home countries but are projected to decline sharply, by as much as 20 percent in 2020 – and even more in some cases, due to the economic crisis induced by the COVID-19 pandemic.<sup>13</sup>

15. Extended lockdowns in many countries have had widespread negative economic effects, including on food systems.<sup>14</sup> The ongoing crisis has led to a fall in farm incomes and to an increase in unemployment and poverty. It also has reduced fiscal revenues, undermining governments' ability to support business and vulnerable populations. According to the latest estimates, COVID-19 may add an additional 83 million to 132 million people to the ranks of the undernourished in 2020, depending on the economic growth scenario.<sup>15</sup>

16. Globally and in the Europe and Central Asia region, economic growth is expected to recover after 2025, although the COVID-19 pandemic and accompanying social disruption are expected to have lasting effects. The rate of urbanization is expected to be slowed, for

example, and remote working and online services are likely to become much more widespread than before the pandemic. These post-COVID-19 economic development trends could compromise the achievement of the SDGs and warrant detailed FAO analysis.

## II.2. Natural resource constraints and climate change

17. The growing global demand for food and pressure from growing populations puts additional stress on existing natural resources, including land, soils, water and biodiversity. Economic growth, in general, is not decoupled from environmental degradation.<sup>16</sup>

These natural resource endowments already face severe environmental challenges from unsustainable use, and that pressure is intensifying. Worldwide, water resources are increasingly scarce and polluted, land is degraded or lost to urbanization, soils are depleted, and biodiversity is lost, all challenging the ability of food systems to continue to supply growing populations and meet new demands and compromising progress towards the SDGs. The very unsustainability of intensive farming systems themselves is adding to that pressure.

18. Climate change exacerbates the fragility of natural resources through the increased frequency and severity of extreme weather events. Its impact is already becoming more pronounced, and it will be one of the most important drivers of future changes throughout food systems, affecting all four dimensions of food security and nutrition – availability, accessibility, utilization and stability. Agriculture, as the source of 23 percent of greenhouse gas emissions, has significant responsibility not only for contributing to climate change but also for mitigating it through reduced emissions.<sup>17</sup> However, the deleterious effects of climate change extend beyond natural resources and agricultural production throughout food systems, including food safety. Food systems are confronted with an urgent need to

improve sustainability through the reduction of greenhouse gas emissions, climate change adaptation and mitigation, better management and conservation of natural resources, and conservation of resources, including through alternative production systems such as agroecology, conservation agriculture and organic production. At the same time, agriculture needs to be more productive to meet the growing demands placed upon it while safeguarding sustainability.

19. The Europe and Central Asia region is not immune to these changes.<sup>18</sup> There already has been a notable decline in biodiversity.<sup>19</sup> A major driver of this loss of biodiversity has been land-use change, caused in part by production-based subsidies that have led to unsustainable intensification of agricultural practices. The region's agricultural systems already are seriously affected by climate change through increased temperatures, greater crop water demand, more variable rainfall, and weather extremes. The region increasingly is exposed to intensifying weather patterns, with some areas – notably the Western Balkans – geographically prone to severe flooding, and others – notably Central Asia – prone to droughts.<sup>20</sup>

Some countries potentially could benefit from climate change through, for example, longer growing seasons or productive use of previously non-productive areas. However, these countries are mostly poorly positioned to exploit this opportunity because of the underdeveloped technological state of their agricultural sectors and their inability to cope with current climate variability. In many non-European Union countries of the region, persistent budget deficits and lack of sound private insurance systems have limited national abilities to respond to hazardous events.<sup>21</sup>

20. Climate change also impacts animal and plant pathogens and diseases and their geographical and temporal distribution.<sup>22</sup> It can exacerbate certain interactions between the environment and animal and human health. The effects of climate change on the

spread of diseases are best exemplified by vector-borne diseases such as lumpy skin disease or bluetongue.<sup>23</sup> Climate change also can challenge food safety. Emerging hazards in primary production may call for improved safety management systems to effectively control those hazards and ensure the safety of the final product. Furthermore, increasing average temperatures could increase hygiene risks associated with the storage and distribution of food commodities.<sup>24</sup>

21. Agriculture is one of the major contributors to greenhouse gas emissions and thus to climate change in the Europe and Central Asia region. In 2016, greenhouse gas emissions varied between 0.8 tCO<sub>2</sub>eq per person in Central Asia to 1.2 tCO<sub>2</sub>eq per person in Kazakhstan.<sup>25</sup> Emissions have increased over the last 15–20 years, mainly due to increasing livestock numbers.

22. One of the major challenges facing agriculture across the non-European Union Europe and Central Asia region is the need for the effective management of natural resources and the adoption of climate-smart agriculture. Management and policy decisions on land use and agriculture production need addressing in the context of ensuring the sustainability of food systems. The common problem for all these countries is the lack of integration of agro-ecological, climate change mitigation and adaptation policies with agricultural policy. The development of agricultural policies does not typically integrate sustainability concerns that are considered as an additional burden for producers. In Kazakhstan and the Russian Federation, for example, this is the result of an apparent assumption that major agricultural resources are without limit, while in other countries it results from the difficulties of imposing sustainable practices on poor smallholders, especially in the absence of effective extension systems.

23. Responses to climate change in the agricultural sector are further complicated by a lack of awareness among the public and decision makers of the nature of climate change, the threats it poses and its consequences.

Many countries of the region also suffer from a lack of relevant conventional and vocational education and training on sustainable practices in food systems as well as profound research and development in this field.<sup>26</sup> However, even when there are national strategies and research and development to address climate change and environmental issues, implementation mechanisms may not be fully operational.

24. For the future, agroecology and the widespread uptake of modern agri-environmental practices could provide a holistic approach in policy planning and farm management to address the environmental challenges described above. Agroecology could play an important role in supporting food production and food security and nutrition, restoring the ecosystem services and biodiversity that are essential for sustainable agriculture, and building resilience and adaptation to climate change in the region.

25. Land and water resources also are squandered in the production of food that is lost or wasted, with negative impacts on climate change and livelihoods. “Food loss” refers to the decrease in the quantity or quality of food, from post-harvest up to – but not including – the retail level. “Food waste” refers to the decrease in the quantity or quality of food at retail, in catering and in the home. A preliminary estimate by FAO suggested that, globally, around one-third of food produced is lost or wasted. FAO’s recently developed food loss index indicates that around 14 percent of the world’s food – with an estimated value of USD 400 billion – is lost between post-harvest and the retail level.<sup>27</sup>

The United Nations Environment Programme is developing a corresponding index of food waste by retailers, food service providers and consumers. [Target 12.3](#) of the SDGs calls for halving per capita global food waste at retail and consumer levels by 2030, as well as reducing food losses along the production and supply chains.

It appears from FAO’s broad regional estimates of food loss that these are among the highest for countries in Europe and Central and Southern

Asia, yet none of the Eastern European, Western Balkans, Caucasus and Central Asian countries has a comprehensive strategy or at least a vision to reduce food loss and waste. Typically, there is limited awareness of the nature and extent of food losses and waste and how these can be addressed. Recognition of the problem and practical efforts to reduce food loss and waste varies from country to country. The European Union had already in 2011 called for its Member States to reduce waste by 50 percent by 2025. In the Russian Federation, the food loss and waste issue began to enter the political agenda only in 2015, supported by the FAO Liaison Office in Moscow. In Central Asia, there are almost no initiatives comparable to those of Western Europe.

## II.3. Social and poverty issues

26. Even where the economic growth record is impressive, the tendency for rural areas to lag behind urban areas in terms of incomes, employment, infrastructure and access to services including healthcare is commonplace. If growth is not inclusive, pockets of rural stagnation, poverty and undernourishment can persist side by side with urban growth.

The differences are even more marked for rural women, the elderly and youth. The COVID-19 pandemic has exacerbated these inequalities, with a disproportionate effect on such vulnerable groups. In these circumstances, it is not surprising that rural youth find migration an attractive option either to urban centres or further afield to other countries, exaggerating the tendency towards increasing average ages in rural populations, less dynamism, and less openness to innovation and technical progress. Deliberate measures are needed to reverse these tendencies and to maintain agriculture and rural business as attractive career possibilities for rural youth.

27. While there has been significant progress towards the eradication of extreme poverty in the Europe and Central Asia region, the

problem of multidimensional poverty still exists, and around 80 million people still live on less than USD 5 per day. Rural poverty has been declining over the years, but this trend has slowed recently. Average incomes are typically lower in rural than in urban areas, and poverty has a strong gender dimension. The urban–rural income gap is a serious issue in the region – particularly in Central Asian countries, where the rural population has limited access to social services.<sup>28</sup>

28. The Soviet era left most non-European Union countries in the Europe and Central Asia region with significant underdevelopment of rural areas and poor rural livelihoods. During that period, rural development was facilitated through support to agriculture and food including forestry and fisheries. More recently, growth in agricultural labour productivity and the sector's declining share in the overall economy, means that agriculture is no longer the major source of income in rural areas throughout the region. In the Russian Federation, for example, on average, only 19 percent of the rural population receive their income from agricultural activities.

29. The high incidence of migration from rural to urban areas and abroad in many countries, particularly in Central Asia, has both positive and negative aspects. Outmigration from rural areas is part of the process of structural transformation of economies in which the importance of agriculture for income and employment generation declines relative to other sectors.<sup>29</sup> However, rural–urban migration not being supported by income generation in urban areas can lead to the growth of urban poverty. At the same time, such migration leads to the depopulation and degradation of rural areas and a shift in the demographic structure. Young people unable to find decent employment and leaving rural areas means that rural populations are ageing, losing dynamism and innovativeness. Youth unemployment rates vary across the region but are among the world's highest in Armenia, Bosnia and Herzegovina and North Macedonia, at 38.2 percent, 33.8 percent and 45.5 percent, respectively.<sup>30</sup> International migration is also significant in the Europe and Central Asia region, with the

western and northern countries receiving labour migrants from the eastern and southern countries, in general. A significant percentage of international labour migrants are from rural areas.<sup>31</sup> Remittances are an important source of income for recipient families, especially in the Caucasus and Central Asia, but often are spent on housing and consumption rather than investment in agriculture or other rural businesses.<sup>32</sup> The COVID-19 pandemic is having a significant and protracted impact on all aspects of migration in the region.

30. As current farm structures were largely defined by land reforms and privatization of state-owned agricultural land from the beginning of the transition in 1990 onwards, that generation of farmers will retire in the coming years. In many countries, farm structures are dominated by small family farms with less than 5 ha and often with excessive land fragmentation, where each small farm is split into a number of scattered and badly shaped parcels.<sup>33</sup> This is particularly the case in the Western Balkans, the Caucasus and most Central Asian countries. It remains an important social and rural issue to support the younger generation to take over these small farms and develop them into commercial family farms. Intergenerational changes and the number of young farmers will have an important bearing on the uptake of innovation and digitalization needed to improve efficiency and competitiveness.

## II.4. Agri-food trade and policies

31. While import tariffs have generally been reduced or removed under multilateral trade liberalization or the proliferation of regional and bilateral trade agreements, agricultural trade continues to be subject to many kinds of restrictions and obstacles, including sanitary and phytosanitary requirements, technical barriers to trade, bureaucratic trade procedures, and weak trade infrastructure. Non-tariff barriers related to increasingly strict environmental, labour, packaging or food safety standards can be problematic for food exporters, especially

where these standards differ from one import market to another. Variations in standards and the complexity of the associated regulations and inspection procedures impose additional costs on exporters that can be especially challenging for small- and medium-size enterprises. The WTO Trade Facilitation Agreement agreed upon at the 2013 Bali Ministerial Meeting, which came into force in 2017, recognizes the importance of simplifying and harmonizing trade procedures and provides for capacity development and technical assistance.

32. Trade barriers have become more common since the 2008–11 food price spikes, when export restrictions were imposed by a number of major cereals exporters, exacerbating the adverse effects of high prices on access and stability. In a departure from past trends that saw free trade as beneficial to enhancing the stability and variety of food supplies, policies for food self-sufficiency also have become more widespread, and this has accelerated with the COVID-19 pandemic. These developments have been, in part, responsible for the slowdown in the rate of growth of global agricultural trade in recent years. The slowdown also has been attributed to slower GDP growth, especially in China, and trade tensions between different trading partners.

33. As the Europe and Central Asia region integrates further into the global economy, its agrifood trade environment has changed significantly over the past few years. Agrifood trade development always has been a priority for Central and Eastern Europe, the Western Balkans and Central Asia during the transition, to serve as an engine of income growth. All countries in the Europe and Central Asia region either are already members of the World Trade Organization or are observers negotiating or intending to negotiate membership with the trade policy obligations that brings. Regional cooperation agreements such as the Eurasian Economic Union or the association agreements with the European Union also have proliferated.<sup>34</sup> Bilateral trade agreements have remained key drivers of agricultural trade in the Europe and Central Asia region.<sup>35</sup>

34. Agrifood trade, both exports and imports, has increased significantly in the region during the past two decades, with lower-value-added food products dominating exports and higher-value-added products dominating imports.<sup>36</sup> In the future, countries will need to refocus on higher value addition in agriculture and food production as well as trade activities to support the overall agricultural development of the region and contribute to the achievement of the SDGs.

35. Despite this trade orientation, the majority of countries in the Europe and Central Asia region have the achievement of food self-sufficiency among the main objectives of agricultural policy. The policy instruments that have been used to this end have included production subsidies for specific commodities as well as trade measures such as import tariffs, food embargoes, and non-tariff trade barriers.

Agricultural policies promoting self-sufficiency objectives are in place in Armenia, Belarus, Kazakhstan and Russian Federation. Kazakhstan and the Russian Federation have significantly increased budgetary support to producers. In the Russian Federation, total budgetary support to producers doubled in 2019 compared to 2005, while Kazakhstan saw a fourfold increase over the same period.

36. As noted above, the disruption to agricultural trade caused by the COVID-19 pandemic has led to an apparent increased interest in protectionism and reliance on self-sufficiency in food systems. Problems in food shipments and panic buying made food supplies uncertain in net food importing countries and led to a temporary rise in food prices. Consequently, several food-exporting countries imposed temporary export restrictions in the hope of averting price spikes in their own local markets and, in doing so, destabilized global trade. Kazakhstan and the Russian Federation, two of the major cereal exporters of the Europe and Central Asia region, took temporary measures to tighten their exports of wheat and other agricultural exports to ensure sufficient stocks were available for domestic markets.

These export limitations caused an increase in food prices in import-dependent countries. Flour prices in Tajikistan, for example, were 30 percent higher in May 2020 than in May 2019. Not surprisingly, self-sufficiency in basic foods has been considered by policymakers in many countries of the region as a potential long-term strategy that safeguards national food security in times of global crises.

## II.5. Food systems transformation, innovation and digitalisation

37. The transformation of food systems is at the heart of the 2030 Agenda for Sustainable Development, with sustainable food systems and nutrition patterns highlighted as one of the six entry points for successful transformation towards sustainable development.<sup>37</sup>

Agrifood systems develop and evolve constantly as consumer demands shift – driven by income and population growth, changing preferences, urbanization and changes in the range of what is supplied – and as adjustments are made to new technological possibilities in production, storage, transportation and value chain structures. Progressive urbanization, which is expected to reach 70 percent globally by 2050, is one of the most important factors shaping modern food systems, making them more integrated, centralized and globalized. Urbanization also leads to significant shifts in diets and food demand towards higher-value-added products and processed and packaged foods.<sup>38</sup>

Food chains become longer and more sophisticated, with concomitant risks for the environment in terms of greater carbon dioxide emissions from transportation and storage and increased waste from packaging.<sup>39</sup>

38. The evolution of food systems has been accompanied by developments in their regulatory environment, a wider geographic spread (including through global value chains)





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and greater concentration of market power. Increasingly strict public and private product standards, traceability requirements and food safety laws are integral elements of modern food systems, and especially global value chains, that must be met by all participants. Food producers and processors need to meet the food safety requirements of the regulatory authority and trading partner.

A clear distinction should be made between essential, minimum food safety standards to assure public health protection and standards pertaining to additional product quality parameters or identification. Securing export markets is conditional on meeting specified standards that may relate not only to the physical characteristics of the product itself but also increasingly to the environmental, social and animal welfare implications of how it is produced. This, in turn, demands

corresponding local regulations and effective inspection and certification systems to assess compliance with the relevant standards and requirements. At all stages before and after farm production itself, there has been increasing concentration in agrifood systems. This includes not only the processing and distribution activities to which agriculture sells but also the industries supplying inputs such as seeds, chemicals, pharmaceuticals, genetic materials and machinery from which agriculture buys. Small family farms, which represent the majority in global agriculture, face market power and information asymmetries vis-à-vis large agribusiness corporations and are in a relatively weak bargaining position.

39. In discussions of food systems, there has been much focus on agricultural production itself and the need to improve productivity and

sustainability. To this end, higher productivity has been achieved around the world as innovations are made and adopted more widely. Agriculture generally has become more capital intensive and mechanized and open to adopting new technologies, including biotechnology and digital solutions, to address the twin objectives of productivity and sustainability. However, while mechanization and digitalization through food value chains can increase productivity and even sustainability, there is a risk that not all may be able to share in and benefit from the new technologies. Food system transformation needs to promote innovation and productivity enhancement to improve livelihoods, but not in such a way that smallholders and especially women and youth are excluded. Inclusivity and the aim to “leave no one behind” are important for sustainability. Aging rural populations militate against innovativeness, but farming is perceived as offering limited opportunities and as unattractive for younger generations leading to migration from rural areas. Young entrants into farming need to be able to access funds for investment and training to acquire the technical and business skills required to operate viable, productive and sustainable agricultural enterprises.

40. Innovation is the main driver of productivity growth. It also is key to improving the sustainability of food systems, especially in the face of climate change, and enhancing their inclusivity. Innovation in agriculture cuts across all dimensions of the production cycle and along the entire value chain – from crop, forestry, fishery or livestock production to the management of inputs to market access. Innovation in agriculture involves more than technology. It also includes new social, organizational or institutional processes, ranging from access to markets, credit or extension services to marketing produce in new ways and with new policies and new business models. Agricultural innovation systems involve a far wider range of actors and activities, notably farmers themselves, beyond the research community and infrastructure administered and funded by central government, although these are integral.<sup>40</sup> While organized research

generates innovations, this can be under government auspices or private sector laboratories or both working together in public–private partnerships. However, the creation of a new technology or product is only the beginning of an innovation process that continues with adoption and use by farmers and other operators through the value chain and ends with the market and consumers. Extension services and advisers have a key role in ensuring the dissemination of new technologies. Governments have a further role in implementing policies and regulations and creating institutions that provide an enabling environment for innovation. The roles of these various players overlap; farmers also innovate and, together with consumers and markets, can help guide the direction of innovation and avoid supply driven systems.

Furthermore, as the scope of agricultural innovation has become broader, to include information communication technologies (ICT) and digitalization, for example, so agricultural innovation systems have needed to evolve and embrace a broader range of participants. This calls for improved mechanisms for coordination and dialogue, including across national borders to facilitate international collaboration and technology transfer. Ultimately, agricultural innovation systems need to deliver innovations that are relevant and practical if inclusiveness is to be achieved. Widening access to agricultural education and making it more attractive and appealing to young people can improve the chances of successful adoption. However, the creation of effective agricultural innovation systems with all these dimensions involves major investment.

41. Progress in raising agricultural productivity and sustainability has been slowed by the low priority given to agriculture by most governments. Target 2.a of the SDGs calls for increasing investment 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 practice, government support for investment in food systems development

and innovation – including research, training, extension and infrastructure – has typically gone in the opposite direction. Public spending has declined in recent years, not only as government spending generally has been curtailed due to lack of funds but also because agriculture has not been given high political priority. The agricultural orientation index for government expenditures is an indicator (2.a.1) developed by FAO to measure progress towards SDG Target 2.a; it is defined as the ratio of the agricultural share of central government expenditures to the agriculture share of GDP. A value equal to 1 indicates neutrality in the government's orientation, while values greater than 1 indicate a favourable orientation. Values smaller than 1 indicate a less-favourable orientation. The index showed an average value of 0.26 in 2017, suggesting that governments worldwide have not prioritized agriculture, contrary to SDG Target 2.a. The values of the index for the Europe and Central Asia region have declined in recent years; in 2017, the highest values were for Belarus, at 0.8, and the Russian Federation, at 0.5. Ukraine and Kazakhstan were at 0.4, Uzbekistan was at 0.3, and Albania, Kyrgyzstan and Republic of Moldova were at 0.1.

42. Modern food systems are entering a fundamentally new stage of technological development based on the introduction of “smart” solutions involving robotics, “precision agriculture” and the “Internet of things.” Digitalization is seen as a key enabler of agricultural and rural development through improved information and communication processes and other digital technologies. It involves designing, developing and applying innovative ways to use information and communication technologies in the rural domain, with a primary focus on agriculture and food, including fisheries, forestry and livestock.

Technological application, facilitation, support of standards and norms, capacity development, education, and extension belong to the broader concept of so-called “e-agriculture,” which is now more commonly called digital agriculture.<sup>41</sup> In the non-European Union countries of the Europe and Central Asia region, the scope

for digitalization is still lagging behind the Organisation for Economic Co-operation and Development countries in terms of internet penetration, digital skills, affordability and returns on investment for smallholders.

43. Digital technologies create new opportunities for more inclusive food chains, as they could facilitate better integration of smallholders in a digitally driven food system.<sup>42</sup> However, digitalization in agriculture is associated with new challenges, not the least of which is ensuring its accessibility to all. The greater technical and knowledge demands of digitalization present a major challenge for much of the rural population, especially in the eastern part of the region. They throw into even sharper relief the difficulties many small family farms and aging rural populations face in the adoption of innovative technologies. Currently low levels of government spending on research extension and advisory services and education for agriculture and food industries across the region make it more difficult to bridge that digital divide. Growing the digitalization of agriculture will also require government action on the development of public information systems and the interoperability of databases – both statistical and factual. Potential impacts on labour markets also are a matter of concern.

In many countries of the Europe and Central Asia region, agriculture makes up to 25 percent of the GDP, which implies low employment absorption ability in urban industries. Under these conditions, the spread of highly innovative, labour-saving technologies in agriculture could lead to increases in rural poverty and food insecurity. Policy interventions may be needed to minimize the potential risks of innovative development in the sector.<sup>43</sup>

44. The development of modern food systems has been accompanied by the rise of global value chains (GVCs). Although, to a lesser extent than for other industries, food systems also are increasingly organized within GVCs, as trade liberalization and reductions in agrifood trade barriers have enabled various stages of the process of transforming raw materials into a final consumer product to be

located across different countries. However, this global trend towards liberalization has slowed markedly, as the COVID-19 pandemic has strengthened the political shift towards self-sufficiency and increased domestic support. Nevertheless, according to Organisation for Economic Co-operation and Development data, in 2014, on average, around 21 percent of the value of exported agrifood products from any given country came from goods and services produced in other countries.<sup>44</sup> While participation in GVCs has been increasing in some countries of the Europe and Central Asia region, it remains limited in Central Asia and the Caucasus. The GVC participation index of European Union members is significantly higher than that of non-European Union countries in the region – around 10 percent for Kazakhstan in 2016, for example, compared with 44 percent in Hungary.

45. The World Bank attributes the sharp reduction of poverty in many parts of the world to the fast development of GVCs.<sup>45</sup> The benefits of participation in GVCs can include increased revenues for national producers, the creation of employment, more diversified domestic food supply, and the facilitation of technology transfers. However, there can be a mismatch between agribusinesses in GVCs or any modern food value chain and small family farms, and the extent to which they are or can be integrated into these value chains is variable. Small farms represent the major part of global agriculture; of the more than 570 million farms worldwide, an estimated 500 million (84 percent) are small, mostly family farms of less than 2 ha that produce one-third of the global food supply.<sup>46</sup> In the Europe and Central Asia region, except for Belarus, Kazakhstan, Russian Federation and Ukraine, farm structures are similarly dominated by smallholders and small family farms. The inclusion of smallholder farmers and other rural entrepreneurs in agricultural value chains can improve their access to finance, inputs, services and markets. A range of market, institutional and policy actions can enhance their participation in value chains through the establishment and strengthening of producer organizations, including cooperatives and other forms of farmer groups; support for

quality standards and marketing/branding of locally produced products, including potential registration of geographic indications and products with traditional specificities; organization of and participation of smallholders in business and investment fairs; business development, extension and advisory services for small farmers; and better access to finance.

46. Contrary to the rise of global value chains, short supply chains and the development of local markets, alternative food networks, local farming systems and direct sales also can play a role. They have become evident as a new trend in recent years in the Europe and Central Asia region, gaining increased attention more recently due to the COVID-19 pandemic. Interest in short value chains is driven by the demand for locally available nutritious and diverse food, promoting local economies and income, maintaining local food cultures and the development of rural areas, contributing to a greener economy, and reducing food loss and waste. Untapped potential and opportunities exist to develop a more vibrant food processing sector in many countries in the region.

47. It is not only agricultural production and food processing and distribution that can contribute to increased sustainability in food systems, but also what people eat. Throughout the Europe and Central Asia region, poor diets are a major contributory factor to the increasing levels of obesity and associated non-communicable diseases and to undernutrition and micronutrient deficiencies in some countries. To overcome nutrition challenges, ensure positive health outcomes, protect livelihoods, promote economic development and protect the natural resource base, food systems need to continue to undergo structural transformation towards more sustainable models. Members at the Thirty-second Session of the Regional Conference for Europe affirmed the importance of adopting a sustainable food systems approach for healthy diets that maximizes contributions to the three dimensions of sustainability (environmental, economic and social).<sup>47</sup> The COVID-19 pandemic has further highlighted a range of inefficiencies and challenges in global

and regional food systems and has reconfirmed the urgent need for a shift towards sustainable production and consumption patterns.

## II.6. Challenges of food and nutrition security

48. Population growth is a major challenge for global food security, especially in sub-Saharan Africa and South Asia, where the latest population growth rates are estimated at 2.7 percent and 1.2 percent per year, respectively. Population and income growth are the two major drivers of food demand influencing the access and availability pillars of global food security. By 2050, the world population is projected to reach 9.7 billion, with additional growth to 11.2 billion by 2100. More than half of this growth will be concentrated in sub-Saharan Africa and Asia, implying significant food demand growth in those regions.<sup>48</sup>

In the Europe and Central Asia region, population growth is a less-significant driver. For the region as a whole, excluding the higher-income countries, population growth is around half a percent per year. However, this average figure is inflated by Central Asia population growth rates, which are much higher, averaging around 2 percent per year, although the total population of the Central Asian countries is relatively small, at around 75 million people. Elsewhere in the region, the population is static or even declining and is projected to remain so. For the non-European Union Eastern European countries and those of the Western Balkans, population growth rates are similar to those in the European Union countries of the region and are actually slightly negative in almost every case. Annual population growth in the Europe and Central Asia region is projected to be -0.15 percent by 2045–2050, -0.41 percent for Eastern Europe and +0.6 percent for Central Asia.

49. Nevertheless, demographic factors other than population size per se, such as the age structure of the population and its distribution

among urban and rural locations, do have a significant impact on food demand and food security. For the non-European Union Eastern European countries and those of the Western Balkans, population structures in terms of age cohorts are also similar to those in the European Union countries of the region. For the Europe and Central Asia region as a whole, the proportion of the population age 65 and older is around 20 percent. However, the Central Asian countries have a much younger age structure, with the proportion of adults 65 and older being around only 5 percent, and only 3 percent in Tajikistan. The Central Asian countries have a correspondingly higher share of young people in their populations, with around 30 percent younger than 14. This is similar to South Asia, but not so high as in sub-Saharan Africa, where the percentage is 42 percent. These high figures clearly have implications for current food security and future youth employment possibilities.

50. Rising per capita incomes lead not only to increased overall food consumption but also to changes in food preferences – and, hence, the types of food consumed. With higher incomes, people tend to change their food consumption habits towards more varied diets that include more milk, meat, fruits, vegetables and processed foods and less food staples. However, they also consume more energy-intensive fast foods, especially with urbanization, which raises issues for nutrition-related non-communicable diseases and sustainability.

51. There are major differences in food consumption patterns across the Europe and Central Asia region. In the Western Balkans and Turkey, for example, the share of fruits, vegetables and pulses in food consumption is greater, while in European CIS countries, meat and fish account for a greater share compared to other subregions. At the other extreme, Central Asian countries consume relatively lower quantities of fruits, vegetables and fish products.<sup>49</sup>

52. Despite dynamic changes in food preferences and consumption in the region, ensuring

growth in agricultural production has been central to ensuring food security. Beyond this, policies aimed specifically at healthy diets will be needed. For example, consumer education on nutrition and proper diversified diets is still lacking, especially in the case of vulnerable population groups. Nutrition education is not compulsory in most European Union countries, nor in other Europe and Central Asia region countries, except in a few. Food-based dietary guidelines that aim to establish a basis for public food and nutrition education are unavailable in many of the countries in the region, particularly in Central Asia. Food product reformulation to reduce levels of specified nutrients in processed foods is widely implemented in the region but is less common in Central Asia.

53. Despite continuous efforts to reduce the number of hungry people globally, this number has been slowly rising since 2014 and is projected to exceed 840 million by 2030.<sup>50</sup> At the same time, 1.9 billion people are now overweight and 600 million are obese, posing serious challenges for food security and nutrition in the future. Most recently, the prevalence of moderate or severe food insecurity also has risen in Central Asia and the Caucasus.

54. The triple burden of malnutrition (undernutrition, micronutrient deficiency and overnutrition) is highly relevant in the Europe and Central Asia region, even though most countries have food security laws. In the region, 14.3 million adults consider themselves food insecure.<sup>51</sup> Poor diets contribute to the incidence of non-communicable diseases such as diabetes, heart disease, stroke and cancer, contributing to early deaths. Although the region has made good progress in increasing the availability of fruit and vegetables, a more balanced, diverse and appropriate selection of foods will be needed to reduce the risk of non-communicable diseases and ensure health and well-being for all citizens.<sup>52</sup> Moreover, the COVID-19 pandemic has increased poverty rates throughout the region. Extended lockdowns and the accompanying economic downturn have resulted in shrinking incomes, further jeopardizing food security and healthy diets. Labour migrants have faced deteriorating living conditions and

increased social tensions in host countries, and household food and nutrition insecurity has been exacerbated by the sharp reduction in remittances.

## II.7. Increased role of food safety

55. Changes in food consumption patterns and the development of more sophisticated technologies and value chains, from farm to consumer, have been paralleled by the strengthening of food safety legislation to ensure safe food supplies and protect consumer health. Almost every country recognizes food safety as a public health priority for its citizens and has progressively put in place science-based regulatory frameworks and national systems and infrastructure for food safety and quality control. Codex texts provide the basis for most public food safety regulations and are the World Trade Organization benchmark standards for international food trade. With increasing food trade, the development of national and global value chains and the increasing market power of large food manufacturers and retailers, private sector standards also have become widespread and can be even more demanding. Meeting these standards, public and private, requires adequate knowledge and capacities and can impose significant compliance and administration costs for small farmers and food processors. However, compliance with relevant standards is a prerequisite for national and international market participation.

56. Food safety gained increasing prominence during the transition from centrally planned to market economies. Countries in the Europe and Central Asia region have tried to tackle this problem in the years since the break-up of the former Soviet Union, with varying degrees of success. The slow uptake of food safety standards and challenges in demonstrating compliance have prevented most countries in the Western Balkans and Central Asia from achieving larger shares of markets in developed countries, including the European Union. During the transition phase, some countries

made the policy decision of suspending all planned food inspections for an extended designated period and allowing food business activities to operate.

57. While compliance with food safety standards is key for food trade, and while improvements in food safety often are driven by the need to comply with importing country requirements, the assurance of safe food for domestic consumers is a basic human right and is essential for food security and nutrition. Food is not nutritious if it is unsafe. Consumer trust in food standards has been an ongoing challenge to government and food industries in many countries in the Europe and Central Asia region, not only, but also elsewhere. Countries in the region are increasingly aware of the need to invest in robust food control systems to provide a governance structure and the importance of actions by all actors in the value chain to implement safe food practices and food safety management systems. While there has been some progress, these will require increasing attention in the coming years.

58. There are three key areas where investment in food safety is critical in the Europe and Central Asia region and will contribute to other outcomes and development goals. First is access to market requirements, such as local and international food laws and standards, that may not be harmonized or that do not have explicit arrangements for equivalence. Second is the assurance of safe food production and resilience along the value chain, ensuring that food production and processing and distribution systems, from farm to fork, are not vulnerable to disruptions or changes in the availability and pricing of raw materials, food fraud, emerging food safety hazards/zoonoses, water and energy availability, and other challenges.

Third is the sustainability of farm to fork food systems as currently implemented, which concerns the impact of food value chain actors on the environment and their exploitation of the environment and its natural resources. Environmentally sustainable practices should be implemented with due consideration for

safe food production. While COVID-19 is not a food safety issue, it has had major disruptive effects of food systems and food supply chains and has impacted food business ingredient supplies and food sales, not only, but also how official food control activities are carried out and resilience along the value chain, ensuring food production, processing and distribution systems from farm to fork are not vulnerable to disruptions or changes in raw materials availability and pricing, food fraud, emerging food safety hazards/zoonoses, water and energy availability, and other challenges; and thirdly the sustainability of farm to fork food systems as currently implemented, which concerns the impact of food value chain actors on the environment and their exploitation of the environment and its natural resources. Environmentally sustainable practices should be implemented with due consideration for safe food production. While COVID-19 is not a food safety issue, it has had major disruptive effects of food systems and food supply chains and has impacted food business ingredient supplies and food sales, and how official food control activities are carried out. **53 54**

59. In the countries of the Europe and Central Asia region, there already are initiatives that innovate, robotize and digitize approaches and technologies implemented along food value chains, seeking to improve food availability and food information to consumers, the resilience and sustainability of value chains, and the governance of food safety and other requirements. Sharing the relevant knowledge and skills with all relevant stakeholders within and outside value chains – and within and across countries – will be key to the success of addressing challenges around the use of natural resources, climate change and the threat of disruptions. While food systems innovate and transform to address food security challenges, climate change and value chain resilience, it is important that appropriate food safety measures are implemented, that an adequate enabling environment is provided for food businesses to comply, and that scientific risk assessments are completed in a timely manner for any new technologies.



**GEORGIA**

Woman farmer harvesting maize grown on irrigated land where production has been intensified  
© Jon Spill / FAO



A close-up photograph of a person's hands peeling the bark of a tree trunk in a forest. The person is wearing a red and blue patterned sleeve. The background is a blurred forest scene with green foliage and tree trunks. A semi-transparent blue rectangle is overlaid on the top half of the image, containing white text.

# **TRENDS, CHALLENGES AND DRIVERS BY SUBREGIONS IN EUROPE AND CENTRAL ASIA**

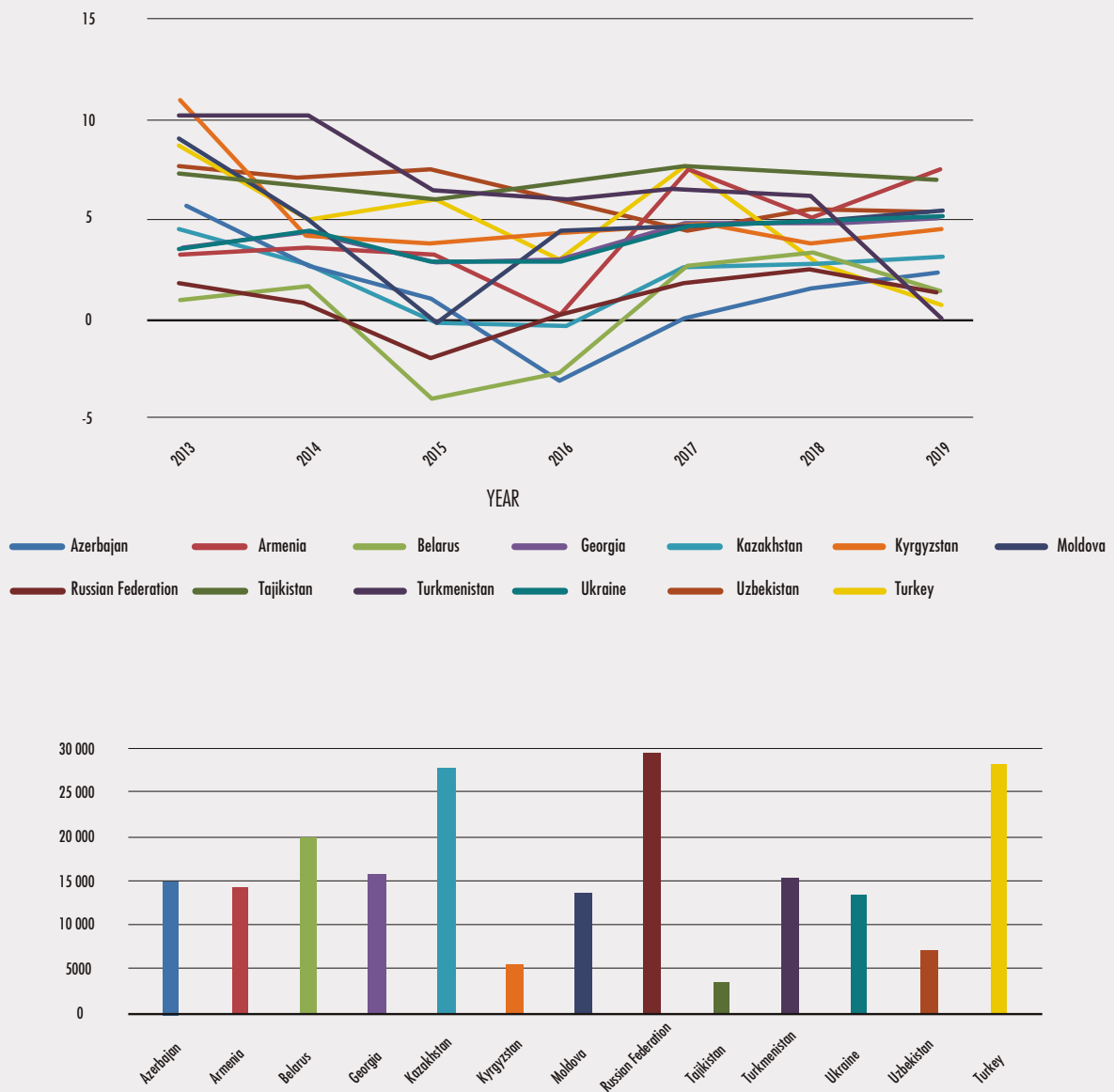
### III.1. Trends in food, agriculture and rural development in Caucasus, Central Asia and Eastern Europe

60. For the purposes of this chapter, the 13 countries of the Caucasus, Central Asia and Eastern Europe subregions are grouped together. These countries, apart from Turkey, share some common history as parts of the former Soviet Union which, at least initially, led to similarities in their development paths. All of them currently face many of the same challenges in their agricultural and food sectors.

At the same time, as *Figure 1* shows, there are significant divergences among them in their GDP growth rates and GDP per capita. The state of food and nutrition security also varies significantly from country to country, as *Figure 2* shows. Kyrgyzstan, Tajikistan and Turkmenistan face challenges under all dimensions of food insecurity, while Belarus, Kazakhstan, Russian Federation and Turkey have levels of food security close to those of Organisation for Economic Co-operation and Development countries. The nature of the agriculture and food sectors differs among countries. Smallholder agriculture predominates in the Caucasus and Central Asia, while large holdings coexist with smallholders in Kazakhstan, Russian Federation and Ukraine. Agricultural resources endowments vary across a wide spectrum, from an abundance of land and water in the Russian Federation to a scarcity of water and land resources in Uzbekistan.



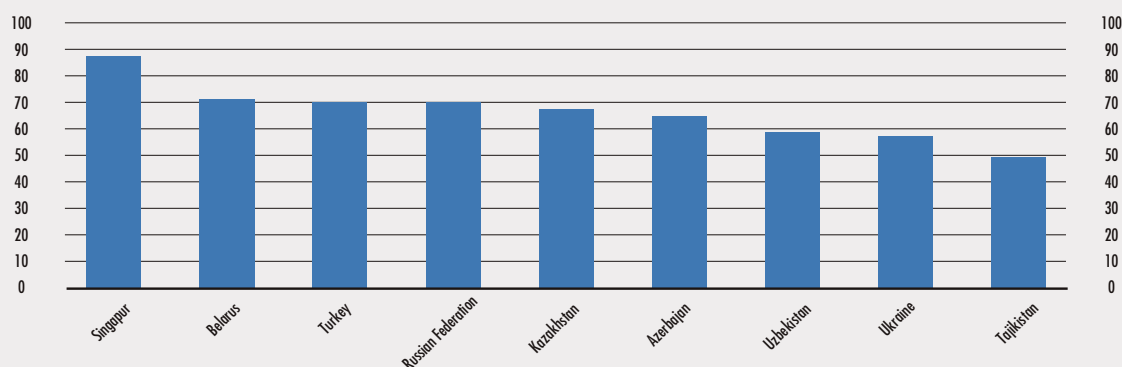
**FIGURE 1.**  
Caucasus, Central Asia, and Eastern Europe: GDP growth in 2013-2019 (annual percent) and GDP per capita, 2019 (PPP - current international USD).\*



\* For Turkmenistan - 2018

Source: World Development Indicators. 2019. GDP growth. In: The World Bank. Washington, DC. Cited 2 April 2021. <https://databank.worldbank.org/source/world-development-indicators>

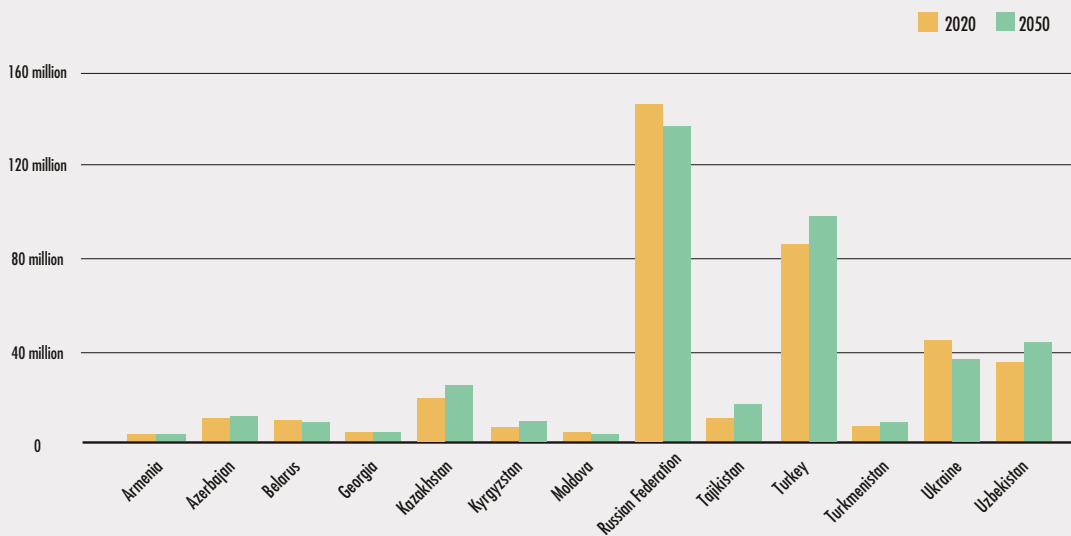
FIGURE 2.  
Caucasus, Central Asia, and Eastern Europe Global Food Security Index, selected countries, 2019 (maximum score is 100).\*



\* Singapore – world leader in 2019, presented for benchmarking

Source: Global Food Security Index. 2019. In: The Global Food Security Index. London, England. Cited 5 April 2021. <https://foodsecurityindex.eiu.com/>

FIGURE 3.  
Caucasus, Central Asia, and Eastern Europe population forecast.



Worldmeter. 2020. Population forecast. In: The Worldmeter. The United States of America. Cited 28 April 2021. <https://www.worldometers.info/>

61. The subregions' demographic trends also diverge. The population of the Caucasus, Central Asia and Eastern Europe as a whole is projected to decrease by 1.5 percent by 2050, while in Central Asia, the population is projected to grow by almost 20 percent.<sup>55</sup> However, growth in per capita incomes generally and the reduction of poverty will drive increasing overall demand for food and shifts in demands for different foods as food consumption patterns evolve. The region also is a growing supplier of food for global markets.

62. The availability and quality of land and water resources are becoming increasingly constrained across the region, and climate change, extreme weather events and urbanization are making these resource constraints increasingly binding. The region's agriculture and food sectors will need to overcome these challenges to meet growing demands for food driven by income growth and shifts in food consumption patterns. Agricultural and food production in the future will need to rely increasingly on technical, policy and institutional innovations and improved knowledge and technologies to raise productivity sustainably, to become more resilient to shocks from external climatic and biological factors, to reduce loss and waste, and to ensure that food consumed is safe and nutritious.

### III.1.1 A new paradigm for agricultural development: innovation and digitalization of agriculture

63. The challenges summarized in the preceding paragraphs call for a new paradigm of agricultural development that emphasizes sustainability in all its dimensions – economic, social and environmental – and not simply food production. Adoption of such a paradigm will imply dramatic and widespread change in the region's food systems, including the application of “smart” solutions. Change is necessary if the region is to increase productivity, ensure inclusivity, improve nutrition, enhance food safety and traceability along the value chain, reduce food loss and waste, limit agriculture's greenhouse gas emissions, and prevent the

depletion of natural resources and the loss of biodiversity.

64. Innovative technologies, which can help provide the foundation for sustainable productivity growth, include new technologies for animal and plant breeding, improved genetic potential, biotechnologies, integrated pest management and organic agriculture, precision agriculture, e-commerce, information systems, and mobile apps. Improving productivity growth remains a challenge both in countries that already are performing well, where easy adjustments have already occurred, and in lower-performing ones that require changes in incentive systems. In many countries, the lack of competitiveness and capacity in food processing industries is an issue for at least some part of the sector, limiting the expansion of agriculture, innovation and export capacity in the food system. Improvements are thus needed at all stages along the value chain.<sup>56</sup>

65. According to calculations carried out by the Institute for Agrarian Studies of the Higher School of Economics (Moscow) using the data of the ITC Trade Map,<sup>57</sup> by the end of 2018, the level of import dependence in the agricultural biotechnology sector in the countries of the Caucasus, Central Asia and Eastern Europe was over 80 percent. In the segment of functional food supplements, it was up to 95 percent, and it also was high in the majority of other segments. The final products of the region's agriculture are highly reliant on genetic material, technologies and equipment, mainly of foreign origin. This is seen as a weak point in achieving greater sustainability and food security, even with current technology and limits on the price competitiveness of exports. The closure of borders in response to the COVID-19 pandemic provided an illustration of this risk, with equipment for hatcheries and breeding animals unable to be delivered. This disrupted normal farm operations and led to the suspension of a number of new investment projects. Some lesser-developed countries of the region even experienced problems with the supply of products.

66. Along with the localization and development of key technologies, it is important to develop the relevant knowledge and expertise so that farmers can use them effectively. To meet those needs, farmers are increasingly turning

to specialized agricultural regional consulting centres and private consulting companies and also some large agricultural input suppliers.

67. National governments have recognized the importance of supporting farmers in the adoption of innovations, in making and sharing innovations themselves. State development programmes, along with the practical examples of individual large agricultural producers, can provide support for the production of different ingredients in food processing, breeding material, working with genetics and biotechnologies, organic farming and integrated pest management. The Russian “Federal Program for Scientific and Technical Development of Agriculture until 2025,”<sup>58</sup> for example, envisages co-financing of private agri- for example, envisages the co-financing of private agrifood companies’ research and development projects. Around USD 35.5 million of state finance was allocated for implementation of this programme, which focuses on crop and animal genetic breeding, new animal feeding technologies, new plant protection products and digital agriculture. Some 30 diverse projects already have been launched, with knowledge sharing, through collaboration with regional agrarian universities and governments.

68. Almost all countries in the region are taking similar steps to support innovation. In Kazakhstan, for example, the “State Program on Forced Industrial-Innovative Development of Kazakhstan for 2010–2014” (SPFIID) and “SPFIID 2015–2019” were developed in accordance with the “Strategic Development Plan 2020”<sup>58</sup> to improve agricultural labour productivity and promote infrastructure development for the agricultural and food industries. Turkey also formulated its national policy framework with a focus on technology, innovation, and information and communications technology-based development in its Eleventh Development Plan (2019–2023), enacted in July 2019. Agriculture is one of the three “priority development areas” of the plan, which envisages development interventions, including through public–private partnerships, to raise productivity

while increasing sustainability and protecting biodiversity. Special priority is given to support to digitalization; artificial intelligence- and data-based business models; and the development and upgrading of information systems, biotechnology, and other innovative techniques for improving seeds and genetic animal resources. Azerbaijan is considering the adoption of a model for supporting interactive innovations based on multi-actor collaborative networks at the district level and regional public–private partnerships, piloted in a European Union-funded project implemented by FAO (GCP/AZE/018/EC).

69. The largest agricultural producers of the Caucasus, Central Asia and Eastern Europe that currently export basic agricultural products such as poultry meat, pig meat and grains also are expanding the processing of agricultural products and compound feed. In Belarus, Ukraine and Uzbekistan, biotechnology plants constructed in the Soviet period are being actively modernized, and new pilot projects are being built to produce an increasing number of enzymes, plant protection products and amino acids. These countries are actively considering more sophisticated grain processing projects for the production of glucose–fructose syrups, starch, bioethanol and monomers for bioplastics, maltodextrins and feed components. Many countries still lack regulations on bioethanol production and support for the production and use of materials from various types of bioplastics, but the situation is gradually changing. Investments that utilize renewable energy sources and high-tech and innovative food processing are prioritized and incentivized in Turkey.<sup>60 61</sup> Turkey is one of the few countries in the region that have formulated a national biotechnology policy. Many countries also are engaged in biotechnology research related to the increase and conservation of biodiversity. Genome editing in crops and livestock is offering great potential in this respect, and relevant research is ongoing in many of the countries in the region. However, the lack of clarity in the regulation of some of the products of genome editing is limiting its wide application.

70. Organic agriculture is gradually developing in all countries of the region. Belarus, Kazakhstan, Republic of Moldova, Turkey, Ukraine and many other countries in the region have long produced and certified such products. Some of these countries already have laws on organic agriculture in full conformity with those in the European Union. There is rapidly growing interest from farmers in new organic production methods and appropriate training programmes. The same trends are encouraging the strengthening of product quality control at all stages of production, the introduction of integrated protection systems, and a recognition of the importance of the factors that preserve soil fertility in the longer term.

71. Global trends towards healthier lifestyles – at least for the middle classes – along with urbanization and the cost of quality protein have led to a regional interest in the production of protein from alternative sources such as insects, herbs or peas and the production of meat analogues by fermentation. The first pilot projects in these areas have been launched and are developing rapidly.

72. All the technologies described above can be supported by new digital cross-platform solutions to control processes, optimize costs, increase labour productivity, reduce food loss and reduce transaction costs through value chains. However, as noted above, the Caucasus, Central Asia and Eastern Europe region is large and diverse, with very different preconditions for digitalization in food systems. In many of the countries of the region, information strategies and digital agendas contain some elements of digital agriculture, and many countries have set out concrete programmes for digital agriculture development. At the same time, related legislation often is lagging behind.<sup>62</sup>

73. Countries with larger economies, such as Belarus, Kazakhstan, Russian Federation, Turkey and Ukraine, already are supporting digitalization in various sectors of agriculture, developing e-commerce, and creating platforms for tracking product quality using precision farming and drones.

74. During the COVID-19 pandemic, Turkey launched a number of programmes and initiatives aimed at developing digital platforms and providing financial support for improving connections among producers and consumers in order to increase the resilience of agrifood supply chains (Digital Agriculture Marketplace Platform, or DITAP), and to boost precision agriculture and crop management (The Scientific and Technological Research Council of Turkey, or TUBITAK, space department). An FAO–Turkey joint initiative reinforces the country's efforts to develop a national e-agriculture strategy to determine the current usage of information and communications technology and help set up an e-agriculture strategy.

75. Other countries in the Caucasus and Central Asia – apart from Kazakhstan – have far less capacity for public and private investment in digital agriculture. Their food systems are based on smallholders, public finance is more limited, and their educational and scientific systems are weaker. These countries are reliant on international aid for developing digital agriculture and introducing other advanced technologies. At the same time, one advantage of implementing digital technologies is that they do not require a significant material and technical base, as opposed to biotechnology, robotics, engineering solutions or genetics. Innovation and commercial development can be achieved with relatively small investments in infrastructure, and the cost–benefit ratio for digitalization investments is highly favourable.

76. FAO and the International Fund for Agricultural Development are providing technical support for the development of a national e-agriculture/ digital agriculture strategy for Kyrgyzstan. The World Bank project “Digital CASA”<sup>63</sup> also is providing support for digitalization in Kyrgyzstan. The objective of this USD 50 million project is to increase access to more affordable connectivity, to attract more private investment to the ICT sector, and to boost the government's capacity to deliver digital government services. The European Union and FAO are supporting numerous projects and initiatives in Tajikistan.

In December 2019, the Tajik Ministry of Agriculture requested FAO assistance in the implementation of innovative technologies for agriculture, including digitalization, strategy development and implementation, database development and farm mapping.

77. In general, the region has relatively well-developed 3G mobile networks and internet coverage infrastructure, as summarized in *Table 1*. However, this infrastructure is lagging far behind the national average in rural areas and, therefore, agriculture. As *Table 2* shows, there also is a great disparity among countries in terms of digital skills. The “value” column in *Table 2* shows responses to the World Economic Forum Executive Opinion Survey question asking to what extent the population has sufficient digital skills; answers give scores ranging from 1 to 7. The “score” column shows a weighted average of the responses for the two most recent surveys, expressed as a percentage of the maximum possible value.

78. While it may seem that there is no lack of infrastructure for digitalization in the region, when it comes to rural areas and Central Asia, the digital divide widens.

Everywhere, institutional support from the state for the introduction of digital technologies is still needed. This support needs to be aligned with relevant changes in legislation, including on the use of digital transactions accounting and the digital economy in general, as well as the protection of intellectual property rights.

79. While the prospects for successful development and implementation of innovations are good, governments in the region have an important role to play in creating a favourable investment climate, improving the legal framework, modernizing the system of agricultural education and supporting basic research. Successful innovations will require both public support and private sector investments in research and development. In countries where agriculture is more developed, such as Belarus, Kazakhstan, Russian Federation, Turkey and Ukraine, large private agricultural companies may have the resources to acquire new technologies or to develop them through their own research, including jointly with the public sector. Less affluent countries, primarily in the Central Asia region, such as Uzbekistan, Tajikistan and Turkmenistan may need international aid to overcome problems of

TABLE 1.  
Caucasus, Central Asia, and Eastern Europe Region ICT Infrastructure in selected countries, 2018.

Country	Percent of population covered at least 3G mobile network	Internet users (percent)	Households with Internet access at home (percent)
Kazakhstan	75	79	90
Turkey	98	75	88
Uzbekistan	44	52	80
Russian Federation	78	81	75
Ukraine	90	59	60
Moldova	97	76	50
Kyrgyzstan	80	38	20
Tajikistan	90	22	10

Source: ITU & FAO. 2020. Status of digital agriculture in 18 countries of Europe and Central Asia. 102 pp. Cited 3 May 2021. <http://www.fao.org/publications/card/en/c/CA9578EN/>.



TABLE 2.  
Caucasus, Central Asia and Eastern Europe Region digital skills of population in selected countries, 2019\*

Country	Value	Score	Rank/140
Turkey	3.5	42.1	116
Georgia	3.7	44.3	107
Kyrgyzstan	3.9	47.6	91
Armenia	4.5	59	50
Moldova	4.5	57.6	55
Ukraine	4.5	57.5	56
Tajikistan	4.4	57.4	57
Kazakhstan	4.7	61.5	43
Russian Federation	4.9	65.8	27
Azerbaijan	5.1	68.2	19
Finland	5.8	80.5	1

\*Finland – world leader in 2019, presented for benchmarking

Source: World Economic Forum. 2019. The Global Competitiveness Report 2019. Cited 3 May 2021. <http://reports.weforum.org/global-competitiveness-report-2019/>

financing and to properly organize technology transfer along with the necessary consulting and support.

80. There is a need to improve the governance of agricultural innovation systems, for example by establishing longer-term strategies, involving multiple stakeholders, clarifying the roles of various organizations, improving coordination among research organizations, and developing comprehensive and coherent evaluation procedures.<sup>64</sup> Public funding of agricultural research and development is crucial for the whole system. It should be targeted in areas with good characteristics for improving complementarity with other efforts, providing stable funds for knowledge infrastructure, strengthening public research capacities and dedicating funding to policy-relevant research. Government actions should complement private-sector contributions to research and development and innovation for food and agriculture, and it should be focused on areas where private-sector investment is inadequate.

Productive public–private partnerships can increase the impact of public funding.

81. One hindrance to the creation of productive public–private partnerships for agricultural innovation is the lack of effective dialogue and communication among agricultural businesses, scientific institutions and the state. There is little systematic experience of working together to implement innovation, from the laboratory to the final consumer. There is no infrastructure for conducting industrial tests for research and development products, planning strategic priorities for technology development, and supporting already certified technologies for implementation in daily practice, including the necessary training and upgrading of farmers' skills. A few countries in the region have preserved scientific schools based on Soviet agricultural science, but all of the countries in the Caucasus, Central Asia and Eastern Europe have problems with modern technology transfer and intellectual property rights protection. It is important to strengthen linkages within the

agricultural innovation system between research and development and technical assistance, and also with research and development in other sectors by, for example, enabling research cooperation and participation in networks.

82. Transition to the new technological stage “Agriculture 4.0” involves the transition to a knowledge economy. The process of digitalization, innovation and robotization will radically change the structure of employment by reducing dependence on low-skilled labour and calling into question the relevance of individual professions, on one hand, and placing ever higher and rapidly changing requirements for key competencies, on the other. This requires the formation of a new model of education focused on rapid adaptation to new conditions.

The quality of agricultural education remains a key issue in the region. This applies to the overall prestige of the profession and to the level of research and training of qualified specialists at the universities. In all countries of the region, it is necessary to significantly improve the quality and attractiveness of agricultural education. Events for early pre-university training and professional orientation for future students can actively promote agriculture as a high-tech modern branch of the economy that makes a significant contribution to the growth of the region's GDP. At the same time, special attention also should be given to the scope for improving the quality of school education in rural areas through remote training and the creation of specialized agricultural classes under the patronage of agricultural universities in the region.

83. The impacts of COVID-19 on the introduction of innovative technologies and the development of agriculture have highlighted existing problems in the region's food systems. This situation has shown that the transfer and localization of innovative technologies will lead to greater stability and food security. Online technologies that were obligatory during lockdowns are likely to stay in place, dramatically changing the character of future food systems. Many agribusiness companies that experienced labour force limitations due to the lockdowns

and limitations on the availability of migrant labour may well incline towards labour-saving technologies in the future. Whether this materializes will depend on the relative costs of hiring low-skilled professionals and investment and the operating costs of labour-saving technologies. The medium- and long-term consequences of COVID-19 in agriculture are likely to be the adoption of innovative and digital technologies. However, while this may raise agricultural productivity in general, it carries the risks of higher rural unemployment, the concentration of value chains in fewer hands, and less-inclusive food systems.

84. The COVID-19 pandemic has had a significant effect on how digitalization in the food and agriculture sector is progressing. The pandemic has encouraged the uptake of many market information systems for farmers and many digital agricultural information and administration systems for governments. The Government of Turkey started accepting paperless applications for support payments at the beginning of the pandemic, in line with its strategy for digitalization of government service delivery. Several countries and organizations are putting in place measures and prioritizing digital solutions to help farmers better manage their farming activities, such as timing planting and harvesting and mitigating the loss of high-value perishable commodities.

Some farmers and farm advisers have tested and already use many online communication channels. The usage of these channels for timely extension advice is expected to grow and become more widespread. Mobile apps and web-based tools are increasingly being used to facilitate the direct sale and delivery of farm products to consumers. As in certain other sectors, such as commerce and education, farming has become more digital during the pandemic. Big data analyses can help provide countries with facts and information about how the pandemic is impacting decision-making in food chains.<sup>65</sup> However, COVID-19 lockdowns also have exposed the digital divide. Those who are not using the internet, especially smallholders and family farmers, have become increasingly

excluded and have had even less support and opportunity during these difficult times.

85. The COVID-19 pandemic also has shown the advantages of living outside big cities; one of the possible consequences of that could be some reverse migration of the population, from urban to predominantly rural areas. This would significantly increase demand for e-services in rural areas for teleworking, education, medicine, banking, retail, state services and entertainment, as well as for new technological solutions for physical infrastructure. This will present a new challenge for technological progress in rural areas and rural development.

### III.1.2. Natural Resource Management

86. The land, soils, water and biodiversity of the Caucasus, Central Asia and Eastern Europe already face severe environmental challenges from unsustainable use encouraged by policy support to agricultural production, and that pressure is intensifying, exacerbated by the increased frequency and severity of extreme weather events associated with climate change. However, so far, policy responses to better manage natural resources in pursuit of more sustainable food systems have been weak, in most cases, with agricultural policies being formulated independently of sustainability and climate change concerns.

87. Most countries of the Caucasus, Central Asia and Eastern Europe, especially those in the Caucasus and Central Asia, have not yet implemented comprehensive standards on good agricultural practices and environmental conditions comparable with those in the European Union, for example. National legislation on land, water and soil utilization have existed since the 1990s and have been updated in the past five years. Some countries have also have adopted laws on organic farming or “green economy”: Ukraine and Tajikistan in 2013, Kazakhstan in 2016, Belarus in 2018, and Russian Federation in 2018 and 2019. Due to the scarcity of water resources, special attention has been paid to

water legislation in Central Asia – especially in Uzbekistan, where a state programme on irrigation development and land improvement was adopted in 2018. Again in Central Asia, land use legislation has been extended to cover traditional pastoralism, with special laws being adopted in Tajikistan, Turkmenistan and Kazakhstan in 2013, 2015 and 2017, respectively.

88. While some progress has been made, most of the countries in the Caucasus, Central Asia and Eastern Europe still lack sound and coherent policies on land and water resources. Despite subscribing to the Sustainable Development Goals, the majority still give little priority to sustainable use of natural resources, especially where agriculture is concerned (*Table 3*). Agriculture is seen primarily as an important source of export revenues – for example, in the Russian Federation, Ukraine and, to some extent, Belarus – or as the main source of livelihoods for a significant share of the rural population in Central Asia, Armenia and Georgia. The geographic distribution of resources across national boundaries in the region means that policies for the sustainable use of natural resources need to be a shared responsibility. There have been several attempts by the Interparliamentary Assembly of the Commonwealth of Independent States to design model legislation on soil protection (2007) and on mountain territories (2019), but they are far from being widely implemented.

89. The particular natural resources sustainability issues facing various countries have been influenced to a great extent by the nature of the drastic changes in agrarian structure that resulted from the transition’s reforms.<sup>66</sup> In the Russian Federation and Ukraine, huge vertically integrated structures controlling hundreds of thousands of hectares of land became pillars of commercial agriculture. In the Caucasus, where land parcelling is very fragmented, and in Central Asia, where smallholder agriculture predominates, production has switched from cash crops, previously produced by large-scale state or collective farms, to such food crops as grains, beans, vegetables and potatoes.<sup>67</sup> As a consequence, pressure on land resources has grown, land and water resource use is

**TABLE 3.**  
Caucasus, Central Asia and Eastern Europe Region: Global food security index: natural resources and resilience ranking of some countries, 2019

Country	Global ranking /119	Score/100 maximum
Tajikistan	111	40.5
Azerbaijan	85	49.9
Belarus	59	56
Ukraine	53	57
Uzbekistan	53	57
Turkey	45	60
Kazakhstan	33	62.9
Russian Federation	26	65.1

Source: Global Food Security Index. 2019. In: The Global Food Security Index. London, England. Cited 5 April 2021.  
[https://impact.economist.com/sustainability/project/food-security-index/resources/Global\\_Food\\_Security\\_Index\\_2019\\_report.pdf](https://impact.economist.com/sustainability/project/food-security-index/resources/Global_Food_Security_Index_2019_report.pdf)

inefficient, and sustainability is compromised. According to the Global Environment Outlook, water withdrawal for irrigation in Central Asia is 50 percent higher than the global average.<sup>68</sup> Small farmers rely to a great extent on their own labour and often cannot afford machinery, irrigation equipment, improved seeds and high-quality chemicals. In contrast to Europe and many regions of Russian Federation, demographic pressure on land in the states of Central Asia is increasing. At the same time, land abandonment is widespread in the entire region, although this could allow greater production in several countries.

90. In Central Asian countries, crop productivity remains low for many reasons, including low levels of soil organic matter, limited precipitation, and pest and disease problems. In 2020 alone, 1.8 million ha were infested by locusts and sprayed with insecticides. The prevention, detection and control of plant pests and diseases play a crucial role in achieving a more sustainable food system while protecting natural ecosystems and the regional economy.

91. Central Asian countries still suffer from problems of soil salinization and contamination

by pesticides inherited from the Soviet past, when their main task was to produce cotton. The disappearance of the Aral Sea is an extreme illustration of this abuse. More recently, better agricultural practices have been introduced – such as efficient irrigation in Turkmenistan and in the Fergana valley in Uzbekistan or the introduction of saline-resistant and drought-resistant cotton varieties with a lower water demand in Uzbekistan.<sup>69</sup> While there may well be what could be seen as abundant reserves of water in glaciers, this should not be allowed to create a false sense of security and weaken the case for resource conservation. In any case, the glaciers are melting due to climate change.

92. In Kazakhstan, Russian Federation and Ukraine, the situation is quite different. The immense size of their national territories underlies a false perception that land resources are inexhaustible, which in turn limits recognition of the need for sustainable agricultural practices. The current boom in agriculture is driven by large-scale holdings and based on the introduction of highly mechanized technologies requiring high doses of chemicals. Producers' attempts to compete on global

markets and maximize profits frequently lead to the overuse of agricultural land. This situation is typical of Russian grain production in the Chernozem region and elsewhere in the south, where more than three-quarters of the total land area is under agricultural use, monoculture is frequent, and waste from intensive livestock production pollutes the environment.

At the same time, in many areas with lower agricultural potential, mostly in the north, land abandonment is common. This is similar to other countries in the Caucasus, Central Asia and Eastern Europe. In Armenia and North Macedonia, for example, more than one-third of arable land is abandoned.

93. Organic agriculture in the Caucasus, Central Asia and Eastern Europe is in an early stage of development. The country with the highest proportion of agricultural land under organic management is Republic of Moldova, where it extends to 1.9 percent of the farmland and represents 11 percent of all agriculture exports. Other countries of the region fall far behind. Even in Ukraine, which has an impressive 270 000 ha under organic management, only around 0.5 percent of the agricultural area is organic. In Turkey, organic production amounts to 1.7 percent of total agricultural land, which corresponds to 626 885 ha.<sup>70</sup> The export market is clearly the driver, even though there have been attempts to develop the local market, and there is a growing interest among consumers.<sup>71</sup>

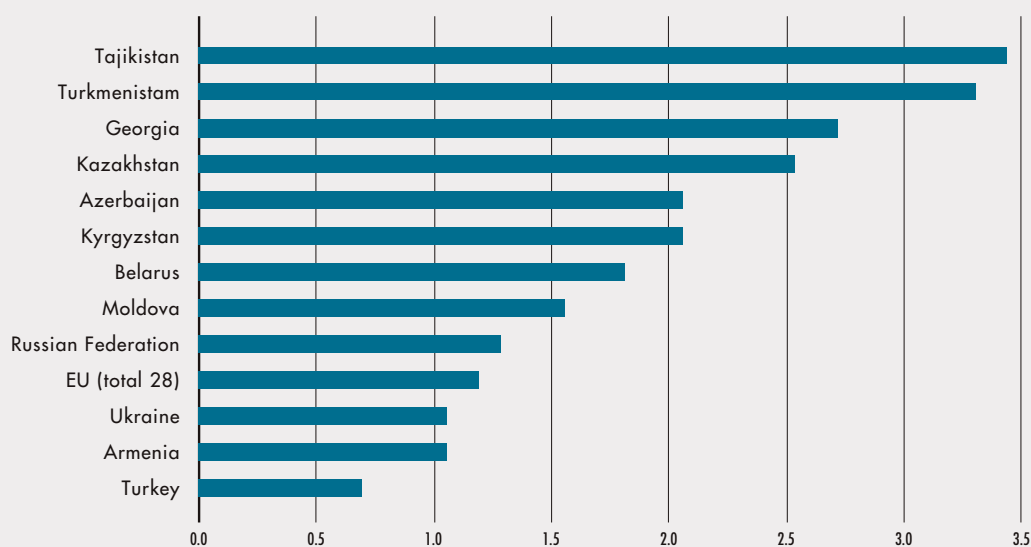
94. Evaluation of the impact of climate change in the countries of the Caucasus, Central Asia and Eastern Europe is complicated and not always negative. The melting of glaciers in the mountains of Central Asia increases river flow and provides more water for irrigation. Negative effects are recognized in the northern fringes of the Russian Federation and the arid southern regions. In the north, permafrost thawing causes waterlogging, which impedes traditional activities such as reindeer and horse breeding, while greenhouse gas emissions and more favourable conditions for the spread of animal diseases also are issues. In the south, warming is increasing desertification, which is already affecting large areas of the Central

Asian countries. According to the United Nations Economic Commission for Europe, 88 percent of the population in Uzbekistan live in areas under threat of desertification.<sup>72</sup> Despite pessimistic climate warming forecasts, its impact on Russian agriculture is still very rarely considered an issue.<sup>73</sup> Nevertheless, climate change is already affecting the steppe belt, and since 2000, the main grain producing regions of the Russian Federation have been increasingly suffering from water deficits, seriously affecting the yields of winter crops. Under the present conditions of climate change, the resilience of farmers and rural populations in most countries of the Caucasus, Central Asia and Eastern Europe is diminishing. Emergency preparedness, disaster risk management and social protection measures are inadequate. In Armenia, 28 percent of households are at risk of becoming food insecure.

95. Given the scarcity of natural resources, the identification, measurement and reduction of food loss and waste in the Caucasus, Central Asia and Eastern Europe is vitally important in minimizing environmental and economic costs, reducing greenhouse gas emissions and increasing the efficiency and sustainability of agricultural and food systems.<sup>74</sup> *Figure 4* indicates the relative wastefulness of agriculture in the countries of the region compared to the European Union.

96. In response to a request by the FAO Regional Conference for Europe (ERC) 2012, FAO initiated work on a regional assessment of food loss and waste. However, no measurements of food loss and waste have yet been conducted. The available loss figures are estimates derived from various assessment studies, complemented by assumptions and extrapolation.<sup>75</sup> An estimated figure for the carbon footprint per capita of food waste in the Caucasus, Central Asia and Eastern Europe does not exist. An aggregated figure is quoted instead that combines the estimated figures for the two regions of “Europe” (nearly 700 kg CO<sub>2</sub> per capita per year) and “North Africa, Western Asia & Central Asia” (nearly 500 kg CO<sub>2</sub> per capita per year).<sup>76</sup>

FIGURE 4.  
Caucasus, Central Asia and Eastern Europe Region: greenhouse gases emissions (CO<sub>2</sub> equivalent, kg)  
per unit of Gross Production Value of Agriculture (current prices, US dollars), 2016



FAOSTAT. 2016. Greenhouse gases emissions. In: FAO. Rome, Italy. Cited 16 May 2021.  
<https://www.fao.org/faostat/>

97. Country reports commissioned by FAO for Turkey (2013),<sup>77</sup> Ukraine (2013), Armenia (2013), and Kazakhstan (2014) concluded that most losses occur at the farm level. Farmers are either not aware of the best practices or they do not have access to financial means to introduce modern technologies with lower wastage rates.<sup>78</sup> The absence of investment in equipment and technology in middle- and low-income countries of the region is compounded by the overall investment climate, the difficulty of doing business in many countries of the Caucasus, Central Asia and Eastern Europe, and the discouragingly high rates of interest (often over 20 percent per annum) charged by commercial lenders to value chain actors.<sup>79</sup>

98. There remains a lack of research and detailed data concerning food loss and waste in the countries of the Caucasus, Central Asia and Eastern Europe. The scope for introducing

policy measures aimed at reducing food loss and waste is limited by a lack of knowledge of how much is actually wasted, at what stage of the food supply chain it is wasted, and why.<sup>80</sup> Currently, there is no active research on the topic in CIS and Central Asian countries. Moreover, in many countries of the region, there is not a comprehensive strategy or even a broad vision as to how food loss and waste might be reduced.

99. Turkey, with strong support from FAO through the technical cooperation project “Zero Waste Zero Hunger: Support to Awareness Raising on Food Loss and Waste”,<sup>81 82</sup> took action within the framework of FAO’s Save Food Initiative, and the region’s first National Strategy and Action Plan on Food Loss and Waste was developed in 2019. Under this project, FAO provides technical assistance to the recipient countries – Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkey, Turkmenistan and Uzbekistan – in developing national strategies and action plans for reducing food loss and waste.

### III.1.3. Trade Policy, Self-Sufficiency and Domestic Support

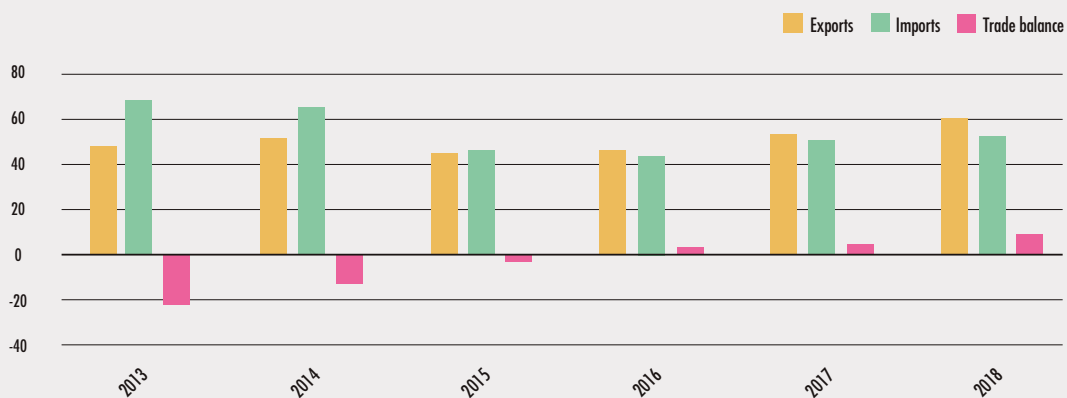
100. In recent years, the agricultural trade policy stance of many countries of the Caucasus, Central Asia and Eastern Europe has been somewhat ambivalent. The development and integration of agrifood trade into the global economy have been seen as promoting economic growth, and all countries in the region are either already members of the World Trade Organization or are observers negotiating or intending to negotiate membership, with the trade policy obligations that brings. Bilateral trade agreements and regional trade cooperation agreements, such as the association agreements with the European Union, also have proliferated and have had a significant impact on agricultural trade. However, in spite of this trade orientation, the majority of countries in the Caucasus, Central Asia and Eastern Europe have the achievement of food self-sufficiency, at least in relation to “strategic crops,” as a major objective of agricultural policy and have used various domestic support measures supplemented by protectionist trade measures to achieve it.<sup>83</sup>

The policy instruments used to this end have included production subsidies for specific commodities as well as import tariffs, food embargoes,<sup>84</sup> and various non-tariff trade measures. Agricultural policies promoting self-sufficiency objectives are in place in Armenia, Belarus, Kazakhstan and Russian Federation. The Russian Federation and Kazakhstan have significantly increased budgetary support to producers. In the Russian Federation, total budgetary support to producers in 2019 was double what it had been in 2005, while Kazakhstan saw a fourfold increase over the same period.<sup>85 86</sup>

101. The structure and dynamics of the agricultural exports and imports of the countries of the Caucasus, Central Asia and Eastern Europe have seen a major transformation since the early 2000s. Most put in place import substitution and export development strategies in agriculture.<sup>87</sup>

In the CIS, aggregate agricultural exports grew and imports fell (*Figure 5*). Previously a net importer, by 2016 the Caucasus, Central Asia and Eastern Europe region had registered a positive balance in agricultural trade that then grew steadily since. Central Asia remains a net importer of agricultural products as a whole

FIGURE 5.  
Agricultural trade in the CIS, 2013–2018, billion USD.



Source: FAO. 2018. Agricultural trade. In: FAO. Rome, Italy. Cited 17 May 2021.  
<https://www.fao.org/economic/est/international-trade/en/#.Y1F8JHZBw2w>

but is a net exporter of cereals and fruit and vegetables. Eastern Europe is a net exporter of agricultural products as a whole – especially cereals, but also pig meat and poultry meat. These regional trade balances are swayed by a small number of major exporters, and the majority of countries remain net importers of agricultural products. In 2016–2018, only Belarus, Republic of Moldova, Turkmenistan, Uzbekistan, and Ukraine had agricultural trade surpluses. The countries most integrated into international trade include Kazakhstan, Russian Federation, Turkey and Ukraine, where agricultural exports and imports represent a large share of domestic supply and demand. In 2018, almost half of the growth in agricultural exports in the region was accounted for by grains.<sup>88</sup>

102. In recent years, the European Union and China have increased their presence as trade partners for many economies of the region. In 2018, almost half of the agricultural imports into Ukraine (48 percent) and Republic of Moldova (43 percent) and almost a quarter of agricultural imports into the Russian Federation (25 percent), Georgia (22.5 percent) and Belarus (22 percent), were from the European Union. The European Union also is a major agricultural export market, accounting for 54.5 percent of exports from Republic of Moldova in 2018, 35.6 percent of exports from Turkey, 33.2 percent of exports from Ukraine, 15.4 percent of exports from Georgia, and 11.4 percent of exports from the Russian Federation.<sup>89</sup> At the same time, the Russian Federation remains the main supplier of agricultural products for the majority of post-Soviet countries.

103. Agricultural trade among member countries of the Eurasian Economic Union (Armenia, Belarus, Kazakhstan, Kyrgyzstan, Russian Federation), continues to grow, although the larger exporters, notably Belarus, Kazakhstan and Russian Federation, also have seen significant growth in their agricultural exports in 2016–2018 to markets outside the Eurasian Economic Union. Over the same period, import growth rates of Eurasian Economic Union member countries were higher than in non-member countries.

104. In addition to being a major agricultural exporter to the European Union and the Middle East, Turkey also is a significant agricultural trade partner for other countries of the Caucasus, Central Asia and Eastern Europe.

105. Although the post-Soviet countries have pursued an active policy of diversification of agrifood exports, lower-value-added food products such as cereals, fats and oils, fish and oilseeds still constitute more than 50 percent of the regional total. The trend towards more active expansion of agricultural exports to countries outside the region, notably to the European Union and China, rather than to the traditional Commonwealth of Independent States markets, has continued. However, relatively few exports go to higher-income countries. A lack of competitive export products, weak sanitary and phytosanitary control systems, and limited export knowledge and skills are the key factors impeding the region's agricultural export growth.

106. The countries of the Caucasus, Central Asia and Eastern Europe have implemented tariff changes to gradually align national schedules with their WTO tariff reduction commitments.<sup>90</sup> However, while average import duties on agricultural products decreased in 2017 in almost of them, they increased in 2018 (*Table 4*). Import duties vary considerably in the region, with the highest rates in Belarus, at 11.3 percent, and the Russian Federation and Republic of Moldova, at 11.2 percent. Georgia has the lowest average import tariffs, at 6.5 percent.<sup>91</sup> Tariff rate quotas (TRQs) also are used in some countries as instruments of trade regulation.

107. The further expansion of agricultural trade is also limited by non-tariff measures (NTMs), which are more numerous for agricultural products than for industrial and include veterinary, sanitary, and phytosanitary requirements and technical standards.<sup>92</sup>

108. Bilateral and regional trade agreements remain key instruments of agricultural trade development in the Caucasus, Central Asia and Eastern Europe. These involve trade with the European Union countries, trade in the



**TABLE 4.**  
Caucasus, Central Asia and Eastern Europe Region applied and bound MFN import duty rates on agricultural products, percent

Country	Average bound rate, 2018	Simple average applied MFN rate			Trade Weighted Average MFN Applied Tariff, 2018
		2016	2017	2018	
Armenia	14.7	8.2	7.9	9.2	10.1
Azerbaijan	n/a	n/a	n/a	n/a	11.6
Belarus	n/a	11.2	10.3	11.3	8.5
Georgia	12.9	6.4	6.3	6.5	7.1
Kazakhstan	10.0	9.5	9.4	9.6	11.5
Kyrgyz Republic	12.8	9.2	9.0	9.1	10.8
Moldova	14.1	11.6	11.1	11.2	11.2
Russian Federation	11.2	11.0	10.2	11.2	10.1
Tajikistan	10.9*	10.5	10.6	n/a	n/a
Turkey	n/a	43.2	43.1	41.8	n/a
Ukraine	11.1	9.2	9.2	9.2	5.7

n/a- not available  
\*- in 2017

Source: WTO. 2017. MFN import duty rates on agricultural products. In: WTO. Geneva, Switzerland. Cited 21 May 2021. [https://www.wto.org/english/tratop\\_e/tariffs\\_e/tariff\\_data\\_e.htm](https://www.wto.org/english/tratop_e/tariffs_e/tariff_data_e.htm)

framework of the Eurasian Economic Union, trade in the framework of regional integration with the non- Eurasian Economic Union neighbouring countries of Central Asia and Caucasus and, in one case, trade with China. Expected agricultural export growth from Georgia, Republic of Moldova and Ukraine to the European Union due to loosening tariff and non-tariff barriers was one of the major reasons behind the signing of Association Agreements, including Deep and Comprehensive Free Trade Areas (DCFTA).<sup>93</sup>

The first years of DCFTAs showed a positive influence on agrifood exports from Georgia, Republic of Moldova and Ukraine to the European Union. Mainly as a result of liberalization of tariff access to the European Union market, all three countries have seen not only considerable growth in their agrifood exports to the European Union but also declines in their export concentration and expansion in the range of products traded.<sup>94</sup>

In 2015, Kazakhstan signed the Comprehensive and Enhanced Partnership and Cooperation Agreement with the European Union, which took full effect in March 2020. Armenia signed the same Comprehensive and Enhanced Partnership Agreement with the European Union in November 2017. In January 2020, Republic of Moldova and Lithuania signed the plan of actions to strengthen cooperation in agriculture.

109. The regional economic integration of Central Asia and the Caucasus with neighbouring countries has strengthened. In February 2020, Azerbaijan and Turkey signed a preferential trade agreement. The free trade agreement signed in May 2017 between Georgia and China took effect on 1 January 2018. Turkey continues its policy to develop bilateral trade and adjust its existing free trade agreements. The free trade agreement signed between Turkey and Kosovo<sup>95</sup> went into effect in September 2019, and the free trade

agreement signed in September 2014 between Turkey and Republic of Moldova entered into force in November 2016.<sup>96</sup> The free trade agreement between Turkey and Bosnia and Herzegovina was revised in May 2019, and that between Turkey and Serbia was revised in 2018, with the inclusion of trade in services and the expansion of agricultural concessions, entering into force in June 2019.

110. Ukraine also has actively developed bilateral trade links with other countries outside the region and has free trade agreements with Israel (2019) and with Canada (2017).

111. The countries in the region have very different levels of support for agriculture, not only because of the differences in their policy priorities but also because of the differences in

the sizes of national budgets. In 2017–2019, on average, agricultural budget support was USD 6 billion in the Russian Federation, USD 3.2 billion in Turkey,<sup>97 98</sup> USD 1.2 billion in Kazakhstan, USD 0.5 billion in Ukraine and USD 0.05 billion in Republic of Moldova.

112. The countries of the Caucasus, Central Asia and Eastern Europe apply various trade-distorting instruments of domestic support for agriculture – including subsidized credit and compensation for investment costs, tax concessions and input subsidies, and reduced water and electricity tariffs – with the objective of increasing local production. This is in spite of both the OECD and the World Bank<sup>101</sup> advising shifting support from subsidies for producers to general services such as agricultural innovation systems, inspection and

TABLE 5.  
Caucasus, Central Asia and Eastern Europe Region and EU levels and structure of domestic support to agriculture and indicators of business environment for agriculture.

Country	Domestic support to agriculture in the CCAEE, 2018							Enabling environment for agriculture, 2019		
	Agricultural budget, million USD	Share in total budget, percent	Share in ag. value added, percent	000 USD per person in rural areas	000 USD per sq. km of ag. land	General services, share in budget transfers, percent	R&D, share in budget transfers,* percent	EBA score <sup>99</sup>	GCI Infrastructure score <sup>100</sup>	GCI ICT adoption score
Belarus	729	3	18	0.36	8.5	30	n/a	n/a	n/a	n/a
Kyrgyz Republic	83	4	9	0.02	0.8	n/a	n/a	72	56	59
Armenia	83	3	5	0.08	4.9	10	n/a	67	69	62
Azerbaijan	541	5	22	0.12	11.3	n/a	n/a	n/a	77	55
Moldova	54	2	5	0.03	2.2	20	6	n/a	66	67
Georgia	62	1	5	0.04	2.6	41	n/a	64	68	64
Kazakhstan	1191	4	15	0.15	0.5	26	2	68	68	68
Tajikistan	74	3	5	0.01	1.6	26	2	43	61	32
Turkey	4215	2	9	0.21	11	40	2	78	74	58
Russian Federation	5989	1	11	0.16	2.8	32	5	73	74	77
Ukraine	532	1	4	0.04	1.3	42	3	67	70	52
Uzbekistan	690	5	5	0.04	2.6	n/a	n/a	42	n/a	n/a
EU	99 335	52	36	0.85	60.5	12	2	88	81	72

n/a - not available

\*The lack of publicly available information on the structure of the agricultural budgets for the countries studied is also an obstruction to improvement of its efficiency.

Source: OECD. 2020. Agricultural support. In: OECD. Paris, France. Cited 25 September 2021.  
<https://data.oecd.org/agrpolicy/agricultural-support.htm>

Source: FAOSTAT. 2020. Gross Fixed Capital Formation. In: FAOSTAT. Rome, Italy. Cited 25 September 2021.  
<https://www.fao.org/faostat/en/#search/indicators%20of%20business%20environment%20for%20agriculture>

control systems and rural infrastructure support so as to create an enabling environment for agriculture. Among eight countries of the Caucasus, Central Asia and Eastern Europe region studied,<sup>102</sup> the share of support given to general services was no higher than 20–40 percent of the total budgetary transfers (*Table 5*). Only the Russian Federation, Ukraine and Republic of Moldova allocate substantial resources to research and development, while elsewhere most general services support is for inspection services.<sup>103</sup> Without investments in research and development, extension and innovations, the gaps between the countries of the Caucasus, Central Asia and Eastern Europe in productivity, quality of life and levels of rural development will remain significant. Creating an enabling environment for agriculture by supportive business legislation for agriculture, investment in infrastructure development and information technology adoption (*Table 5*) is crucial for ensuring long-term growth in the countries of the Caucasus, Central Asia and Eastern Europe to close the gap between them and European Union countries. Among other business environment trends, the costs of doing business while exporting and importing goods will determine countries' competitiveness and ability to maintain resilient value chains.<sup>104</sup> Underdeveloped transportation, storage and institutional infrastructure is a major obstacle for agricultural growth in the region.

113. The strengthening of the trends towards increased food self-sufficiency in the Caucasus, Central Asia and Eastern Europe could also increase the adverse impacts of agriculture on the environment. According to the World Bank, global value chains can lower the net resource intensity of global agricultural production because the production occurs where it is most efficient,<sup>105</sup> while pursuing self-sufficiency and local value chains can have the opposite effect. Subsidies for producers are associated with increased deforestation, soil erosion and chemical runoff into bodies of water. Globally, conservation programmes amount to only 5 percent of agricultural support.<sup>106</sup> In the Caucasus, Central Asia and Eastern Europe countries, these programmes are

almost non-existent in agricultural budgets, and there are no requirements to implement environmentally friendly practices to qualify for public support. Promoting food self-sufficiency by increasing the share of producer subsidies in public support will exacerbate this issue by leaving fewer resources for creating the enabling environment for innovations needed for sustainable productivity growth.

114. The diversion of scarce budgetary resources into domestic support measures to promote self-sufficiency also compromises efforts to combat the impacts of climate change, which raises concerns for medium-term productivity growth in the Central Asian countries with high climate risks. Insufficient investment in the mitigation of climate-related risks is another common problem in the countries of the Caucasus, Central Asia and Eastern Europe. Only Georgia, Republic of Moldova and Uzbekistan have invested in agricultural technology for building climate change resilience.<sup>107</sup>

115. The COVID-19 pandemic has caused disruption of global and local supply chains. Logistical disruptions and panic buying during the pandemic raised fears concerning the reliability of supplies. In order to avoid the surge in prices that could decrease the affordability of staple foods for the most vulnerable and aggravate food insecurity, some exporting countries implemented temporary measures to defend their internal markets by limiting or banning food exports. These obviously affected the stability of food supplies in the countries of the Caucasus, Central Asia and Eastern Europe dependent on food imports. Although these limitations were only temporary, they were damaging to confidence in international supply sources, and this could have longer-term negative consequences for food systems in the region in the form of further protectionism and dependency on self-sufficiency.

116. Two of the major regional exporters – Kazakhstan and the Russian Federation – tightened their export policies related to wheat and other agricultural commodities,

with the objective of guaranteeing adequate supplies to their domestic markets under the uncertain market conditions created by the COVID-19 pandemic in the first half of 2020. Turkey banned lemon exports and initially restricted exports of potatoes and onions by requiring pre-shipment authorizations. However, all export restrictions for those commodities were lifted later in May and July. For cereals and pulses, Turkey eased imports by removing import tariffs.<sup>108</sup> Kazakhstan banned exports of buckwheat, white sugar, potatoes (apart from seed potatoes), sunflower seeds and sunflower oil. The country also banned wheat and wheat flour exports, although later the ban was substituted by quotas. This measure hit importing countries hard – especially Tajikistan, Kyrgyzstan and Uzbekistan, where Kazakh grains account for more than 90 percent of the markets. The Government of the Russian Federation implemented export quotas for wheat, rye, barley and maize to non-Eurasian Economic Union member countries, while Ukraine banned buckwheat exports and set a maximum limit for wheat exports in the 2019/20 marketing year. In the context of cooperation and coordination, and in order to maintain stable and uninterrupted functioning of the internal agrifood market of the Eurasian Economic Union, the Board of the Eurasian Economic Commission imposed a temporary ban on exports of various commodities, including rice, buckwheat, soybeans and sunflower seeds, from Eurasian Economic Union countries. These restrictions led to increases in retail prices for food in neighbouring countries, notably Uzbekistan and Tajikistan. Kyrgyzstan banned exports of a whole range of products, although the impact of this may have been more psychological than economic, since it included products such as wheat, which Kyrgyzstan imports in large quantities rather than exports.

117. Some countries of the region chose to assist food imports. The Board of the Eurasian Economic Commission approved a list of the most important imported commodities to be freed from import customs duties. The Board also simplified the requirements for certificates of origin in order to avoid shortages of socially

important commodities, including agricultural products and food. Republic of Moldova and Uzbekistan implemented similar measures.

118. While export restrictions and other trade measures introduced in response to COVID-19 are most likely to be temporary and some are already lifted, the shift in policy focus towards support for greater self-sufficiency in food could have a lasting influence and result in increased subsidies for producers in some countries of the Caucasus, Central Asia and Eastern Europe that are difficult to remove once introduced. Internationally, many countries have declared maximizing independence in food supply for domestic consumption as a policy goal and have increased agricultural subsidies accordingly.<sup>109</sup>

Countries such as Kazakhstan, Russian Federation and Turkey, with larger budgets, soon reacted by providing additional support packages to agricultural producers.<sup>110</sup> Armenia, Republic of Moldova and Ukraine, with smaller budgets, also increased support. Kazakhstan already had doubled the amount of subsidized lending to farmers. Turkey subsidized farmer loans by 25–100 percent, introduced new subsidized low interest rate credits, postponed credit repayments of farmers, and expanded its agricultural support budget by 36.7 percent. Armenia provided additional subsidized credit and subsidized machinery leasing.

119. An important risk is that, especially given the likely macroeconomic consequences of COVID-19, a corollary of increased subsidies for producers is a corresponding underfinancing of general services support, including for investment in research, development and innovation, which will lead to efficiency losses in the future. Additional distortions in the Caucasus, Central Asia and Eastern Europe countries are being created because support is partially provided not to agriculture directly but through the parastatals, such as the state holding “Kazagro” in Kazakhstan, which channels 80 percent of all agricultural support, or the state-owned bank “Rosselkhozbank” in the Russian Federation, which in July 2020 received USD 280 million of budget funds of additional capitalization.

### III.1.4. Food systems developments

120. Food systems in the Caucasus, Central Asia and Eastern Europe changed drastically at the transition from being centralized, government controlled and supply driven to being private enterprise and market-led, whereby producers responded to changing consumer demands in terms of the range and qualities of products on offer. Those structural changes have continued to work out over the past 20 years. Food consumption patterns have evolved in response to such factors as income growth and urbanization, while new technologies have changed how those demands are met through value chains. Increasing integration of national food systems into regional and global value chains has broadened the range of foods on offer, how that food is produced, and how it is delivered to final consumers. All these developments have implications for consumers, for nutrition and food security, for the livelihoods of producers and other value chain actors from production to retail, for resource use, for sustainability and, hence, for appropriate and effective government policy and regulatory measures. Interventions need to be guided by an emphasis on sustainable improvements in productivity and efficiency, greater resilience, provision of healthy and nutritious food for all, and the inclusion of smallholders, women, youth and other vulnerable groups. Resilience is critical to cope with and recover from shocks such as COVID-19 and to “grow back better”.<sup>111</sup> While, as described in Section IV.1.2, there is some information about the sustainability performance of agricultural production, such information is generally lacking for the downstream stages of value chains. This hampers the achievement of more sustainable food systems, and research is needed.

121. The countries of the Caucasus, Central Asia and Eastern Europe are increasingly integrated into the global agrifood system. As noted in the previous section, Belarus, Kazakhstan, Russian Federation, Turkey,<sup>112 113</sup> and Ukraine make significant contributions to the agrifood sector of the region and have increased exports

globally.<sup>114</sup> However, not all countries of the region have shared in this growing involvement in international trade. The roles of Republic of Moldova and the countries of Central Asia and the Caucasus are more limited, although progress has been made in strengthening national and regional value chains for foods that are strategically important for food security and livelihoods or that are culturally significant. Deserving of more attention are investments and support services, including extension and access to finance, to support national and regional value chains.

122. One of the most striking features of food systems has been the rapid development of global value chains, which now account for almost 30 percent of global trade. However, the global value chain participation index of countries in the Caucasus, Central Asia and Eastern Europe is still not very high – around 10 percent for the Russian Federation and Kazakhstan in 2016 and lower for other countries.<sup>115</sup> They are, therefore, still in the early stages of this transformation. Compared to more traditional national and local value chains, global value chains are typically longer and more technologically advanced, making greater use of smart and sophisticated technologies and solutions to process materials, intermediate and final products through to retail. Assessments of the impacts of global value chains suggest that they can improve the range and quality of foods available, providing greater choice to consumers. They may also impact food prices and competition for locally produced foods and have negative impacts on the environment and sustainable use of natural resources.

123. Food demands in the Caucasus, Central Asia and Eastern Europe have evolved with income growth, both quantitatively and qualitatively. Consumers with higher incomes have been able to increase their consumption of higher-value foods and access a wider variety of foods in line with their preferences. There have been significant changes in the demand for both fresh and processed foods as a result of lifestyle changes and greater awareness of the health and nutritional properties of various

foods. More recently, some consumers have become increasingly concerned and influenced by how their food is produced and transported, in particular its sustainability and environmental impacts. Urbanization has reinforced these trends but also typically has been associated with greater consumption of convenience foods and foods processed or prepared outside the home that tend to be higher in fat, salt and sugar. Supplying increasing urban populations tends to result in longer, more complex, commercial food value chains, which may offer a wider variety of food products but also can limit consumers' access to nutritious foods.

124. The countries in the Caucasus, Central Asia and Eastern Europe have followed the global trend towards greater online food marketing, although how quickly and to what extent different countries will move to e-commerce has yet to be assessed. There has been a significant increase in online sales over the past five years, and the COVID-19 pandemic reinforced and broadened participation in this shift. The biggest growth has been in Turkey,<sup>116</sup> Ukraine, Belarus, Russian Federation, Kazakhstan, and the Caucasus. The Central Asian countries, where permanent access to the internet is less widespread and where basic tariff rates can be high, have lagged behind.<sup>117</sup> Nevertheless, strong growth in e-commerce is expected in the future. E-commerce also can play a role in enhancing market access and creating new niches and opportunities for small producers. Online platforms allow innovative direct supply chains linking farmers to consumers. Demands for the supply of small batches of exclusive food products are increasing, and consumers are ready to pay more for environmentally friendly products with a traceable origin, such as organic products or those with geographic indications.

125. A major issue facing the food systems of the Caucasus, Central Asia and Eastern Europe is how to integrate smallholder producers into the rapidly developing value chains and ensure their access to markets. Smallholders and family farms predominate in farm structures and, except for Belarus, Kazakhstan, Russian Federation and Ukraine, are key contributors to

ensuring food security and nutrition throughout the region.<sup>118</sup> In Georgia, for example, only 1 percent of farms are bigger than 5 ha, in Moldova only seven percent. In Kyrgyzstan, average farm size is 2.5 ha.<sup>119</sup> In Turkey, according to the 2016 Agricultural Holding Structure Survey, 26 percent of agricultural holdings are between 2 and 5 ha. and 81 percent are smaller than 10 ha.<sup>120</sup> Even in those countries where industrial agriculture dominates, such as Belarus, Kazakhstan, Russian Federation and Ukraine, small-scale, rural households still account for over 50 percent of the production of potatoes, vegetables, meat, milk and wool. In spite of the numbers of small, family farms, the nature and challenges of modern value chains mean that their successful participation is limited.

126. Small farms and other rural businesses face severe constraints in relation to their integration into modern value chains. Successful private enterprise requires business skills that existing vocational education may not always provide. They can struggle to meet market demands for quantity and quality and have limited capacities to comply with key food safety requirements and other important public and private standards. In countries where small farms predominate, such as Armenia or in Central Asian countries, non-inclusive value chains can contribute to the persistence of poverty in rural areas. In countries with dualistic agrarian structures, non-inclusive chains can lead to the marginalization of small producers and the concentration of production in large-scale enterprises. Some small farms can be perfectly profitable businesses, provided their particular production capabilities can be matched to appropriate marketing channels with the necessary distribution and storage infrastructure to ensure food quality and safety. There is a clear need for capacity development for smallholder farmers, to give them the business skills they need to identify market demands and opportunities and sell their produce at a profit. There also is a need to invest in local market outlets with shorter value chains whose needs are more in line with what smallholder farmers can produce and where consumers can buy nutritious, locally produced food at affordable prices.

127. Governments can support the integration of small farmers and other rural businesses into modern agricultural value chains. A prerequisite for effective support to promote inclusivity is constructive dialogue among the interested parties, and mechanisms need to be in place to cater for this. A further prerequisite is a more favourable regulatory environment, with better enforcement of law and contracts. Easier access to inputs, finance, credit, insurance and risk management tools and effective agricultural and business information and extension services can enhance the viability and resilience of small businesses.<sup>121</sup> Support for the establishment and strengthening of producer organizations, including cooperatives or other forms of farmer groups, can help facilitate this. The share of cooperatives in processing and marketing in Europe is around 40 percent, and cooperatives are seen as playing an important role in helping subsistence-oriented households boost their output and productivity by shifting to small-scale commercial farming. However, there is little evidence of success in the Caucasus, Central Asia and Eastern Europe region. Less than 1.5 percent of all agricultural products of the biggest countries in the region are supplied and sold via agricultural cooperatives, even though the development of agricultural cooperation has been supported by governments for more than 25 years. Weak legal frameworks, an absence of cooperative education and information services, and poorly targeted financial support have militated against cooperative enterprise.<sup>122</sup>

128. While integration into value chains that emphasize large volumes and consistent quality standards may be problematic for small farmers and rural businesses, the differentiation of their products for more specialized market segments can lead to better rewards. Emphasis on food quality and nutritional characteristics, production methods that are not environmentally damaging, branding as locally produced products (including potential registration of geographic indications and products with traditional specificities) can provide market opportunities. Participation in social and environmental certification schemes, such as Fairtrade, also can help improve small farmers' livelihoods, though the additional

costs of certification and compliance need to be offset. Shifting demand to local and organic agricultural products that do not rely on economies of scale but rather on the unique characteristics of the products also can contribute to the sustainability of smallholder farms, the more rational use of natural resources, and the reduction of food loss and waste. The development of alternative energy will make it possible to reduce dependence on central distribution networks and make small forms of business more self-sufficient.

129. Coordination is needed to achieve fair, responsible and environmentally friendly business investment along agricultural supply chains. According to the Organisation for Economic Co-operation and Development<sup>123</sup>, a wide range of partners needs to be involved in such coordination: government agencies and regulators; investors, standard setters and certification groups; commodity traders, exchanges, national importers/exporters and retailers; inter-governmental and regional organizations; and civil society and unions. The OECD-FAO Guidance for Responsible Agricultural Supply Chains has been developed to help large enterprises observe existing standards for responsible business conduct along agricultural supply chains, promote risk-based due diligence to identify, prevent and address risks along the value chain, and contribute to sustainable development.<sup>124</sup>

130. The timely availability of accurate market information is necessary for effective and rational decision-making that enhances the sustainability of food systems. OECD<sup>125</sup> suggests that governments collect and share information on potential concentration and bottlenecks upstream in supply chains and work with the private sector to address those issues. The provision of market information and extension services to farmers has been associated with greater inclusiveness in value chains and higher incomes. However, the Caucasus, Central Asia and Eastern Europe countries have not yet reached the same level of provision as the European Union, and further efforts are required to fill data gaps and enhance institutional capacity.

131. The early stages of the COVID-19 pandemic saw disruptions to some global supply chains. Global air cargo capacity in the week of 10–16 May 2020 was 26 percent lower than during the same period in the previous year.<sup>126</sup> The transportation of bulk goods by freight, rail and sea suffered less, but nevertheless there was a breakdown of traditional transport links. Transportation and logistics problems have been most pronounced for perishable high-value products such as fruits and vegetables, which are the main export commodities for many countries in the Caucasus, Central Asia and Eastern Europe region, notably Republic of Moldova and the countries of Central Asia. The fruits and vegetables sector also has been affected by quarantine measures and delays in border inspections, including those resulting from a reduced number of inspectors. Cereal supplies, on the other hand, have not faced major disruptions, since bulk transport has been less affected and cereals can be loaded, shipped and handled with minimal labour input.

132. Economic contraction due to COVID-19-related lockdown measures has posed a particular threat to smaller producers, processors, retailers and service providers in food value chains. The initial closure of farmers' markets affected their ability to sell their products directly to consumers, and their sales were further undermined by the closure of institutional buyers such as schools.<sup>127</sup> Changes in demand and consumer behaviour during the pandemic also have affected smallholder farmers disproportionately. Along with the growing demand for products with a long shelf life and an increase in online sales, there has been a decrease in demand for fruits, vegetables and other perishable products, significant volumes of which are produced by small farms. Small livestock producers were cut off from markets and slaughterhouses. Family farmers lacking storage facilities risked losing their products. Restrictions on the movement of people have created problems for smallholders in some countries where seasonal migrant work is critical to agriculture. The countries of the Caucasus, Central Asia and Eastern Europe region have inadequate

budgetary resources to provide significant support to their agrifood sectors, and debt levels increased significantly during the crisis.<sup>128</sup> It is possible that some smallholders will be marginalized and leave the sector, leading to greater concentration of business along food value chains.

133. Beyond the introduction of urgent measures to preserve family farmers' health and ensure the safety of their production, it is urgent to adopt mitigation actions that provide social protection where necessary, to assist farmers in dealing with debts incurred, to ensure access to basic goods and farm inputs, and to keep markets, transport and distribution working safely so that family farmers can continue supplying fresh food to their communities and local food systems and play their roles in revamping local economies during the recovery phase.<sup>129</sup>

### III.1.5. Food and Nutrition Security

134. Countries in the Caucasus, Central Asia and Eastern Europe recognize the importance of food security in their national security policies. Armenia, Azerbaijan, Kyrgyzstan, Tajikistan and Turkmenistan have stand-alone laws on food security. Belarus, Kyrgyzstan, Russian Federation, Tajikistan, Turkey and Uzbekistan have adopted concepts or strategy documents defining the role of food security in their countries. In some countries, food security concepts are presented either as part of the national security programmes, as in Kazakhstan and Republic of Moldova, or as part of agricultural and rural development. However, in a number of countries, including Azerbaijan, Belarus, Kazakhstan, Russian Federation, Tajikistan and Turkmenistan, the concept of food security is still primarily viewed as "food self-sufficiency." This view of food security also is reflected in the Concept of Food Security adopted by CIS member countries in 2010.<sup>130</sup>

135. In the past 10–15 years, almost all Caucasus, Central Asia and Eastern Europe region countries saw drastic changes in dietary



patterns, with increased consumption of higher-caloric-value food and more animal protein driven by increasing per capita incomes. Animal protein in diets now exceeds 50 percent in Belarus and the Russian Federation and 40 percent in Armenia, Republic of Moldova and Ukraine. In Tajikistan and Uzbekistan, it accounts for 23–39 percent of total proteins.<sup>131</sup>

136. At the same time, the prevalence of undernourishment across the region was 5–8 percent, and severe food insecurity was 1.8 percent, though moderate and severe food insecurity was 11 percent in 2018.<sup>132</sup> The triple burden of malnutrition – undernutrition, micronutrient deficiency and overnutrition – also remains relevant, and 14.3 million adults in the region consider themselves food insecure.<sup>133</sup>

137. Low-caloric-value food, together with low animal protein intake, leads to protein-energy deficiency. In the majority of the Caucasus, Central Asia and Eastern Europe countries, rates are below 2.5 percent, as they are elsewhere in most of the developed world. However, in Armenia, Georgia, Kyrgyzstan, Turkmenistan and Uzbekistan, the incidence is higher. Child growth and weight for height are internationally recognized indicators of nutritional status and health in populations, as the former may be indicative of chronic malnutrition and the latter of acute malnutrition. In Armenia, Republic of Moldova, Tajikistan and Uzbekistan, more than 10 percent of children younger than 5 have low height for age, and 4–5 percent have low weight for height.<sup>134</sup>

138. In the majority of countries in the Caucasus, Central Asia and Eastern Europe, daily average caloric value is 20–30 percent more than the calculated need, which may lead to rising obesity. Between 2005 and 2016, obesity rates among the adult population increased in Belarus from 22.9 percent to 24.5 percent, in Ukraine from 20.5 percent to 24.4 percent, and in Turkey from 25.1 percent to 32.1 percent. Even those countries with a deficit in caloric values have seen a growth of obesity – in Republic of Moldova from 15.5 percent to 18.9 percent, in Tajikistan from 9.4 percent to 14.2 percent, and in Kyrgyzstan and Uzbekistan from

to 11.4 percent to 16.6 percent.<sup>135</sup> Forecasts of the future incidence of obesity in the region are not optimistic.

139. FAO has observed that growing rates of obesity in the region closely correlate with growth in per capita incomes, allowing the consumption of higher-caloric-value products, coupled with increasingly sedentary lifestyles. To a lesser extent, obesity also can be a result of low incomes, associated with the consumption of cheaper foods with high levels of total fat, sugar and other refined carbohydrates. A lack of awareness about healthy diets also contributes to the increasing prevalence of overweight and obesity in the region.<sup>136</sup> There are few instances of policies and initiatives to address this lack of awareness and promote healthy food choices.

140. Micronutrient deficiency, or a lack of key minerals and vitamins such as vitamin A and iron, also persists in the majority of countries in the Caucasus, Central Asia and Eastern Europe. The prevalence of anaemia among women of reproductive age ranges between 20 percent and 40 percent. Anaemia also is closely linked to health-related SDG targets, particularly SDG Target 3.1 (by 2030, reduce the global maternal mortality ratio to less than 70 per 100 000 live births), as lowering the prevalence of anaemia will help reduce maternal mortality.

141. The COVID-19 pandemic posed new challenges to food security in the Caucasus, Central Asia and Eastern Europe. Central Asian economies are relatively small, mostly undiversified, and depend heavily on foreign trade.<sup>137</sup> As countries in Central Asia have closed their borders with neighbours and restricted the internal movement of people and goods to stem the spread of COVID-19, value chains have been disrupted. These value chains, as well as the availability of domestic goods and the concomitant question of food security, will be further imperilled by border restrictions imposed by China, Iran and Russian Federation.<sup>138</sup>

All these developments point to the need to ensure that food systems in the region are more resilient to cope with future vulnerabilities, shocks and stresses.

TABLE 6.  
Caucasus, Central Asia and Eastern Europe Region adulthood obesity prevalence forecasts in selected countries.

Country	Male in 2020	Female in 2020	Male in 2030	Female in 2030
Armenia	10%	18%	12%	16%
Belarus	17%	30%	22%	40%
Russian Federation	31%	26%	33%	26%
Turkey	44%	26%	51%	25%
Turkmenistan	15%	11%	20%	15%
Uzbekistan	13%	20%	14%	25%

Source: WHO. 2021. Country work. In: WHO Regional Office for Europe. Copenhagen, Denmark. Cited: 14 May 2022.  
<https://www.euro.who.int/en/health-topics/disease-prevention/nutrition/country-work>

142. According to the OECD, there are some peculiarities in employment patterns that lead to an unusually high number of vulnerable workers in the CIS countries. Around half of those in Azerbaijan and Georgia are own-account workers (self-employed individuals without hired workers). Many of them rely on seasonal work related to tourism so are severely affected by the containment measures and have only limited access to traditional forms of income support. The situation in Armenia, Georgia and Ukraine is further exacerbated by high unemployment rates. Low saving rates, particularly in Armenia, Georgia and Republic of Moldova, further undermine the ability of households and individuals to absorb the economic shock related to the pandemic.<sup>139</sup>

143. Overall, food production did not decrease in the Caucasus, Central Asia and Eastern Europe region, at least in the early stages of the COVID-19 pandemic. In January–May 2020, for example, compared to the same period in 2019, the production of sugar increased by 54 percent, macaroni products by 16 percent, vegetable oil by 13 percent, cereals by 12 percent, butter by 11 percent, flour by 6 percent, meat by 4 percent, and whole-milk products by 2 percent.<sup>140</sup> The key challenge for food security and nutrition in the Caucasus, Central Asia and

Eastern Europe region is the growth in poverty rates in every country. By the end of May 2020, public employment services in the Caucasus, Central Asia and Eastern Europe registered 3.3 million unemployed citizens looking for a job, twice as many as at the end of May 2019. The rate of registered unemployment at the end of May 2020 reached 2.2 percent, 0.9 percent more than at the end of May 2019. At the same time, the number of vacancies reported by employers to public employment services decreased in the majority of the countries.<sup>141</sup>

144. The average monthly unemployment compensation is USD 182 in Azerbaijan (as of March 2020), USD 14 in Belarus (May 2020), USD 78 in Republic of Moldova (May 2020), and USD 42 in Tajikistan (April 2020).<sup>142</sup>

In the Russian Federation, it is reported that the share of population with a monthly per capita income below USD 200 has increased from 38.1 percent in February to 45 percent in June 2020. According to Food Bank Rus of the Russian Federation, the number of people in need of financial support as well as food and basic goods increased significantly during the pandemic. Apart from long-term low-income recipients of support, another category of recipients emerged, namely households that had suddenly lost their regular income and found themselves

in a situation of acute need. In general, those families receive assistance for a short period of time, since they are highly motivated to overcome the crisis and find a way to regain their incomes.

145. The situation was worsened by the significant reduction of remittances provided by labour migrants, leading to reduced living conditions in host countries and increased social tensions. According to the OECD, remittances account for more than 10 percent of the GDP in Armenia, Georgia, Republic of Moldova and Ukraine.<sup>143</sup> In Kyrgyzstan and Tajikistan, remittances have grown steadily for the past several years due to increased labour migration, mainly to the Russian Federation, and amounted to nearly one-third of the country's GDP in 2019.<sup>144</sup>

146. The growth in poverty rates has been accompanied by strong food price inflation in some countries. In Tajikistan, flour prices increased by 30 percent, and potato prices doubled in 12 months. The consumer price index for foodstuffs increased sharply in April 2020, up 5 percent from the previous month. This was mainly due to increased prices of wheat flour, potatoes and eggs.<sup>145</sup> Across almost all the Caucasus, Central Asia and Eastern Europe region, food price inflation was caused by currency devaluations. In Turkmenistan, restrictions on internal movement during the pandemic strained the supply of food and basic goods to shops and markets throughout the country, leading to price increases and shortages.<sup>146</sup>

147. In Tajikistan, poor and vulnerable households have adopted a variety of coping strategies, including consuming seed stock and harvesting immature crops to sell in markets for immediate cash, selling livestock, resorting to bartering due to cash shortages, and borrowing food from shops, neighbours and relatives. These observations indicate severe food insecurity among the affected population, and some of the reported coping strategies – such as the sale of productive assets – have longer-term implications for households' resilience to food insecurity.<sup>147</sup>

### III.1.6. Food Safety

148. The transition to market-oriented economic systems in the countries of the Caucasus, Central Asia and Eastern Europe has led to a growing awareness of the need for mechanisms to ensure food safety. Every country has recognized food safety as a public health priority and a prerequisite for food security and nutrition. Consumers themselves have become more concerned with the safety, quality and origin of the food they eat as well as its price, and accordingly they demand guarantees that have their confidence and trust. The production and sale of food throughout the region are now subject to a variety of laws, regulations and standards, both public and private, mandatory and voluntary, supported by systems and infrastructure for food safety and quality control. Legal frameworks to ensure food safety have become more comprehensive and enforcement mechanisms more effective as food production technology has developed and food value chains have modernized and lengthened. Increasing concentration in food processing and distribution and the greater involvement in food retailing of national and international supermarket chains also have given impetus to greater food safety monitoring, including the more widespread incidence of private sector standards. Many food chain enterprises are certified with appropriate quality assurance systems, such as Hazard Analysis Critical Control Point (HACCP), Global Food Safety Initiative (GFSI) benchmark standards and ISO 22000 on food safety and ISO 9001 on quality management systems. A trend is also seen in the region of supermarket chains requesting that suppliers comply with their own company standards and certifications. Compliance with relevant food safety standards is a prerequisite not only for national market participation but also, importantly, international. Meeting international food safety standards is therefore vital for gaining access to foreign markets, notably those in the European Union, and achieving the region's declared objective of increasing its agrifood exports.

149. All countries in the Caucasus, Central Asia and Eastern Europe have laws on food safety.

Kazakhstan's Law on Food Safety, for example, was adopted in 2007. National legislation adopts many of the principles set out in international codex standards and European legislation. All countries in the region either already are members of the WTO or are observers negotiating membership, which brings an obligation to comply with international food safety standards set by the Codex Alimentarius. These obligations are also consistent with the food safety standards being developed by the Eurasian Economic Union. Over the last 20 years, countries from Central Asia – Kyrgyzstan in 2002, then Kazakhstan, Ukraine, Uzbekistan, Belarus, Serbia, Bosnia and Herzegovina, Montenegro, Tajikistan, Azerbaijan and Turkmenistan – have confirmed their membership of the Codex Alimentarius Commission. Those countries in the region negotiating membership in the European Union will have to adopt European Union regulations concerning food safety and veterinary and phytosanitary policies as part of the *acquis*.

150. While food safety laws in the region, including secondary regulations, are being continually improved, implementation and enforcement is a national responsibility and can vary, including from one country to another. Different institutional arrangements of responsibilities – between health and agriculture ministries, for example – are in place. Some countries, including Azerbaijan, Armenia, Tajikistan, Republic of Moldova, and Bosnia and Herzegovina, have formed single food safety agencies in an effort to integrate food safety official controls. Despite the ongoing process of harmonization and a great deal of progress, food safety systems and food safety control in food businesses can lag behind trading partners' requirements, and this has proved an obstacle to expanding export market shares. Capacity development, including institutional capacity development, is needed to build the necessary scientific capability for the accurate and timely assessment and management of risks and enhance the effectiveness and efficiency of control systems. There also is a general need for corresponding investments in infrastructure for inspection and testing. However, greater food safety is not only a matter of enhanced

legal controls and testing. More efficient food safety management systems, with appropriate infrastructure and superior technologies, equipment and personnel, are critical. Parallel support to food systems development is therefore also essential. This includes capacity development and support to small- and medium-sized farmers, food processors and distributors for whom compliance with food safety standards and regulations can impose significant costs. The activities of food industries and governments in relation to food safety need to satisfy consumer concerns in order to earn consumer trust.

151. The epizootic situation in the region is mostly stable – with the exception of rabies, which has been persistently problematic for the past ten years, possibly signifying the endemicity of rabies in the region. On the other hand, the situation with foot-and-mouth disease is stable, and many countries remain historically free of peste des petits ruminants. African swine fever is prevalent in most countries with a pig sector in Eastern Europe and the Caucasus. In the absence of a vaccine, the disease is continuing to spread throughout the region and beyond. Lumpy skin disease was successfully controlled in the Balkan region through coordinated regional vaccination, which also helped to overcome sporadic cases of the disease in Armenia, Azerbaijan, Georgia and Kazakhstan. However, the disease is now threatening to spread throughout Central Asia.<sup>148</sup> Outbreaks of lumpy skin disease are likely to re-emerge in Turkey, which is considered endemic for the disease, and in neighbouring Central Asian countries, due to increasing temperatures.<sup>149</sup>

152. Antimicrobial resistance connected with the excessive use of antimicrobials in animal and human healthcare is associated with an estimated 700 000 human fatalities annually worldwide.<sup>150</sup> As a response to the challenges in the region, As a response to the challenges in the region, the Central Asian and European Surveillance of Antimicrobial Resistance (CAESAR) was created. CAESAR is a joint initiative of the WHO Regional Office for Europe, the European Society of Clinical Microbiology

and Infectious Diseases, and the Dutch National Institute for Public Health and the Environment. Currently, 19 countries participate in CAESAR, including Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Republic of Moldova, Russian Federation, Tajikistan, Turkey, Turkmenistan, Ukraine and Uzbekistan.<sup>151</sup>

### III.1.7. Rural Development and Rural Livelihoods

153. Broad changes are taking place in food and agricultural systems globally, and farmers and rural areas across Europe and Central Asia face significant challenges. Poverty is expected to remain a persistent challenge for middle- and low-income countries in the region. The rural populations are particularly affected, usually having fewer employment opportunities and weaker social protection options than urban residents, especially those working informally in agriculture. In a situation with many concurrent and interconnected development constraints, it is key to address the problems in a holistic and integrated approach.

154. Rural development offers a complex multidisciplinary and territorial development approach and pursues the overall goal of addressing the key problems of rural people, women and men, by empowering rural households to improve their livelihoods. These efforts significantly contribute to the achievement of the 2030 Agenda for Sustainable Development in an inclusive, collaborative and coherent way. However, the availability and quality of rural development policies in the region ranges from continuous and consistent policy implementation in European Union Member Countries to a complete lack of a coherent rural development vision in countries of Central Asia. To fill this gap, FAO has a long history of supporting rural development in the beneficiary countries in Europe and Central Asia at the policy level, through technical assistance for the preparation and implementation of gender-equitable national rural development strategies and programmes, as well as at the community level, through supporting the development and implementation of community development plans and strategies.

155. The overall challenge in the region is not only to secure agricultural and rural development – with subsistence and semi-subsistence farms developing through increased productivity and competitiveness, resulting in increased income – but also to ensure that the growth becomes inclusive and results in improved livelihoods for rural communities and in reduced poverty for women and men, especially the vulnerable groups in danger of being “left behind.” It is the experience of FAO that an integrated community development approach can be a very good basis and platform for the development of rural communities in the region. This approach is strongly based on the pledge to leave no one behind and transforms the development context of a given rural community by focusing on the local assets, development potential and possibilities.

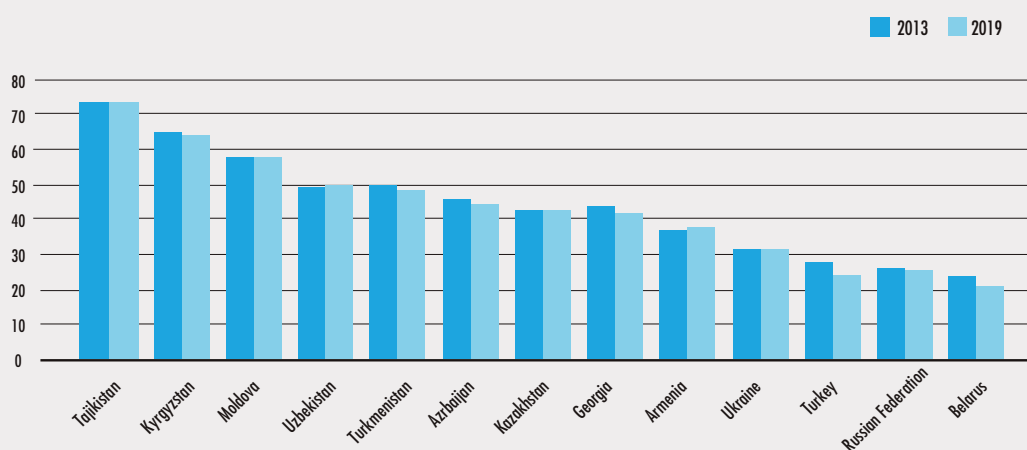
156. Between 2000 and 2018, the rural population 156. From 2000 to 2018, the rural population as a percentage of total population in the Caucasus, Central Asia and Eastern Europe and in most individual countries of the region decreased (*Figure 6*), though by less than the world average and for different reasons. Some countries of the Caucasus, Central Asia and Eastern Europe have a high share of rural population where urbanization is still in its early stages. These are mainly Central Asian countries where, as *Figure 7* shows, the rural population is still growing in absolute terms. On the other hand, in the Russian Federation, 23 percent of the population lived in cities of 1 million or more in 2019.<sup>152</sup>

157. Infrastructure development, including access to the internet, in rural settlements remains one of the conditions for rural development and the reversal of rural–urban migration in the longer term. However, the level of house improvement in rural areas still lags far behind that in urban areas. *Figure 8* shows the situation in the Russian Federation. In countries with lower incomes, the urban–rural gap is even greater. In general, there is a need to support responsible investments in public infrastructure, rural services and digitalization, including internet access in rural areas.

158. Rural people, especially women, youth and other disadvantaged groups, have fewer decent employment opportunities and often do not have access to adequate living and working conditions. Rural areas often offer only low-skilled and insecure employment.

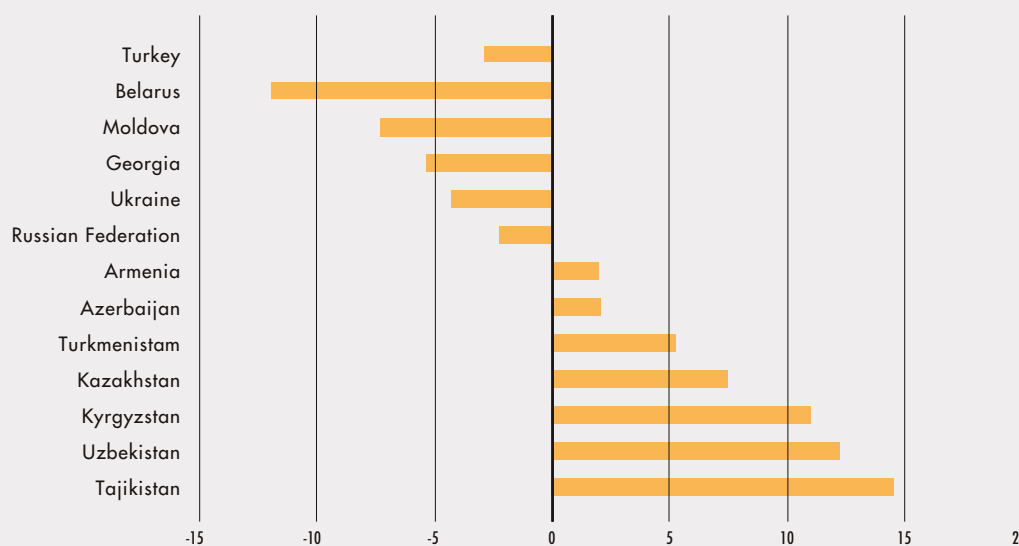
The share of agricultural employment in rural areas has tended to decrease (Figure 9). In some countries, this results in agriculture no longer being the main source of employment and income in rural areas – although in others, such as Georgia, Republic of Moldova and Uzbekistan,

FIGURE 6. Caucasus, Central Asia and Eastern Europe rural population in selected countries (percent of total population)



Source: World Bank. 2019. Rural population. In: The World Bank. Washington, DC. Cited 3 April 2021. <https://data.worldbank.org/indicator/SP.POP.TOTL>

FIGURE 7. Caucasus, Central Asia and Eastern Europe rural population growth in selected countries from 2013 to 2019, percent

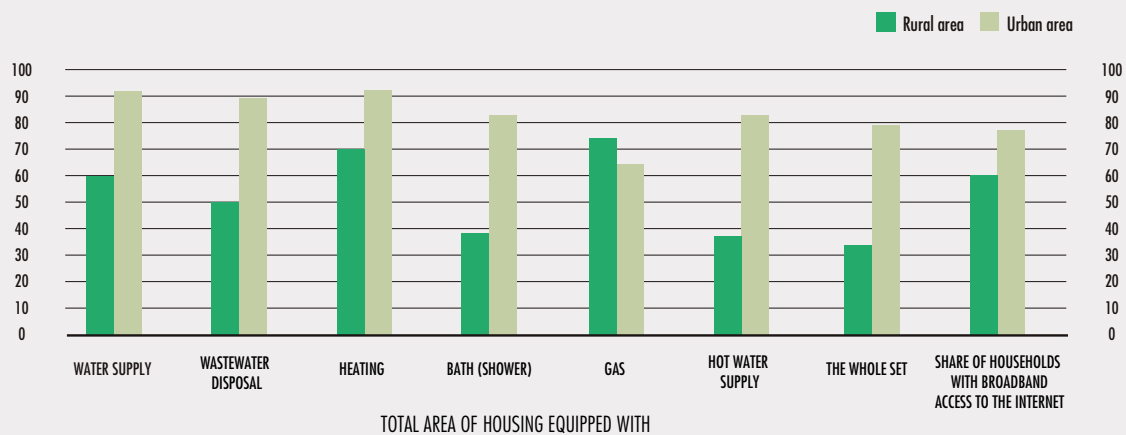


Source: World Bank. 2019. Rural population growth. In: The World Bank. Washington, DC. Cited 3 April 2021. <https://data.worldbank.org/indicator/SP.RUR.TOTL.ZG>

it still is. The modernization of farms and labour productivity growth have, in some countries, led to agriculture needing fewer but more professionally qualified people. Since these developments inevitably will be repeated across the region, national authorities need to pay increasing attention to the diversification of income sources and the development of alternative (non-agricultural) employment in rural areas.

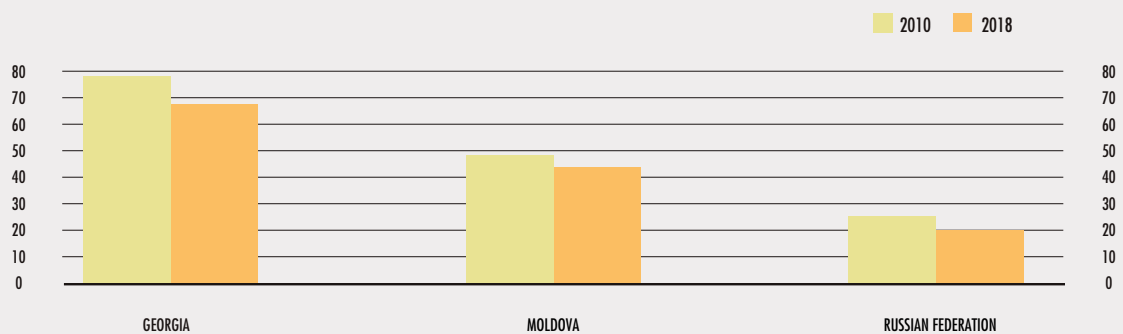
159. Rural poverty has been declining over the years, but this trend has recently slowed. In many countries of the region, the average income of the population is lower in rural than in urban areas and poverty has a strong gender dimension. In Georgia, around 17 percent of the urban population was below the national poverty line in 2016, while the corresponding figure for the rural population was 26 percent. Persistent rural poverty results from several factors and also has strong gender dimensions.

FIGURE 8.  
Russian Federation: House improvement in rural and urban areas, 2018, percent



Source: The Federal Service for State Statistics (Rosstat). 2018. House improvement. In: the Federal Service for State Statistics (Rosstat). Moscow, Russian Federation. Cited 2 May 2021. <https://rosstat.gov.ru/>

FIGURE 9.  
Caucasus, Central Asia and Eastern Europe agricultural employment in rural areas in selected countries (percent of total employment)



Source: ILOSTAT database. 2018. Employment in agriculture. In: ILO. Geneva, Switzerland. Cited 20 April 2021. <https://data.worldbank.org/indicator/SL.AGR.EMPL.ZS?locations=GE-RU-MD>

Low rural incomes are especially an issue in the region's post-transition economies, and disadvantaged groups – including women, minorities and the disabled – find it harder to secure decent work and tend to be overrepresented in lower-paid, insecure and informal jobs. Extreme rural poverty<sup>153</sup> in most countries of the Caucasus, Central Asia and Eastern Europe, except Tajikistan, is not as pronounced as in low-income countries in other regions. According to official national sources, in Tajikistan and Kyrgyzstan, more than one-third of the rural population live below the national poverty line, while in the Russian Federation, this share is only 13 percent. In Kazakhstan, it is 4 percent, and in Republic of Moldova and Georgia, it is 9–10 percent.<sup>154</sup>

160. Migration and remittances make major contributions to many of the economies of the Caucasus, Central Asia and Eastern Europe. Restrictions on labour migration during the 2020 COVID-19 pandemic and consequent reductions in income opportunities for labour migrants have led to dramatic reductions in remittances, contributing to poverty growth, especially in rural areas. Labour migration, primarily to the Russian Federation, has become a common strategy for a significant part of the working-age population of a number of countries in Central Asia and the Caucasus. For example, one-fifth of the Kyrgyzstan labour force is employed in the Russian Federation. Migrants' incomes are estimated to increase typically by three to six times when they move from lower- to higher-income countries.<sup>155</sup> The countries in the Caucasus, Central Asia and Eastern Europe most dependent on remittances are Tajikistan and Kyrgyzstan (Figure 10). In absolute terms, Ukraine remains the major recipient of remittances in the region, with USD 16 billion of remittances in 2019, around 10 percent of the GDP. While the gross flows involved are large, remittances incur a transaction cost (about 6.5 percent in the first quarter of 2020).<sup>156</sup> This is significantly greater than the 3 percent specified as the upper limit for transaction costs by 2030 in SDG Target 10.7. It also is important to note that remittances often are spent on housing and consumption and not on investment in agriculture or other rural businesses.

161. The problems related to the COVID-19 pandemic have resulted in many labour migrants losing their jobs and sources of income. As the least-protected category of workers, they have not been able to count on any social or financial support, and their loss of earnings has led to a dramatic deterioration in their living conditions in the host countries. This often has been accompanied by an inability to return home because of closed borders.<sup>157</sup> Cost-cutting by employers and lower wage rates for migrant workers have led to increased social tensions and, in some cases, public disorder. The decline in income and, consequently, the fall in remittances from labour migrants have led to a sharp drop in income for the affected households in the recipient countries. In the Caucasus, Central Asia and Eastern Europe, remittances are estimated to have fallen by about 28 percent in 2020.<sup>158</sup> By other estimates, remittances in Central Asia alone are expected to have fallen by USD 3.4 billion, or 24 percent of the 2018 receipts.<sup>159</sup> The impact of COVID-19 may have longer-term consequences for labour migrants. Slow economic recovery and the bankruptcies of some employers will lead to a slow recovery of jobs for migrant workers, reductions in their wages, and increased cases of wage abuse by employers. This decline in the incomes of labour migrants will have an immediate impact on rural livelihoods in their home countries.

162. The decline in the incomes of labour migrants also has had an immediate and negative impact on the food security of themselves and their families, ranging from deteriorating nutrition to the threat of hunger. The decrease in purchasing power due to the loss of jobs, coupled with rising food prices, means there has been a decline in the quality of food consumed. Given the relatively lower incomes of labour migrants,<sup>160</sup> their typical lack of savings and the high proportion of food expenses in their expenditures, this category of the population will be among the most vulnerable to the consequences of the pandemic and the economic crisis. The consequences of switching to cheaper foods and reduced protein and micronutrient content of diets may have long-term health consequences.

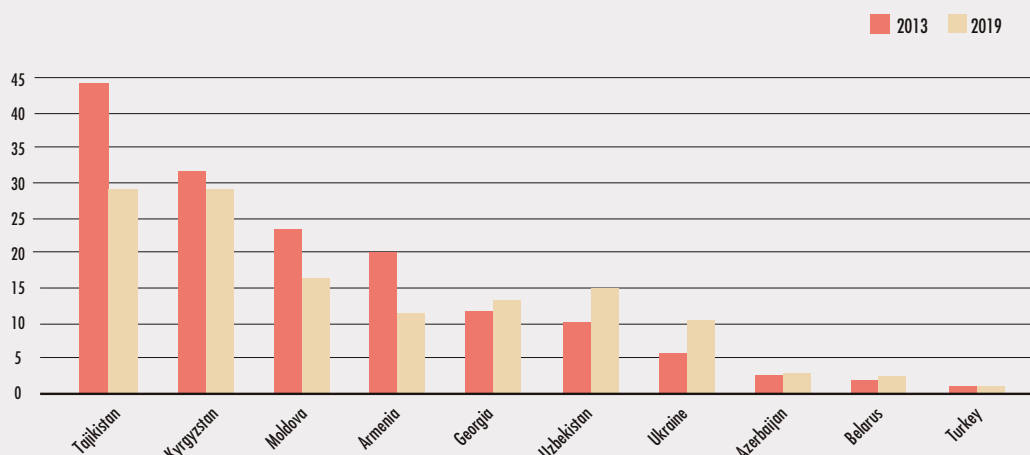


163. Restrictions on the movement of labour between countries during the pandemic led to shortages of seasonal workers in agriculture, particularly in fruit, berries and vegetable production. The Russian Federation, for example, the main destination for labour migration from Central Asia and the Caucasus, employs up to 500 000 such labour migrants, according to industry experts' estimates. Some agricultural producers highlighted the loss of part of their crops due to labour shortages, with consequences for the prices of the foods concerned. Stopping labour migration to the Russian Federation during the COVID-19 pandemic also has worsened the food security situation in the countries of the Caucasus, Central Asia and Eastern Europe region from which they come, as the necessity of feeding the thousands of potential migrants who stayed at home is an additional burden on small peasant farms and subsidiary plots.

164. While the major impact of COVID-19 in terms of numbers of cases has been in urban areas, due to the greater difficulties of social distancing, it also has affected the rural population and migration trends described above. Nevertheless, the higher incidence of

cases in large cities and the perceived lower risk in rural areas have shifted perceptions of the relative merits of urban and rural living, and specifically the benefits of rural areas. This may have slowed and could even have reversed rural–urban migration in two ways. The first is the migration, or more likely the return, of people from large cities to small towns and rural areas in search of relatively inexpensive living during a difficult economic situation until recovery. The second is temporary migration to rural areas in search of a safer environment during the pandemic. It may be that the perceptions underlying the second could have a more lasting effect on the rate of urbanization. It also is possible that during the pandemic, some employers and employees became accustomed to remote working, which allows those with suitable non-agricultural employment such as in information technology, call centres, design, marketing and advertising, or expert services, to locate in rural areas, provided the necessary infrastructure – especially reliable internet access – is in place. However, while this type of movement may continue for some population groups and areas, it is unlikely to offset the global trend towards urbanization to any significant extent.

FIGURE 10. Caucasus, Central Asia and Eastern Europe personal remittances, received in selected countries percent of GDP)



Source: World Bank. 2019. Personal remittances. In: The World Bank. Washington, DC. Cited 25 April 2021. <https://data.worldbank.org/indicator/BX.TRF.PWKR.DT.GD.ZS>

## III.2. Drivers, challenges and opportunities of food, agriculture and rural development in the Western Balkans

165. The countries and territories of the Western Balkans are Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia. The six countries and territories have many similarities in their food, agriculture and rural development status, and economic growth and performance. Agriculture plays an important role in their economies, generating from 3 to 23 percent of the GDP (*Figure 11*). These levels are significantly higher than in the European Union countries, where agriculture contributed on average 1.1 percent to the GDP in 2018. The GDP per capita in the countries and territories of the Western Balkans was a third of the European Union level in 2019. Montenegro had the highest level, at USD 7 782 per capita, and Kosovo had the lowest, at USD 3 900 per capita (*Figure 12*).



166. The countries and territories all have agricultural strategies in place, with accompanying annual programmes and budgets. However, they are at varying levels of readiness for the European Union Instrument for Pre-Accession Assistance in Rural Development II (IPARD II). Some have already used IPARD I or similarly structured programmes. As a rule, the regional rural areas have reasonably well-developed infrastructure, including roads and access to electricity. Information and communications technology infrastructure is relatively well developed, allowing agricultural producers to benefit from relevant online information and services, including access to markets and banking.

167. Agricultural education, research and extension systems are in place in all six countries and territories. All provide agricultural vocational education and training and university education and have agricultural research institutes and functioning extension services. However, recent country studies of the needs and constraints of smallholders and family farms conducted in Albania, North Macedonia and Serbia found that extension and advisory services are weak and not targeting the needs of the small farms that dominate the farms structures in the countries.<sup>161</sup>

168. The countries and territories have regulations in place for key agricultural inputs. Regulations for seeds, fertilizer and tractors protect public health, and compliance is not overly burdensome on farmers.

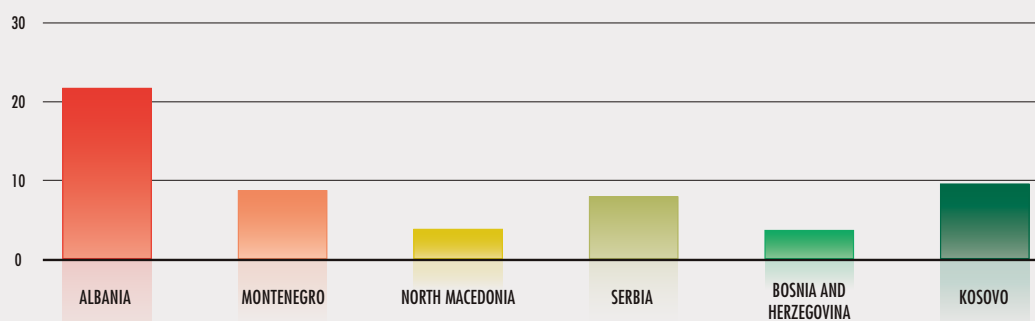
169. Agriculture in the Western Balkans faces many of the same challenges as in other parts of Europe and Central Asia. There are an estimated 1.65 million farms across the Western Balkans. Farm structures are dominated by small holdings, many of which are oriented to subsistence and semi-subsistence farming. Average sizes are small; in Albania, the average size is 1.3 ha, in Bosnia and Herzegovina 1.6 ha, and in North Macedonia 1.9 ha.<sup>162</sup> Average farm sizes are bigger in Kosovo (3.2 ha), Montenegro (5.8 ha) and Serbia (9.17 ha) but still are much smaller than the European Union average of 16.1 ha.<sup>163</sup>

Farms smaller than 5 ha are the most numerous: 88 percent of farms are under 5 ha and operate on 44 percent of the total agricultural area. Albania, Bosnia and Herzegovina and North Macedonia have a greater share of extremely small farms compared to Kosovo and Serbia: about 40 percent of farms are under 0.5 ha and operate on about 5 percent of the total land area in these three economies. Montenegro has a significant share of holdings under 0.5 ha (28 percent), yet it also has the largest share of farms over 10 ha (13 percent). Farms between 2 ha and 5 ha are the most numerous in Serbia, accounting for 30 percent of holdings and using 17 percent of the land. At the other end of the spectrum, farms greater than 10 ha use significant portions of the land in Serbia (57 percent) and in Kosovo (44 percent). Farms larger than 10 ha use only about a quarter of the land in Bosnia and Herzegovina and North Macedonia. In the European Union, over 50 percent of the land is used by farms larger than 100 ha.<sup>164</sup> Even where land is concentrated in larger farms, the farm structure in the Western Balkans is broadly based on small family enterprises. Land fragmentation is excessive, limiting the scope for increasing farm productivity and competitiveness.

170. Land abandonment is widespread, particularly in Bosnia and Herzegovina and North Macedonia, where more than one-third of the arable agricultural land is unutilized. Irrigation and drainage systems are underdeveloped. The technology and technical efficiency of production are low, and the high average age of farmers militates against innovation and the adoption of new technologies. Beyond the farm gate, marketing systems for farm products also are inefficient, and the food processing industry is rudimentary.

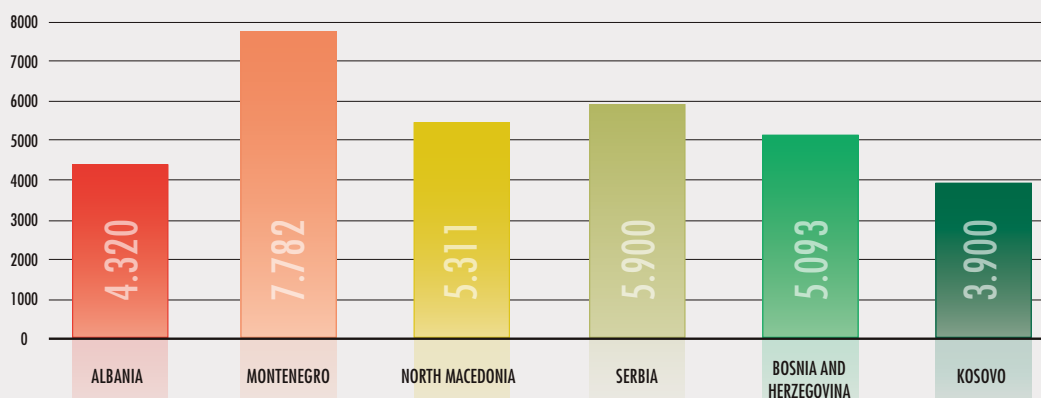
The weak organization of farmers limits the scope for more dynamic involvement in value chains. The provision of services such as information, advice and extension or agriculture insurance is relatively underdeveloped, and quality is weak. There is significant migration from rural areas. Nevertheless, opportunities do exist in the region to continue the transformation of food systems, integrating

FIGURE 11.  
Western Balkans countries percentage share of agriculture in GDP, 2019.



Source: Eurostat. 2019. Percentage share of agriculture in GDP. In: The European Commission. Luxembourg. Cited 18 May 2022. [https://agriculture.ec.europa.eu/international/international-cooperation/enlargement/candidates\\_en](https://agriculture.ec.europa.eu/international/international-cooperation/enlargement/candidates_en)

FIGURE 12.  
Western Balkans countries GDP per capita (USD), 2019



Source: Eurostat. 2019. Percentage share of agriculture in GDP. In: The European Commission. Luxembourg. Cited 18 May 2022. [https://agriculture.ec.europa.eu/international/international-cooperation/enlargement/candidates\\_en](https://agriculture.ec.europa.eu/international/international-cooperation/enlargement/candidates_en)

sustainability and cooperation and partnerships among all relevant stakeholders throughout the public and private sectors and civil society.

171. The prevalence of undernourishment in the total population decreased in the past 15 years in the Western Balkans, averaging 3.26 percent in 2017–2019. The prevalence of moderate or severe food insecurity remains relatively high in the region, averaging 17.2 percent in 2017–2019 in the Western Balkans, nearly four times higher than in Western Europe, which is at 4.9 percent. The share of the population with moderate or severe food insecurity is highest in Albania, at 37.1 percent. In the rest of the countries and territories in the region, this indicator varies from 9.2 percent in Bosnia and Hercegovina to 12.4 percent in Serbia to 12.9 percent in Montenegro and to 14.4 percent in North Macedonia.

### III.2.1. Innovation and digitalization

172. Innovation is a priority in the national programmes for the development of the agricultural sectors of the Western Balkans. In the various national strategic and planning documents, innovation is seen as essential for increasing the efficiency and productivity of agricultural holdings in a sustainable way. In each of the countries and territories, there are measures for financing investment projects in the sector. In spite of the obvious advantages – such as increased competitiveness or lower costs – that innovation brings to agricultural businesses, it has been uneven and hesitant. A number of barriers stand in the way of more effective innovation systems. At the farm or firm level, lack of finance is a particular problem for small and medium-sized enterprises, where the investments concerned are costly and risky and the likely return on investment in terms of expected cash flows is difficult to determine.

Attitudes may not be conducive to innovation where the importance of encouraging and properly supporting innovation is not recognized and priorities are not clearly understood. The necessary information and skills for the development of effective innovation practice may be lacking where relevant training is missing and information networks are underdeveloped. At the national level, effective

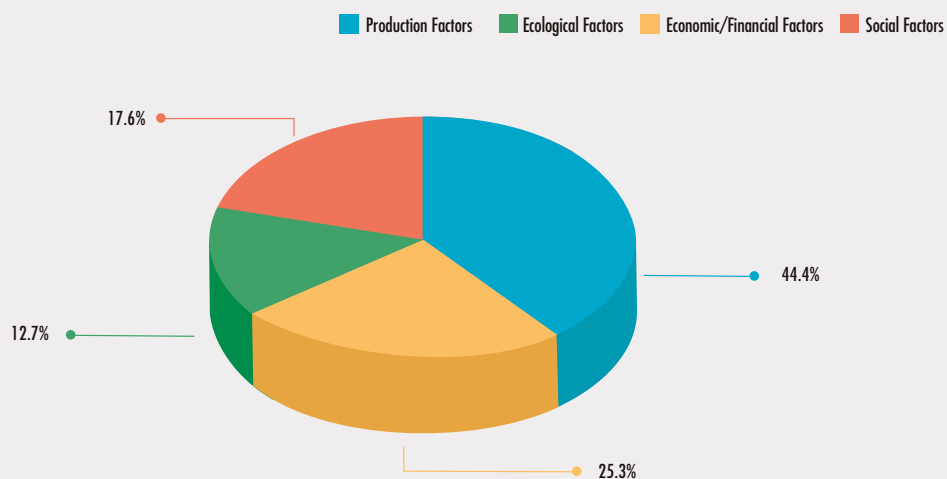
policies to actively encourage and support innovation, including financing, are needed.

173. The successful implementation of innovation policies requires investment in education and capacity development to enhance human capital and create more motivated attitudes towards innovation. Investments in research and development and in building appropriate infrastructure are needed to raise the level of research potential and generate innovations. Efficient collaboration among businesses, science and education is needed to ensure that new technologies developed are relevant, practical and affordable. Improved access to capital and sources of funding for innovation also is needed to facilitate businesses' adoption of new technologies. Motivation and demotivation factors for implementing innovations in agriculture cited by farmers are summarized in *Figures 13 and 14*.

174. Digital technologies are seen as an essential tool to increase production, to provide farmers with real-time information, to ensure higher quality of final products, and to reduce the carbon footprint on the environment, energy and climate. The digitalization of agriculture is also seen as a mean of addressing food security and environmental issues. Realizing this vision requires e-skills, as well as suitable infrastructure for broadband internet and database management. Adequate infrastructure for broadband internet in sometimes remote rural areas is an important prerequisite for achieving a successful digital transformation in agriculture.

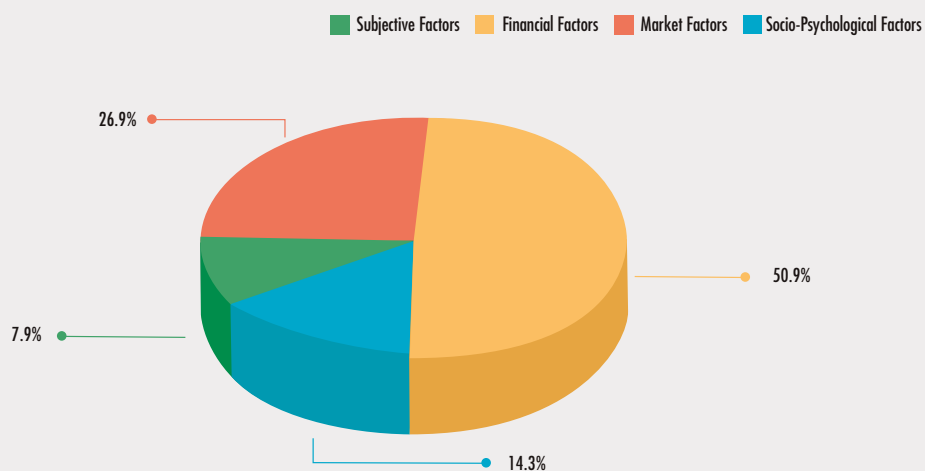
Only a very small part of rural areas in the countries and territories of the Western Balkans are covered by fast or ultra-fast broadband access, with a speed of at least 30 MB/sec. Many smallholders will find it difficult to cope with new technologies due to lack of knowledge or investment capital. The “big digital divide” between large and small farms will continue to deepen in the coming years. The cost of a mid-range drone or GPS device, for example, can be prohibitive for small farms. However, the issue is not only one of affordability but also farmers' awareness of the benefits of digital technologies and the appropriateness of those technologies to farmers', especially small farmers', needs. What is provided is also important. Digital services should provide adapted and reliable content from trusted sources.

**FIGURE 13.**  
Motivation factors for implementation of innovations in agriculture in Western Balkans



Source: Eurostat. 2016. Calculations based on Farm Structure Survey. In: The European Commission. Luxembourg. Cited 23 July 2021. [https://ec.europa.eu/eurostat/cros/content/farm-structure-survey\\_en](https://ec.europa.eu/eurostat/cros/content/farm-structure-survey_en)

**FIGURE 14.**  
Demotivation factors for implementation of innovations in agriculture in Western Balkans



Source: Eurostat. 2016. Calculations based on Farm Structure Survey. In: The European Commission. Luxembourg. Cited 23 July 2021. [https://ec.europa.eu/eurostat/cros/content/farm-structure-survey\\_en](https://ec.europa.eu/eurostat/cros/content/farm-structure-survey_en)

175. The analysis of Farm Structure Survey data in the countries and territories of the Western Balkans indicates farmers' perceptions of the possible obstacles and risks in the introduction of digital technologies: 25 percent of the agricultural producers identified the qualifications of staff; 24 percent indicated the size of the necessary investments; 19 percent identified unclear economic benefits as a risk; and 15 percent were concerned about data security. Only 7 percent felt that the uncertainty of the technology itself was an obstacle. The security of the data, the ownership of the large databases, and the way in which they will be administered have been cited as important factors. It is expected that the state should administer and control large databases and guarantee their security, ensuring equal access for all farmers to them. The data show that an average of 43 percent of farmers in the countries and territories of the Western Balkans are not familiar with the nature of digital agriculture. Innovations and digitalization need to address the specific needs of smallholder farmers and be validated with the involvement of all stakeholders – not only farmers, but also policymakers, agribusinesses, digital technology companies, civil society and academic and research institutes. Receptiveness to digitalization requires digital skills and digital literacy, which in turn require capacity development, not only for farmers and others in rural areas but also for public administration and education. Special attention needs to be devoted to the needs of women, youth, the elderly and other vulnerable groups, and youth in particular should be seen as a catalyst for transformation and innovation.

176. Serbia and North Macedonia are the most advanced countries in the Western Balkans in the application of digital technologies. FAO is supporting the development of digital agriculture strategies in Albania and Bosnia and Herzegovina. Those countries preparing for accession to the European Union will need to adopt the European Union acquis and eventually comply with the requirements of the new Common Agricultural Policy, which has “knowledge sharing, innovation and digitalization” as its tenth objective.

### III.2.2. Natural resource management and climate change

177. Agriculture is a major user of natural resources. It uses about 40 percent of the total land, on average, in the six Western Balkans economies and territories – except in Montenegro, where it uses 17 percent. This average lies between the OECD average (35.6 percent) and the European Union average (43.8 percent). The sector's share of freshwater withdrawals varies widely among the countries and territories, from 39.5 percent in Albania to less than 3 percent in Serbia and Montenegro. Except for in Albania, the Western Balkans use a smaller share of their freshwater resources in agriculture than the OECD average (43.9 percent) and the European Union average (29.7 percent).

178. Soil erosion or land use degradation is a problem in many mountainous areas of the Western Balkans. The European Environmental Agency concluded in 2010 that erosion affects about 20 percent of the combined Serbian and Montenegrin territory. Albania is losing between 20 ha and 70 ha of soil annually. In 1993 in North Macedonia, land degradation and erosion affected around 96 percent of the total area of the country, according to calculations. Land degradation, and in particular soil erosion, is also one of the key environmental problems in Montenegro and has affected 13 135 sq. km, or about 95 percent of the country. In Albania, erosion affects about 25 percent of the country, with on-site losses caused by soil erosion and compaction in the agricultural area estimated at USD 138.2 million per year, or about 5.5 percent of the agricultural GDP in 2011.<sup>165</sup> Various efforts are being made to combat land degradation and restore degraded land, including setting regulatory frameworks; targeted programmes and actions to encourage sustainable food production; improved sustainable land, water and forest management; soil organic carbon management; ecosystem conservation and land restoration; and investments in research and monitoring of specific land degradation processes.

Actions to address land degradation and desertification also can offer co-benefits for other key environmental issues, such as water pollution and scarcity.

179. Deforestation and illegal logging are an important related challenge. Increases in dramatic forest fires and pest and disease outbreaks in the Western Balkans require better risk prevention in sustainable forest management and land use. There is a need to build close inter-institutional relations and private sector networks among the countries of the Western Balkans and with European Union Member States to develop good governance in the forest sector and reduce the risk of illegal timber exports to the European Union.

180. The Western Balkans countries are vulnerable to the impact of climate change and climate-related hazards, including floods (especially in Serbia and Bosnia and Herzegovina) and droughts (especially in Albania). By 2040, the Western Balkans countries, especially North Macedonia and Albania, are expected to have high to very high levels of water scarcity. Overall, it is important that countries should develop adequate water abstraction laws and water quality protection, including mainstreaming in national sectoral policies and plans and strategies for agriculture, water, the environment, climate change and sustainable development. The Albanian National Integrated Water Resources Management Strategy (2016), for example, provides the legal, institutional, technical and socio-economic framework for Albania's water resources. It is based on European environmental legislation as well as on integrated water resources management principles and helps address the needs that have been identified for Albania's water resources. Its vision includes risk reduction and management with regard to floods, thereby integrating disaster risk management as one of its objectives.

181. During the past few decades, the impact of natural disasters, in particular climate-related disasters, on agriculture in the Europe and Central Asia region has steadily increased. It is estimated that between 1990 and 2017, a total

of 577 natural disasters occurred in the region that affected more than 69 million people and resulted in over USD 49 billion in economic damages. The Western Balkans experienced the greatest economic damage, at more than USD 30 billion, from 188 natural disasters that occurred between 1990 and 2017. Floods and droughts in the Western Balkans have affected many people, including smallholder farmers, who were impacted by the 2014 floods and landslides in Serbia and Bosnia and Herzegovina. The extraordinarily heavy rains – with the most rainfall measured in the last 120 years – caused massive flooding and affected 24 and 81 municipalities in the countries, respectively, and resulted in damage and losses to the agricultural sector in Serbia of EUR 228 million, or 19 percent of the total damage and losses in the country, and in Bosnia and Herzegovina of EUR 187 million, or 9 percent of the total damage and losses. The floods and landslides washed away newly planted crops, destroyed storage shelters and drowned livestock. North Macedonia is among the Western Balkans countries that are prone to droughts. It is estimated that the impact of the 1993 drought resulted in a total crop failure that was calculated to be around 7.6 percent of total national income. Due to missing, incomplete or inaccurate damage and loss data, the exact impact of the 2003 and 2006–2007 droughts on crops, grasses and fodder production is not fully known.

182. The policy response to climate change has been limited in most Western Balkan countries. In many instances, in practice, comprehensive strategies for improving the resilience and adaptability of agricultural systems to climate change are missing, as are public funds. Policy interventions are predominantly reactive, aimed at reducing the consequences and negative effects of weather extremes. Agricultural policies, on the other hand, often focus on production rather than on building resilience. Responses to climate change in the agricultural sector are further complicated by a lack of awareness among the public and decision makers about the concept, threats and consequences of climate change, by missing linkages between the economic costs of climate change and investment decisions, and through



underdeveloped and under-implemented risk management mechanisms and disaster risk reduction measures. At the household level, resilience to climate change requires both sufficient buffering capacity in the form of assets and income and a diversity of income sources. In rural areas, where households are often poor and employment opportunities scarce, the lack of resilience to climate change is particularly visible. Nevertheless, positive examples have emerged. Serbia is currently shifting from a reactive, emergency response-oriented approach towards one that is more focused on proactive disaster risk reduction. It recently adopted the Action Plan for the Implementation of the National Disaster Risk Management Programme (NDRMP) 2016–2020. This Action Plan includes risk assessments for the agriculture, water management, forestry and veterinary sectors that are consistent with international standards and European Union directives and develops vulnerability maps and flood and forest fire risk maps.

### III.2.3. Food value chains and smallholder integration

183. Food value chains in the six Western Balkans countries and territories have been through a number of structural changes, including the privatization of food processing and retailing, the consolidation of companies through horizontal or vertical integration, investments in new technologies, diversification of food products and packaging, improved quality and safety of products, and adoption and compliance with relevant food standards. These changes have shifted market power to retailers from large food processors. In parallel, the quality and safety of food have increased significantly in the past decade, according to the results of independent testing.

184. Value chain analysis shows that farmers have the highest shares in retail prices for fruit, vegetables and livestock products where there is relatively little significant additional cost and value-added in the downstream

supply chain. Food manufacturers' margins are bigger than farmers' shares for more processed products, such as wheat flour, sugar, oil and dairy products, where considerable processing and distribution costs are involved. Competition from imports means that domestic food prices tend to follow world market prices, but price transmission is not perfect, and the dynamics and magnitude of domestic price changes differ from those on world markets.

185. The food market can be described as a successive oligopsony. Many farms with small quantities of agricultural products and without any cooperative initiatives exist on one side. The next step downstream in the food supply chain is usually one or a small number of processing companies interested in buying agricultural products in a specific region, and this is followed by a highly concentrated retail sector. Food purchases are increasingly from supermarkets and hypermarkets rather than from small local shops, especially in big cities and urban areas. Consumers in the bigger urban areas typically pay slightly higher prices for their food than those in smaller urban or rural areas.

186. As noted above, the vast majority of farms in the eastern Balkans remain small and family owned, and land fragmentation is excessive. A major challenge for the sustainable development of food value chains in the Western Balkans is the typically small quantities of basic agricultural products produced by these many small farms and the inconsistent or poor quality of those products. These characteristics are problematic for modern processing and distribution, which demands large volumes and consistent quality. Farms need to produce to the specifications demanded by the value chains in which they operate. However, problems of poor product quality, inadequate hygiene, poor processing technologies, poor packaging, inefficient marketing and distribution and weak coordination are not confined to the farm level but exist throughout value chains. There is a general need for upgrading throughout food value chains to enhance their sustainability and to ensure that high-quality and safe food products reach consumers efficiently and meet their requirements. However, many of

the small farms in the Western Balkans are not well placed to meet these demands. They often will lack the necessary information, business skills and resources to face the high costs of compliance with stringent food standards. Agricultural cooperatives could play an important role in helping them integrate into agrifood value chains, not only in selling outputs on better terms but also in buying inputs. They also can contribute to the general upgrading of farm production that is required and facilitate training and capacity development and the supply of extension and other necessary services to farmers. However, cooperative development needs to be promoted and supported.

187. In all countries and territories, consumer preferences and the need to meet consumer demands are increasingly important influences on markets. Agriculture, food processing and retailing in the Western Balkans need to better understand consumer demand and consumption trends, and hence comprehensive market research and attitudinal survey information are needed. Consumer demands increasingly emphasize food safety and food quality, and they require an adequate response from the supply side. Food markets are fast-moving, and the major international and domestic supermarkets are gaining market share. This increasing market power has an important influence on product requirements at the farm and local food processing level. Farms and processors must comply with increasingly demanding global requirements, such as public sanitary and phytosanitary regulations as well as private standards imposed by the big retailers and processors themselves. Consumer preferences vary and diverge substantially, depending not only on income levels and growth but also on demographic factors, location and social class. Marketing strategies need to acknowledge and exploit these variations. New food marketing opportunities appear continuously. There is, for example, increasing demand at home and abroad for new products with claimed health benefits, organic and environmentally friendly products, fair trade products, and traditional foods linked to origin. Food producers

and processors need the skills, knowledge and capacities necessary for identifying and demonstrating compliance with niche markets. Market and consumer research is able to support producers in their efforts to cope with this new commercial environment. For governments, information on food availability and dietary patterns in the countries and territories of the Western Balkans is essential for the development of food policies designed to ensure sufficient healthy food supplies and improved human health and well-being.

### III.2.4. Food safety

188. Ensuring food safety is of crucial importance at all stages of food value chains and requires the active engagement of all stakeholders, including private sector food companies and consumers, and official government controls and intervention. The views of all stakeholders need to be considered in effective communication with governments. In all six Western Balkans countries and territories, food control structures have been established and capacities are continuously being improved to achieve robust food control systems in line with internationally recognized practices.

189. In addition to improving public health protection and ensuring the availability of safe and nutritious food, effective food safety systems also are essential to a wider range of development goals, including those linked to trade, livelihoods and nutrition. New challenges to food safety will continue to emerge as value chains transform to meet evolving consumer preferences and habits, as new food production techniques are developed, and as the balance shifts between domestic and international sources of supply. At the same time, better detection of food-borne illness outbreaks (both within and across countries), improved risk-based inspection regimes (including cross-border), and increased sensitivity in detection methods for biological, chemical or physical food safety hazards and fraud improve capacities for rapid and effective responses to food contamination, new bacteria and toxins.

190. Value chains are transforming in response to changing consumer preferences, increasing demands that foods meet minimum safety and quality requirements, and the availability of high-quality, low-cost imports. With trade liberalization and higher foreign investment in retail come new international competition, rapidly evolving value chains, and increased importance of food quality and safety. In addition to improving public health protection, effective food safety systems are needed to keep the agrifood sector competitive in domestic and external markets. Western Balkan countries and territories are taking advantage of expanding trade opportunities, especially with the European Union, continuously improving their food safety, veterinary and phytosanitary standards and integrating control measures along the food chain, from farm to fork. At the same time, the private sector is investing substantially in food safety management systems and infrastructure to ensure safe food in domestic markets and to meet the requirements of trading partners on food safety.

191. In all countries, a set of legislative reforms and revisions have been ongoing in the last decade to ensure food safety and quality standards are met, as a precondition for the placement of agrifood products on the domestic and world market. The Food Safety Law of Serbia was revised in 2019<sup>166</sup> with further elaborations on internationally accepted standards, guidelines, guides and recommendations. Montenegro completed the revision in 2018 and accepted the European Union acquis regarding food safety and veterinary and phytosanitary policy. The Food Safety Agency of Bosnia and Herzegovina is an independent administrative organization providing scientific advice and technical assistance to the legislation and policy of Bosnia and Herzegovina in all areas that have a direct or indirect impact on food and feed safety, as well as nutrition issues within the national health care program. Albania is a candidate country for the accession in European Union, and the legislative framework is being revised in compliance with European Union legislation. In North Macedonia, the Food and Veterinary Agency is responsible

for coordinating the legislation and control systems on issues in the field of food safety and animal feed among the competent institutions in the country, as well as communication with the European Union institutions.<sup>167</sup> In 2019, the FVA adopted several food safety monitoring programmes that aim to ensure continuous monitoring and timely preventive detection of risks to human health throughout the food safety chain.<sup>168</sup>

192. The food safety laws of Bosnia and Herzegovina, North Macedonia and Serbia, revised in 2019<sup>169</sup>, and Montenegro in 2018<sup>170</sup>, all prescribe that all subjects dealing with food follow instructions for good practices at all stages of the food chain in order to comply with food hygiene regulations and for the implementation of hazard analysis and critical control points (HACCP) principles to minimize food-borne diseases. Additional to the mandatory HACCP, some agrifood businesses, particularly export-oriented producers, additionally follow voluntary private standards (ISO 9001<sup>171</sup>, ISO 22000, BRCGS and International Featured Standards<sup>172</sup>), covering different stages of the supply chain and different levels of communication (with business partners or consumers). Voluntary standards such as GLOBSALG.A.P., or other systems including organic production and products with a geographical indication, also are gaining increasing interest from primary agricultural producers in the recent years, particularly among the export-oriented producers, and sometimes are promoted by governments. Some groups of food producers receive financial support from governmental and non-governmental sources, including the United States Agency for International Development and the European Union, to upgrade their food safety management systems. HACCP programs and their implementation are the responsibility of the food industry, while government inspection agencies are responsible for monitoring and assessing their proper implementation. In most countries, national or local inspection services are responsible for the assessment of HACCP and should be competent to perform these assessments.

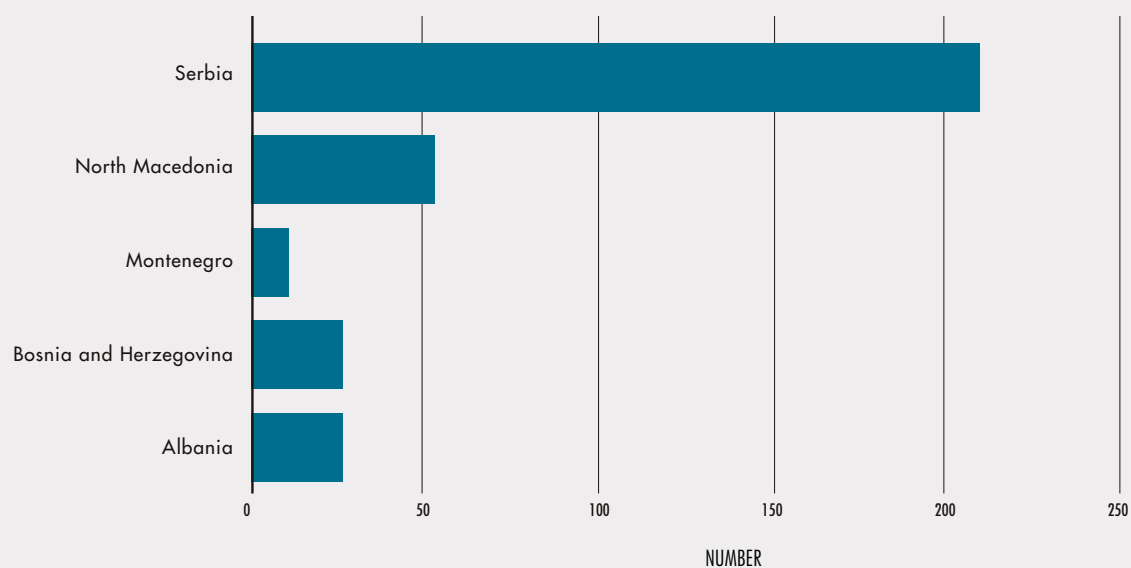
193. The loss of markets due to failure to respect mandatory safety standards and product quality is a real risk, and it needs to be avoided by an active state support policy. Most food producers in the Western Balkan countries are small-scale, family-run businesses with traditional product portfolios who are also struggling to demonstrate compliance with the necessary food safety standards. Recently, Serbia and Montenegro made progress on adopting hygiene bylaws that include flexibility measures and derogations for traditional food products, particularly for meat, dairy and plant-based products.<sup>173</sup>

194. Besides HACCP, the most common certifications in the Western Balkans food industry cover food safety (ISO 22000) and quality management systems (ISO 9001). ISO 22000 is a HACCP-type standard based on ISO 9001, developed to assure food safety. Standards, in their scopes, specify whether

they cover a quality or food safety scheme. Nevertheless, in a broader perspective, all schemes can be understood as quality schemes, with each quality assurance system focused on a particular dimension. Food safety includes Good Manufacturing Practices, HACCP, BRCGS and food safety management systems. Food quality is focused on ISO 9001, and environmental management is focused on ISO 14001. An important task for the future is to measure the benefits attributable to third-party certifiers. Food producers seeking certification consider a certificate as a proof of an implemented and effective system.

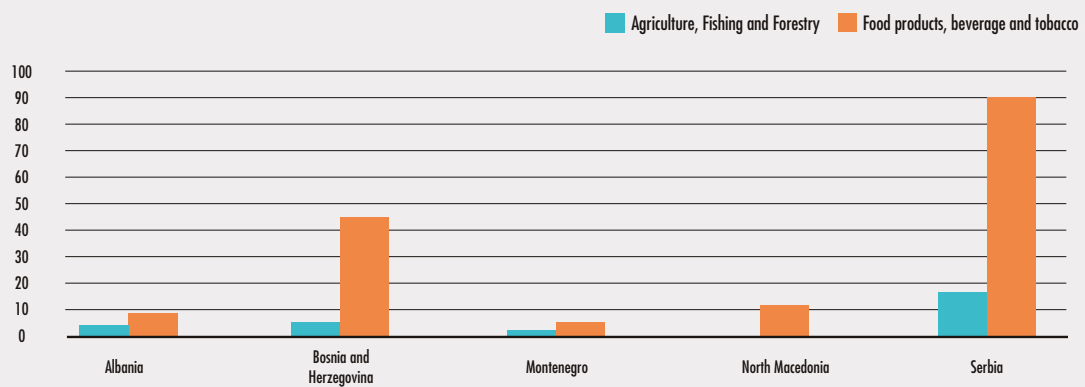
195. The number of enterprises adopting quality assurance systems to improve their competitiveness in the global market is continually increasing in Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia.

FIGURE 15.  
ISO 22000:2018 Food safety management systems – requirements for any organisation in the food chain.



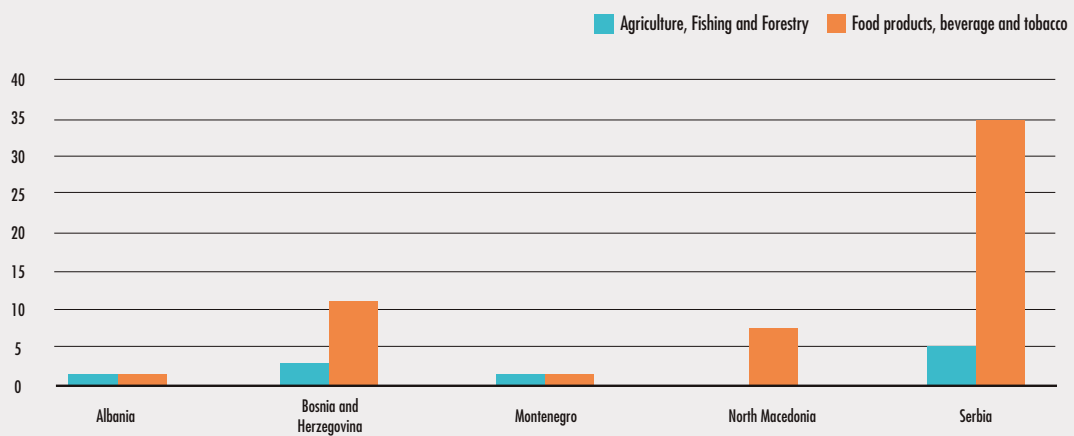
Source: ISO. 2018. ISO survey of certifications to management system standards. In: ISO Standards Development. Cited 13 May 2021. <https://isotc.iso.org/livelink/livelink?func=ll&objId=18808772&objAction=browse&viewType=1>

FIGURE 16.  
ISO 9001:2015 Quality management systems - requirements



Source: ISO. 2018. ISO survey of certifications to management system standards. In: ISO Standards Development. Cited 13 May 2021. <https://isotc.iso.org/livelink/livelink?func=ll&objId=18808772&objAction=browse&viewType=1>

FIGURE 17.  
ISO 14001:2015 Environmental management systems – requirements with guidance for use.



Source: ISO. 2018. ISO survey of certifications to management system standards. In: ISO Standards Development. <https://isotc.iso.org/livelink/livelink?func=ll&objId=18808772&objAction=browse&viewType=1>

### III.2.5. Rural Development

196. Agriculture in the Western Balkan countries and territories benefits from a favourable climate for the production of a wide range of crops. Soils are generally rich and fertile and uncontaminated due to a low use of mineral fertilizers and pesticides. The climate and natural resources support rich biodiversity, the traditional production of typical products, and the preservation of autochthonous species, types and breeds. These are excellent preconditions for the development of organic farming and tourism. Growing local markets are enjoying increasing demand from tourism and provide support for further progress in the sector. In some sectors, processing capacities have been developed in recent years, and these have paved the way for the introduction of value-added products onto the market. However, fragmented holdings, small-scale production, a lack of skilled labour, the low educational level and unfavourable age structure of farmers, limited mechanization, and low levels of implementation of modern technology and knowledge collectively hold back productivity. Relatively high input costs and expensive hire-purchase systems limit the competitiveness of products. Expensive repurchase systems and a lack of storage capacity (for fruits and vegetables, for example) impose seasonal patterns of production, limiting farmers' ability to achieve higher incomes and continuous market supplies. This also creates poor connections with the tourism sector, which requires high quality and stable supplies throughout the year. Even higher quality products are poorly promoted and are not marketed effectively because producers are not organized into groups or professional associations and so do not maximize their collective potential. Overcoming these shortcomings requires investment, but agricultural producers are likely to find credit expensive and difficult to obtain if they are unable to provide collateral.

197. In some countries and territories, notably Albania, Kosovo and North Macedonia, there are specific measures in the agriculture and rural development programmes that focus

on particular products, such as livestock or vineyards and grapes. These indirectly support local rural development. However, there is room for improvement through the proactive implementation of familiar rural development measures. One such possibility might be territorial approaches focusing on integrated community development and building on local needs and opportunities, but funding opportunities are limited and difficult to access. Limited implementation of the results of applied scientific research limits the application of innovative production technologies. This results in a low percentage of new products reaching the market, although it does help maintain traditional products and production methods. Agriculture in the Western Balkans countries and territories has many opportunities for further development. These include generally growing demand due to economic growth and rising consumer incomes and potential sales opportunities in cooperation with the tourism sector. The local population prefers local products, but as living standards increase, the demand for branded goods, high-quality produce and organic produce will increase. Nevertheless, there will remain profitable niche markets for traditional, local foods, perhaps marketed under environmental or geographic indications. However, production to exploit new market opportunities will be constrained by the currently unfavourable agricultural structure, lack of economies of scale, limited availability of land and water resources, the need to protect the environment and vulnerable ecosystems, difficulties in obtaining credit for investment in agriculture, and the lack of dynamism in aging rural populations and outmigration to urban areas. Institutional developments will be needed to fully implement standards of food safety in production and to recognize and standardize defined high-quality products as organic or PDO/PGI (protected designation of origin/protected geographical indication), for example. The backdrop to these agricultural and institutional constraints is generally underdeveloped physical and social rural infrastructure.

198. Empowering local communities and public and private stakeholders to work together

to achieve shared goals remains the core challenge for a full-fledged participatory rural development approach. As one opportunity, the integrated community development approach targets smaller territorial units in a participatory and bottom-up manner that involves the whole local community. Therefore, it can contribute to other ongoing territorial development processes as well. Social capital in a given territory facilitates networking and coordinated action of a variety of involved stakeholders, such as local and central governments, regional development agencies, civic groups, farmers' associations, and research institutes. Another important element is to develop capacities on rural development policy preparation and implementation at the state level, where the implementation of rural development interventions takes place.

199. The issue of rural development is key for Albania, and the country established a so-called rural parliament – the Albanian Rural Parliament. An initiative of the Albanian Network for Rural Development (ANRD), this provides a platform for advocacy, capacity development and networking dedicated to rural development. The rural parliament provides an important opportunity for policy makers, public and private institutions, civil society organizations, donor communities, academia and others to review current progress on rural development and promote changes in policies and practices to ensure that the “Rural Agenda” in Albania is developed and inclusive of all people living in rural communities to enable their participation in the process. The Albanian Rural Parliament represents a critical instrument to offer know-how and bring awareness to institutions to address the problems of rural development in Albania. Following its establishment in September 2017, and in response to the current challenges of agricultural and rural development in Albania, the ANRD, in cooperation with the Agricultural University of Tirana, had planned to organize the second Albanian Rural Parliament in April 2020, but this was postponed due to COVID-19.

200. In all the countries and territories of the Western Balkans, key priorities in rural development are focused on increasing the

competitiveness of farms, increasing the productivity and efficiency of farm production, developing agriculture, diversifying activities, developing tourism, and preserving the environment and landscape. Diversifying the rural economy is important for enhancing the sustainability of the rural economy and can improve living standards and strengthen the links between agriculture and other rural sectors. Sustainable agriculture is based on the use of technology to maximize productivity and minimize adverse effects on natural and human resources. The concept of Sustainable Agricultural and Rural Development (SARD) relies on a multidimensional understanding of the role of agriculture, which provides market and non-market results that are the basis for the diversification of the economy in terms of improving complementary activities. Research on preferences concerning the diversification of the rural economy shows that agricultural households ranked the importance of labour as a significant resource as “low” and do not recognize the additional skills and abilities of their members. It seems, therefore, that most of the rural population is oriented towards the processes of employment, rather than self-employment, and the consequences of these processes become especially prominent in times of recession.<sup>174</sup> Creating favourable conditions and providing support for non-farm activities are important tasks for agricultural policy makers, especially at a time when the rate of unemployment in rural areas is growing.

201. The small, fragmented farms of the Western Balkans face increasingly demanding markets, regulatory requirements and standards. Some have the potential to develop into commercial family farms, but many are ill-equipped to do so, lacking adequate information and knowledge about how to respond to changes in the market and having limited access to funding for diversifying their business activities. Their livelihoods, based on limited land and other natural resources, have become more precarious. In the absence of employment opportunities, rural residents are forced to seek out alternative development strategies to overcome the income risks they are facing.

These strategies entail the diversification of the rural economy and a move away from agriculture as a primary function of rural areas. Additional and complementary activities, related to agricultural production as a basic activity, can generate rural employment and incomes and make a significant contribution to the improvement of living standards for rural residents, including for those who do have viable and sustainable agricultural enterprises but can add non-farm activities to their income stream. Nevertheless, some elements of rural populations – such as women, the elderly, youth and other vulnerable groups – risk being excluded and left behind. Effective social protection systems need to be available for them. Special provisions, including training and education and small business start-up capital, need to be focused on youth.

202. The results of research conducted in Bosnia and Herzegovina in 2018 seem to suggest that the most significant sources of non-farm income are other occupations and other (undefined) sources of income and to a lesser extent, different types of processing of agricultural products on the farm. Diversification was more often present in farms with smaller land assets and consequently insufficient income from primary agricultural production. Larger farms were more specialized in agricultural production, and additional income from diversified activities constituted a smaller part of their total income. Given that mixed farms involving a variety of farm enterprises are dominant in Bosnia and Herzegovina, there already is a certain level of “traditional diversification.” However, it is surprising that the youngest households (where the head was younger than 40 years) showed the least interest in diversification. On the other hand, farms where the head was 70 years old had the least amount of income from farming and the highest non-farm income, because other income (such as pensions or gifts from children and relatives) was regarded as non-farm income.

203. The lack of knowledge and information about opportunities to create diversified

revenues impedes sustainable development in rural areas. An expansion and strengthening of services that provide advice and other assistance to the rural population could make significant contributions to the progress of diversification in rural areas. To this end, it is necessary to encourage the activities of existing development agencies that also deal with issues of diversification and to establish new ones to provide a wider network.

204. The COVID-19 pandemic has caused major disruption to the food and agricultural sectors throughout the Western Balkans. Restrictions on movement and social distancing rules led to delays and reductions in food deliveries and upward pressure on food prices. Traditional organized farmers’ markets were closed for several months. The extended lockdowns and jump in remote working have led to an expansion in online shopping and home deliveries. Slowing agricultural activity and business closures have left many rural low-skilled and seasonal workers, especially women, without sustainable livelihoods. At the same time, opportunities to find alternative engagement in other sectors of the economy or in other countries have been restricted. Many labour migrants previously working in Western Europe returned home with little possibility to find jobs. This also has caused a decline in the levels of remittances. Migrant remittance inflows are sizeable for the entire region, ranging from 2.7 percent of the GDP in North Macedonia to 15.9 percent in Kosov. <sup>175</sup> Remittances for the region as a whole were forecast to fall by an average of 40 percent in 2020 because of the COVID-19 pandemic. Food imports and exports also have been affected, not only by restrictions on the movement of goods but also by the macroeconomic consequences of slow growth and recession in the economies of trading partners.<sup>176</sup> Trade policies, such as tariff reductions and other measures to facilitate border crossings, will be needed to alleviate the immediate disruptions caused by the pandemic and to facilitate economic recovery.



TABLE 7.  
Remittances as a share of GDP in 2018 (percent).

Albania	10.4
Bosnia and Herzegovina	11.0
Kosovo	15.9
Montenegro	11.0
North Macedonia	2.7
Serbia	9.4

Source: FAO & ITU. 2020. The Status of Digital Agriculture in 18 countries of Europe and Central Asia. Geneva, ITU. 8 pp. (also available at [https://www.itu.int/en/ITU-D/Regional-Presence/Europe/Documents/Events/2020/Series%20of%20Webinars/20-00244\\_Status\\_digital\\_Agriculture-revFAOV4.0-MASTER-FILE-20-JUNE\\_REVIEW-FAO\\_PL\\_print%20%28002%29.pdf](https://www.itu.int/en/ITU-D/Regional-Presence/Europe/Documents/Events/2020/Series%20of%20Webinars/20-00244_Status_digital_Agriculture-revFAOV4.0-MASTER-FILE-20-JUNE_REVIEW-FAO_PL_print%20%28002%29.pdf))

### III.2.6. Trade and European Union Integration

205. In 2000, the European Union granted autonomous trade preferences to all the countries and territories of the Western Balkans. These preferences,<sup>177</sup> which expire at the end of 2020, allow nearly all exports to enter the European Union without customs duties or limits on quantities. A continued market opening to imports from the Western Balkan countries and territories is expected to contribute to the process of political and economic stabilization in the region while not creating negative effects for the community. Only sugar, wine, baby beef and certain fisheries products enter the European Union under preferential tariff quotas. A Commission proposal to extend the autonomous trade preferences until the end of 2025 is currently being considered by the European Parliament and Council.

206. Since the launch of the Stabilisation and Association Process, the European Union has progressively concluded bilateral free trade agreements referred to as “Stabilisation and Association Agreements” (SAAs) with each of

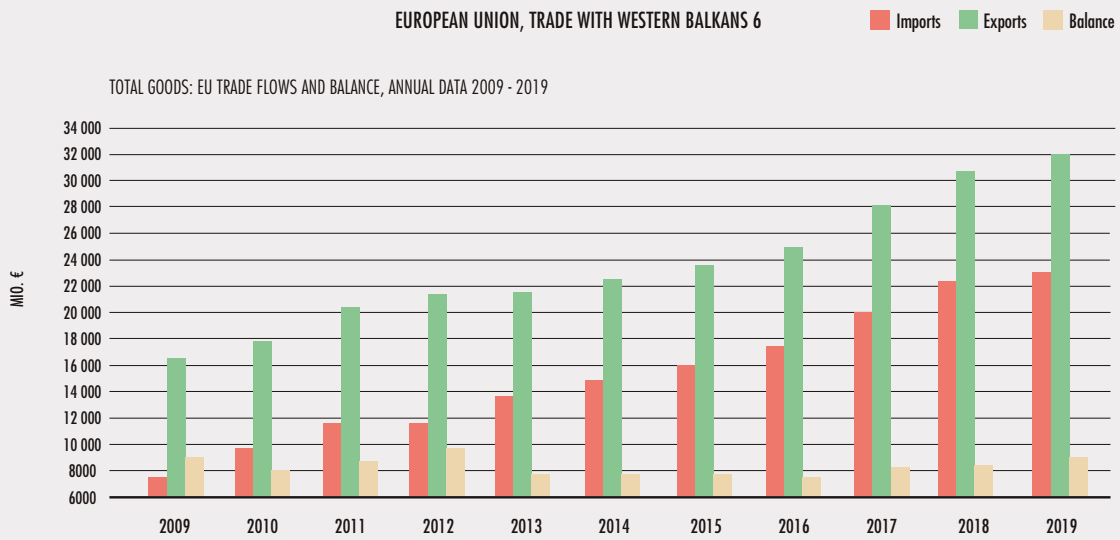
the Western Balkan partners: Albania (2009), North Macedonia (2004), Montenegro (2010), Serbia (2013), Bosnia and Herzegovina (2015) and Kosovo (2016). The SAAs are tools that provide for the economic development and political stabilization of the countries and territories in the region and that provide for the creation of a close, long-term association between the European Union and the Western Balkans. In effect, the SAAs constitute the legal instrument for alignment to the European Union acquis and progressive integration into the European Union market.

207. The SAAs have established a free trade area over a transitional period that has now ended for all but Kosovo (2026). The agreements foresee the elimination of duties and non-tariff restrictions on bilateral trade and cover goods in all chapters of the Harmonized System. Only a few exceptions, for some agricultural and fishery products, are not fully liberalized but are subject to reduced duties and/or preferential quantitative concessions. As a result of the trade preference, the European Union’s trade balance with the countries and territories of the Western Balkans is positive, except for with Serbia. The share of agricultural products (SITC Rev. 3 Product Groups) in total exports in 2019 varies from 8.7 percent in North Macedonia to 30.2 percent in Kosovo.



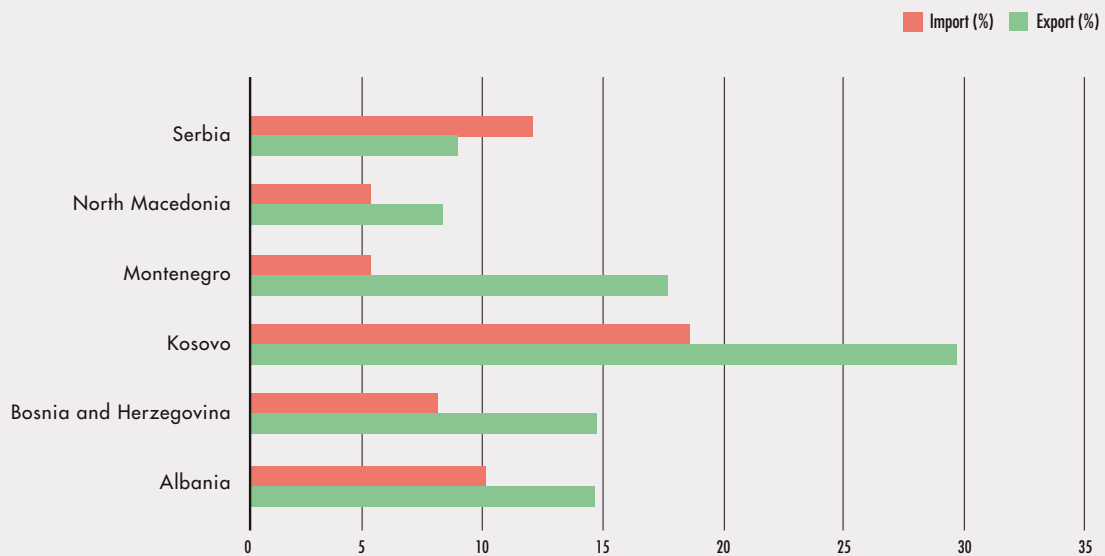
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FIGURE 18.  
EU merchandise trade with Western Balkans countries.



Source: Eurostat Comext. 2021. Eurostat Comext – Statistical regime. In: The European Commission. Brussel, Belgium. Cited 18 September 2021. <https://ec.europa.eu/eurostat/estat-navtree-portlet-prod/BulkDownloadListing?sort=1&dir=comext>

FIGURE 19.  
Western Balkans agricultural trade (including fish and raw materials) with European Union, percent of total, 2019.



Source: European Commission. 2021. European Commission, Trade – Countries and Territories. In: The European Commission. Brussel, Belgium. Cited 25 August 2021. <https://ec.europa.eu/trade/policy/countries-and-regions/statistics/>

TABLE 8.  
Western Balkans merchandise trade with EU.

Country	2016			2017			2018			2019		
	Export (Mio Euro)	Import (Mio Euro)	Trade Balance (Mio Euro)	Export (Mio Euro)	Import (Mio Euro)	Trade Balance (Mio Euro)	Export (Mio Euro)	Import (Mio Euro)	Trade Balance (Mio Euro)	Export (Mio Euro)	Import (Mio Euro)	Trade Balance (Mio Euro)
Albania	2685	1286	1399	2961	1499	1462	3178	1751	1427	3175	1845	1330
Bosnia and Hercegovina	5228	3758	1470	5891	4231	1660	6061	4678	1383	6318	4379	1939
Kosovo*	849	71	778	900	88	812	1037	97	940	1285	129	1156
Montenegro	974	146	828	1052	152	900	1189	180	1009	1219	159	1060
North Macedonia	3646	3670	-24	4060	4184	-124	4611	4828	-217	4757	5161	-404
Serbia	11 515	8487	3028	132 225	9731	122 494	14 531	10 736	3795	15 188	11 279	3909

Source: European Commission. 2021. European Commission, Trade – Countries and Territories. In: The European Commission. Brussel, Belgium. Cited 25 August 2021. <https://ec.europa.eu/trade/policy/countries-and-regions/statistics/>

TABLE 9.  
Western Balkans food and agricultural trade with European Union.

SITC Rev. 3 Product Groups	Albania		Bosnia and Hercegovina		Kosovo*		Montenegro		North Macedonia		Serbia	
	Import (Mio Euro)	Export (Mio Euro)	Import (Mio Euro)	Export (Mio Euro)	Import (Mio Euro)	Export (Mio Euro)	Import (Mio Euro)	Export (Mio Euro)	Import (Mio Euro)	Export (Mio Euro)	Import (Mio Euro)	Export (Mio Euro)
Primary products	527	970	964	1946	35	433	94	440	600	1213	2591	3237
2. Agricultural products (Food (incl. Fish) & Raw Materials)	195	540	378	960	25	388	9	219	293	415	1435	1411
2.1. Food	157	507	161	870	19	375	6	209	267	390	1316	1209
<i>of which</i>												
Fish	92	59	8	24	0	2	0	11	0	9	11	42
Other food products and live animals	65	446	152	846	19	373	6	198	267	381	1305	1167
2.2. Raw Materials	37	35	207	89	6	13	4	10	26	25	119	202

Source: European Commission. 2021. European Commission, Trade – Countries and Territories. In: The European Commission. Brussel, Belgium. Cited 25 August 2021. <https://ec.europa.eu/trade/policy/countries-and-regions/statistics/>

208. All the countries and territories of the Western Balkans have aspirations to European Union membership. They fall into two groups in terms of their path to European Union accession: potential candidate countries and candidate countries. Albania (since 2014), North Macedonia (since 2005), Montenegro (since 2010) and Serbia (since 2009) are candidate countries, while Bosnia and Herzegovina (since 2005) and Kosovo (since 2016) have the status of potential candidate countries.

209. Negotiations are ongoing with each candidate country to determine their ability to apply European Union legislation (the *acquis*), to assess their capacity to cope with the competitive pressures and market forces within the European Union and from imported agricultural and food products, and to examine their possible requests for transition periods.

The Directorate-General for Agriculture and Rural Development is assisting the countries, particularly in preparing to comply with the agricultural component of Chapter 11 on agriculture and rural development and Chapter 12 on food safety, veterinary and phytosanitary policy. The six countries and territories are in different stages of negotiations. Progress in the accession process in agriculture is conditional on their being a number of functioning enabling institutions that are adequately resourced.<sup>178</sup>

The candidates need to demonstrate the existence of a functioning market economy based on clear property rights, functioning markets, price liberalization and macroeconomic stability. The demanding and wide-ranging nature of European Union legislation and regulations requires that candidates have adequate administrative capacity in their agricultural administrations. They need to demonstrate that their administrations have the capacity for agricultural policy formulation, analysis and implementation; the management and control of support payments; and the formulation and implementation of pre-accession rural development measures and, later, community rural development programmes.

Relevant national legislation needs to be aligned with that of the European Union, and administrative capacity needs to be developed in the areas of organic farming and quality standards. At the agricultural market level, candidates must establish the relevant market mechanisms, including marketing standards, price reporting, quota management, producer organizations and public intervention.

The various countries and territories of the Western Balkans are in different phases of meeting these requirements. Governments have introduced various programmes, including action plans and financing, to facilitate the process. The process for European Union accession is crucially important to the candidate countries and defines the nature and content of their agricultural policies and related measures.

### III.3. Drivers and opportunities of food, agriculture and rural development in the European Union that might affect FAO programme countries in Europe and Central Asia

210. As a major global player, the European Union has a central role in achieving the Sustainable Development Goals by 2030, and its food systems will play one of the most important parts in this. Although the share of agriculture in the gross domestic product has declined continuously in the European Union Member Countries, agriculture continues to play a key role in rural communities with, 10.5 million agricultural holdings using 173 million ha of land and producing EUR 341 billion of agricultural goods output in 2019. The European Union is the biggest exporter and importer of agricultural and food products globally and reached a record agrifood trade balance of EUR 31.9 billion in 2019. European Union agricultural and trade policies and food safety and environmental standards



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inevitably impact other countries' imports and exports. European Union consumers have relatively high per capita incomes and correspondingly high and growing expectations when making food choices in terms of quality, safety and environmental impacts.<sup>179</sup>

211. This section highlights the most important current developments and concerns in the agrifood sector and rural areas of the European Union that have an impact on the FAO programme countries in the Europe and Central Asia region. The most direct link between the two is through trade relations. The European Union is the major market for the region's agrifood exports, but the European Union also is a strong competitor on global markets. Both impact the region's ambitions to play a bigger part in global agrifood trade. Trade relations with the European Union are also formalized in many cases by trade agreements or, especially in the case of in the Western Balkan countries, by broader-based agreements relating to eventual accession to European Union membership.

Both entail some degree of harmonization with European Union policies and standards. The countries of the Europe and Central Asia region share a fundamental objective with the European Union of ensuring that consumers have access to sufficient safe, nutritious food. Dietary patterns and consumer attitudes have seen widespread convergence leading to similar nutritional challenges. The European Union and the countries of Europe and Central Asia region also share a common perception that in the face of increasing pressure on natural resources exacerbated by climate change there is a fundamental need to improve productivity sustainably through innovation in food systems. Besides its own efforts in this direction, the Europe and Central Asia region stands to benefit from the pioneering, holistic, strategic thinking and from practical technology transfer and spillovers of innovations in the European Union. The achievement of more sustainable food systems, including sustainable diets and reduced food loss and waste, now dominates European Union policy. The European Union sees itself as the leader in the global transition

towards sustainable food systems and is actively pursuing this role in its relations with other countries.

### III.3.1. Trade relations

212. The European Union is currently the biggest exporter and importer of agrifood products in the world. It has managed to reverse its trade position since the beginning of the current decade, reaching a record agrifood trade balance of EUR 31.9 billion in 2019. The European Union's major agrifood export destinations are traditionally the United States of America, China, Switzerland, Japan and Russian Federation, while agrifood imports arrive mainly from the United States of America, Brazil, Ukraine, China and Argentina. However, the global arena of agrifood trade has changed considerably during recent years with the emergence of new major players, especially Brazil and China.

213. Free trade agreements already in force – for example with Canada, Japan, Singapore, South Africa and Ukraine – will continue to shape the European Union's agricultural and food trade profile in the short run. In the medium and long term, trade agreements under negotiation, such as those with Vietnam, Mercosur and Mexico, also will have an impact.<sup>180</sup> However, the increased opening of agricultural markets via free trade agreements also means increased competition for domestic producers, including in vulnerable sectors. The traditional export markets of the European Union are likely to remain, but the European Union may focus more on the emerging markets of India, China and Southeast Asia, where it can export safe and quality products to markets with significant demand growth.<sup>181</sup>

214. Regarding the Europe and Central Asia region, it also is important to note the role of Deep and Comprehensive Free Trade Agreements (DCFTAs) that the European Union is offering to, inter alia, some of the region's countries, such as Georgia, Republic of Moldova and Ukraine, as part of association agreements. European Union enlargement candidate countries, such as Albania, Montenegro, North

Macedonia, Serbia and Turkey, also have special agrifood trade rules under the Stabilization and Association Agreement. These agreements, and especially their details, are also likely to shape the partner countries' agrifood trade profiles towards greater European Union conformity.

215. Changes in agrifood trade also have become evident in the Europe and Central Asia region. Over the past two decades, the region's agrifood exports and imports have both increased significantly, contributing to economic growth and food security. Trade in high-value-added agrifood products is now a strategic orientation for the region, manifested mainly in regional trade arrangements such as Eurasian Economic Union and European Union association agreements. The European Union has a trade surplus with many countries of the region, indicating the potential for these countries. The Russian Federation, Kazakhstan and Ukraine have been the main agrifood exporting countries during the previous decades. However, with cereals and animal and vegetable oils and fats leading agrifood exports and processed food leading agrifood imports, the Europe and Central Asia region has only partially met its desired strategic orientation. Moreover, the import bans introduced by the Russian Federation and the non-tariff measures applied by many countries seem to be a major impediment to further agrifood trade growth in the Europe and Central Asia region.<sup>182</sup>

216. Besides the direct short-term gains, increased trade with European Union countries could be an attractive opportunity to pursue, since the European Union has the power to support developing countries achieving their SDGs through liberalized agrifood trade policies. However, in order to exploit this opportunity, companies and producers have to understand international trade requirements, including food safety and quality standards and sanitary and phytosanitary requirements. Inspection bodies need to be equipped with an adequate number of high-quality laboratories accredited to international standards.

### III.3.2. Demand for high quality products and healthy diets

217. Changing societal demands will continue to shape European Union agricultural and food markets over the next decade. Although the European Union is a major global exporter and importer, most of its food production is consumed locally, and this seems likely to remain the case in the future. European Union citizens have high expectations towards the food they consume, demanding high-quality, safe and nutritious food at affordable prices. Thirty-five percent of European Union citizens are concerned about antibiotics, pesticides, pollutants and additives, while 50 percent pay attention to origin, cost, food safety and taste.<sup>183</sup> It is evident that consumers now have more information at hand with the rapid rise of information technologies, which for many allows more nutritionally aware shopping and cooking.

218. The quality policy of the European Union, as a special component of the Common Agricultural Policy, plays a central role in shaping the present and future of the European Union food system. The aim of the European Union quality policy is to protect the names of specific products to promote their unique characteristics, linked to geographical origin. However, in spite of comprehensive efforts to ensure the quality of food, the European Union has experienced some setbacks in consumer confidence due to fraud, control gaps or traceability problems. Labelling has been an important tool to regain consumer confidence. It takes many forms, including not only nutritional and origin information but also geographical indications, certification and local quality assurance schemes. New tools for informing consumers, including digital means, can help inform consumers of product composition and preparation as well as nutrition and health aspects. Quality labels and schemes add economic value to European Union food products for which consumers are willing to pay, and there is scope for the Europe and Central Asia region, especially the Western Balkans, to follow this example.<sup>184</sup>



219. In the short term, an increasing demand for organic food is expected in the European Union, though such demand in the medium term may be challenged by other environmentally friendly alternatives. This trend is also enlarged by modern fashionable food consumption lifestyles, such as vegan or paleo. Consumer demand in the European Union is also increasing for local foods with short food supply chains. On average, 15 percent of European Union farms sell more than half of their produce directly to consumers, but this share differs widely by country.<sup>185</sup>

220. However, there also is a contradictory trend, due partly to busy lifestyles, whereby demand for highly processed food, including snacks, as well as on-the-go products and take-away food, is increasing. Fifty percent of the adult population in the European Union is now overweight, contributing to a high prevalence of diet-related diseases and related healthcare costs. High intakes of energy, red meat, sugars, salt and fats already lead to one out of five deaths, and around 16 million lost healthy life years are related to unhealthy diets.<sup>186</sup> Child obesity is a widespread problem that raises additional issues. A variety of food policy measures, including education, information, taxes and restrictions on products and marketing, are available to encourage healthier food consumption choices. Similar nutritional problems are evident in the Europe and Central Asia region, though measures to address them lag behind. While 33 countries in the region already have food-based dietary guidelines (FBDGs), the majority of these are European Union Member Countries, and most countries of the Balkans and Central Asia have yet to develop theirs. Adopting European Union food standards and guidelines would help the countries better respond to consumers' modern dietary needs in addition to favourably impacting diets and the whole food system.

### III.3.3. Innovation and digitalization

221. European Union agricultural production costs increased by 13 percent in real terms between 2000–2002 and 2013–2015, mainly due to energy and fertilizer price increases.<sup>187</sup>

The adoption of cost-saving approaches, therefore, is crucial to mitigating this trend. Precision farming, for instance, can be a solution by reducing production costs at the farm level. Innovation and digitalization will be the key drivers of European Union agricultural and food systems in the twenty-first century. New technologies improving information, logistics and the organization of food chains can give a further boost to European Union agricultural productivity. For many, especially small and medium-sized farmers, the uptake of new technologies is limited. Many farmers are risk averse, preferring to have security in generating a lower but more certain income. The rate of adoption of innovations can therefore be slow, reinforcing the effects of reductions in public investments in agricultural research and development. In the post-2020 Common Agricultural Policy, agricultural knowledge and innovation systems in Member States will benefit from a greater and more flexible support, provided that the supported actions are part of strategic plans for agricultural knowledge and innovation systems and digitalization. Agricultural knowledge and innovation systems will be specifically supported to strengthen interaction and collaboration among the actors involved – farmers, advisers, researchers, academia, producer and non-governmental organizations, start-ups and private sector companies – through interactive innovation processes. Synergies with the European Union research framework Horizon 2020/Horizon Europe are being developed. The European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI) was created in 2012 to encourage innovation that contributes to improving agricultural productivity and sustainability. The EIP-AGRI includes all actors in the agricultural innovation system, bringing together farmers, advisers, researchers, businesses and NGOs to promote constructive dialogue on research relevant to farmers' needs. This includes not only high technology and digital innovations but also relatively simple modifications to farm practices and social and institutional innovations, such as certification and public procurement schemes and participatory guarantee systems.

222. The level of training for the majority of European Union farmers remains generally low, particularly for the older generation. This is especially a problem when young farmers (those younger than 35) account for just 6 percent of the European Union farm population. Not all European Union farms are innovative. Gross fixed capital formation, used as a proxy for investment, decreased at an annual rate of around 2 percent after the economic crisis of 2008, and on average, just 41 percent of European Union farms have introduced new products and processes in the past three years. There are differences by farm size, with large farms more innovative than smaller ones.<sup>188</sup>

223. The European Union is a leader in digital agriculture, the spread of which accelerated with the COVID-19 pandemic. However, digitalization in many parts of the Europe and Central Asia region, and especially in the Balkans and the Caucasus, suffers from underinvestment. In the European Union, information and communications technologies (ICTs) have long

been recognized as key enablers for achieving all three dimensions of sustainable development and thereby contributing to achieving the SDGs.

ICTs provide important support to agricultural innovation systems, sustainable farming, disaster and risk management, enhanced market access, food safety and traceability, enhanced financial services, capacity development, and improved regulatory frameworks.<sup>189</sup> The low level of investments in research and development for digitalization is a key issue for the Europe and Central Asia region. If the region lags behind the European Union's Digital Agenda, it loses its opportunity to be competitive in all these areas.

### III.3.4. Climate change and the environment

224. Climate change is one of the biggest challenges facing European Union agriculture, changing production patterns and land use, introducing new pests and diseases and



causing extreme weather events. All this has important effects on agricultural and food production and on farmers' incomes. There is a continuous and ongoing effort to make European Union agriculture and food systems climate smart and environmentally friendly. Agriculture is responsible for 10.3 percent of the European Union's greenhouse gas emissions, and nearly 70 percent of this is from the livestock sector.

225. Public policy choices addressing these issues have led to a number of different requirements being set in European Union and national regulations on how to produce enough food while safeguarding the environment. Successive versions of the Common Agricultural Policy, for example, have incorporated ever-increasing environmental measures. Although these regulations may translate into higher production costs, they also bring opportunities to add value and increase market differentiation.<sup>190</sup> Alternative production and food systems, such as local, organic, certified, and genetic modification-free production are likely to become more widespread in the upcoming decades, and their market shares are likely to increase correspondingly.

226. Current climate trends are expected to continue in Europe, putting pressure on the yields of certain crops. Severe market disruptions also could be caused by the increasing pressure on natural resources and an increasing incidence of extreme climate events. The European Union has therefore launched its biodiversity strategy for protecting nature and reversing the degradation of ecosystems. This is also part of the European Green Deal to make Europe the first climate-neutral continent by 2050. The aim is to consistently reduce dependency on pesticides and antimicrobials, reduce excess fertilization, increase organic farming and reverse biodiversity loss.

227. Climate change also is a challenging issue for the Europe and Central Asia region. Many of the region's countries are facing warmer temperatures and more frequent extreme weather events such as droughts, floods and windstorms. The frequency

of natural disasters already has risen. Most countries in the Balkans and the Caucasus lack proper adaptation strategies, partly reflecting a legacy of past environmental mismanagement practices. The European Union clearly has the influence to persuade the region to produce in a more environmentally friendly way. Agrifood products produced in unsustainable ways will fail to meet European Union demand and standards and therefore result in reduced market opportunities. Climate change mitigation and adaptation efforts are therefore of key importance to the Europe and Central Asia region if countries wish to remain active with their agrifood products in European Union markets.

### III.3.5. Sustainable food systems “From Farm to Fork”

228. The European Commission has undertaken a far-reaching review of every aspect of European Union food systems to provide a comprehensive framework for future agricultural and food policies. The result is the Farm to Fork Strategy released in 2020.<sup>191</sup>

This will be followed up by legislative proposals for a Framework for a Sustainable Food System before the end of 2023. The background to the Farm to Fork Strategy is the European Green Deal, which sets out a strategy and action plan for sustainable economic growth and provides the European Union's central support for achieving the SDGs. The Farm to Fork Strategy addresses the challenges of creating sustainable food systems that are fair, healthy, environmentally friendly, robust and resilient and that ensure sufficient supplies of healthy food at affordable prices for citizens.<sup>192</sup>

It encompasses and is intended to benefit the sustainability of all activities in food value chains, including food production, processing, transport, distribution, marketing and consumption. The Farm to Fork Strategy is a major step towards emphasizing green objectives in policy towards food systems. The strategic approach and the specific policies to support it will be a model for the countries of the Europe and Central Asia region and will be the reference

point for their relations with the European Union, whether as candidates for membership or simply trade partners. According to the strategy, the European Union aims to lead a global transition towards sustainable food systems by setting global standards, and this includes ensuring that trade policy and trade agreements will have strong provisions on such issues as the use of agro-chemicals, veterinary medicines and animal welfare.

229. The Farm to Fork Strategy has multiple objectives and conditions relevant to the three dimensions of sustainability. It is intended to have a neutral or positive environmental impact, to help mitigate climate change and adapt to its impacts, and to reverse the loss of biodiversity. The conditions to achieve these environmental objectives include commitments to reduce agro-chemical use, reduce greenhouse gas emissions (of which European Union agriculture accounts for 10 percent), and to improve animal welfare. Over the next two years, existing legislation in these areas will be strengthened and new legislation proposed. Organic agriculture will be promoted, and an action plan on organic agriculture is expected. There also will be a new biodiversity strategy. Particular attention is given to the prevention of food loss and waste. An estimated 20 percent of food is wasted in the European Union.<sup>193</sup> Meeting SDG Target 12.3 to reduce this by half by 2030 will require stepping up current actions. The Farm to Fork Strategy aims to ensure food security, nutrition and public health through ensuring access to sufficient safe, nutritious, sustainable food at prices that are affordable to consumers but that still generate fairer economic returns to foster competitiveness and promote fair trade. With better information and labelling to support their food choices, consumers will be encouraged to adopt more sustainable and healthier diets. The public health implications of unhealthy diets are a matter of increasing concern in the European Union – especially widespread obesity, with half the adult population overweight. Food manufacturers and retailers also are being encouraged to emphasize the sustainability of their products, including their

packaging, with more informative labelling. Progress towards achieving greater sustainability will be monitored by an expanded Farm Accountancy Data Network (FADN).

230. Implementation of the Farm to Fork Strategy will clearly involve major investments – not only in physical capital, such as improved infrastructure (including access to fast broadband internet for all by 2025) to promote digitalization – but also in services and human capital. The supply of advisory services and information will be expanded through agricultural knowledge and innovation systems (AKIS). EUR 10 billion will be made available under Horizon Europe to be invested in research and innovation related to food, bioeconomy, natural resources, agriculture and the environment. Rewards for cooperation will be given to farmers through the new Common Agricultural Policy (CAP), and support also will be available to small and medium-sized enterprises in food processing, retailing and service provision.

231. The future CAP 2021–27 was proposed by the European Commission in 2018, but its start date has been delayed until 2023. In the meantime, the existing CAP (2014–20) rules continue in a transitional regulation, with some new elements added to strengthen its green credentials and pave the way for the new CAP in 2023. The new CAP is intended to contribute to the Green Deal, helping farmers tackle climate change and protect the environment, and 40 percent of the CAP budget will be for climate-related support. The future CAP 2021–27 will represent the latest in a series of reforms, spreading over nearly 30 years, that have seen the CAP shift its emphasis from food production to direct support of farm incomes and, most recently, towards sustainability and response to climate change.

232. The current CAP<sup>194</sup> has three broad policy objectives – namely, viable food production, sustainable management of natural resources and climate action, and balanced territorial development – with each entailing specific objectives. The first calls for maintaining market stability, meeting consumer expectations and maintaining diverse agriculture across

the European Union. The second implies enhancing farm income, improving agricultural competitiveness, fostering innovation, providing environmental public goods and pursuing climate change mitigation and adaptation. The third implies the promotion of the socio-economic development of rural areas. Direct payments to “active farmers” are the main policy instrument of the CAP 2014–20, costing EUR 40.6 billion (24 percent of the European Union budget in 2020). These direct payments are “decoupled,” or not linked to current prices or production, according to the WTO definition. Rural development measures cost EUR 14.6 billion (8.7 percent of the European Union budget) in 2020. A major innovation of the CAP 2014–20 was the introduction of so-called “greening,” attempting to influence how farms produce and making direct payments conditional on certain environmentally beneficial farm activities. Rural development programmes covering such priorities as innovation, farm viability, social inclusion, poverty reduction, economic development and climate resilience are jointly financed by the European Union and Member States. At least 30 percent of funding for each rural development programme must be for measures on the environment and climate change, including organic agriculture. The current CAP measures relating to the environment and, especially, climate change are widely deemed to have been inadequate in their design and implementation, and there is little evidence to suggest that they have been effective.

233. The future CAP 2021–27 is built very explicitly around “green architecture,” with enhanced conditionality to link European Union-funded income support to environment- and climate-friendly farming practices and standards and eco-schemes to provide new funding and incentives for agroecology and other environment- and climate-friendly farming practices. Rural development support will aim to enhance ecosystems, promote resource efficiency and help move towards a low-carbon, climate-resilient economy. The farm advisory service will broaden its scope to include more detailed economic and environmental data as a basis for farm management advice. National

CAP strategic plans will be formulated in collaboration with the Commission to meet specific national needs but will need to be consistent with European Union objectives on environment and climate in the Green Deal.

234. The future CAP has nine objectives focused on social, environmental and economic goals. The first three are concerned with the economic sustainability of farms and enhancing food security and resilience: ensure fair income to farmers; increase competitiveness and agricultural productivity in a sustainable way to meet challenges of higher demand in a resource-constrained and climate-uncertain world through research and innovation support, new technologies, rural development and infrastructure, efficient advisory systems and continuous training; and rebalance power in the food chain by improving farmers’ position in value chains through strengthening cooperation and increasing market transparency. The next three objectives are concerned with environmental sustainability: climate change action, including mitigation and adaptation, sustainable energy and the reduction of greenhouse gas emissions; environmental care, including fostering the sustainable development and efficient management of natural resources such as water, soil and air; and the preservation and protection of landscapes and biodiversity. The next two objectives concern rural development: structural change and generational renewal to attract young people and improve their business skills through targeted support for young farmers; and vibrant rural areas by promoting employment, growth, social inclusion and local development in rural areas. The final objective concerns food safety: protect food and health quality by improving the response of European Union agriculture to societal demands on food and health, including safe, nutritious and sustainable food; reduce food waste; and improve animal welfare. This comprehensive list of policy objectives is carried over from the Farm to Fork Strategy and comprises the agricultural contribution to that strategy. They also are very much consistent with the policy objectives of the Europe and Central Asia countries discussed in the preceding sections.

### III.3.6. Food Safety

235. The European Commission's Food Safety policy is based on the White Paper on Food Safety,<sup>195</sup> and follows an integrated approach from farm to fork to ensure food safety and animal and plant health. The European Union General Food Law Regulation<sup>196</sup> and standards cover the entire food production and processing chain within the European Union, as well as imported and exported goods. The ultimate goal of the law is to provide a high degree of protection of public health, providing consumers with confidence and assurance that the food they buy is safe. The law also aims to guarantee fair practices in food trade and ensure the free movement of food and feed in the internal market. In order to ensure risk management decisions taken by the European Commission are science-based, the law established the European Food Safety Authority (EFSA)<sup>197</sup> in 2002. The EFSA provides scientific advice and communicates risks associated with the food chain to European Union Member States and consumers. The EFSA shares its scientific assessments and opinions publicly, enabling interested stakeholders from other countries, including FAO programme countries, to benefit from this information. It also provides a good practice example for the need for science to be non-biased and independent.

236. The competent authorities of the European Union Member States are responsible for the harmonization and enforcement of the General Food Law at national level through national food control systems to ensure that all operators' activities, regardless of their size, and all food and feed sold in the European Union markets, whether produced in the European Union or third countries, comply with relevant standards and requirements.<sup>198</sup> Food operators, by law, have the primary responsibility for ensuring that their business practices comply with the regulations and that their products are safe. If they fall short of the required standards, the competent national authorities are notified, and food or feed deemed unsafe has to be withdrawn from the market. In case of emergencies or crises, the

procedures outlined in the law are followed, and the flow of information on potential public health risks is managed through the Rapid Alert System for Food and Feed (RASFF).<sup>199</sup> The European Commission adopted a legislative proposal for a new single market programme for the period 2021–2027<sup>200</sup> that aims to help strengthen the governance of the single market, increase consumer protection and support the competitiveness of our industry, in particular small and medium enterprises. A fitness check on the General Food Law Regulation completed in 2018<sup>201</sup> gave a generally positive evaluation of its effectiveness, especially regarding the protection of human health and the smooth functioning of the internal market, but less so on addressing new concerns related to sustainability in general and food waste in particular.

237. Building a food chain that works for consumers, producers and the climate and environment is the main goal of the European Union's Farm to Fork Strategy.<sup>202</sup> Results from a Eurobarometer survey show that most Europeans (55 percent) have a high level of awareness on food safety. The survey results show that they are most likely to be concerned about antibiotic, hormone or steroid residues in meat (44 percent), followed by pesticide residues in food (39 percent), environmental pollutants in fish, meat or dairy (37 percent) and additives such as colours, preservatives or flavourings used in food or drinks (36 percent).<sup>203</sup> The excessive use of pesticides has multiple adverse effects on the environment and human health, while the misuse of antimicrobials can result in antimicrobial resistance, risking the health of humans, animals and plants. The specific targets of the Farm to Fork Strategy in terms of food safety include reduction by 50 percent in the overall use of chemical pesticides; reduction of the sales of antimicrobials for farmed animals and aquaculture by 50 percent; and halving per capita food waste at retail and consumer levels by 2030. The strategy also aims to empower consumers to make well-informed decisions by helping them better understand food safety, nutrition and healthy options, to promote greener food production, and to minimize food loss and waste. Plans include the

proposal of mandatory, harmonized front-of-pack nutrition-labelling and the development of a sustainable food-labelling framework that covers the nutritional, climate, environmental and social aspects of food products.

Nutrient profiles and health claims are planned to be stricter, and origin indication of certain products would be required. The European Union legislation on food contact materials is planned to be revised to improve food safety while reducing the environmental footprint. To achieve the objectives, current practices on food safety would need to be reconsidered, and the adoption of more sustainable production technologies and practices would be accelerated. Management of emerging food safety risks and the prevention of pests, diseases and antimicrobial resistance call for progressive and robust food safety control systems being put in place, with the appropriate legislation, building on innovation and new technologies.

238. The improvement of food safety systems is a shared ambition of the European Union and the Europe and Central Asia region countries. The progress of the European Union towards the goals of the Farm to Fork Strategy and Green Deal will affect and stimulate its trade partners to put in place strategies and policies that incentivize more sustainable practices as well. There is increasing interest from the countries in the region in food trade with the European Union, making it a key driver to improve food safety management and control procedures in the region and trading partner countries. Several countries in the region, such as Albania and Georgia, have taken the policy decision to align their legal frameworks with the European Union acquis. Azerbaijan and Turkey consider the legal requirements of the European Union when strengthening and drafting secondary regulations, while other countries, such as North Macedonia and Republic of Moldova, have almost completed the alignment process.

239. Other impacts of the European Union on food safety policy in the region occur through bilateral projects and discussions. The European Commission makes direct financial and technical contributions in the form of grants, programmes and projects to

strengthen food safety in numerous countries, sharing experiences from European Union programmes and policy developments.

The projects target a range of areas, including food safety policy development, food control system improvement, competitiveness of small and medium enterprises, and technical and scientific capacity development.

The European Union also is a member of the Codex Alimentarius Commission and contributes to the global governance of food safety and sustainable food systems, including through the FAO/WHO Regional Coordinating Committee for Europe and the SAVE FOOD global initiative on food loss and waste reduction.

240. It also should be noted that countries in Southern and Eastern Europe and in Western and Central Asia often are challenged by the need to demonstrate their compliance with the stringent regulatory requirements of the European Union. The most commonly observed impact of food safety requirements on trade is the rejection of consignments of agrifood products during border checks, mainly for reoccurring reasons.<sup>204</sup> Another common challenge arises in the modernization of food safety laws and regulations for international harmonization and/or accession to political–economic unions, such as the European Union. If the reforming country attempts to adopt exactly the same legal acts of a source country or union, without appropriately considering the domestic context or infrastructure, the legal act risks becoming ineffective and not proportionate. It also is possible that a new law or regulation borrowed from an external source might be so deeply linked to multiple obsolete and restrictive laws and regulations in force that it loses its intent and rationale. Similar challenges are observed in the adoption of new advanced technologies while the local infrastructure is not prepared to ensure that the new technology functions appropriately. Investigation of the underlying reasons for such challenges would enable the Europe and Central Asia countries to identify areas of improvement and make the necessary investments in infrastructure and capabilities to ensure the safety of food on domestic markets



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and to meet the food safety requirements of trading partners in export markets. The sharing of information and experience among countries, in addition to the sharing of European Union best practices, can be mutually beneficial.

### III.3.7. Reducing food loss and waste

241. As noted above, the Farm to Fork Strategy pays particular attention to the reduction of food loss and waste, which is seen as central to achieving sustainability. Food loss, which appears at various production stages, reduces overall food supply and, thereby, food security. It also implies a squandering of scarce productive resources in producing and distributing food that is not eventually consumed, with consequent unnecessary negative impacts on the environment. Food waste at the consumer and retail levels also implies the waste of resources, and it generates recycling and management problems that entail further unnecessary use of resources. Reducing food loss would make European Union food production more efficient and competitive, and reducing food waste would bring savings for consumers and operators. It also has a potentially important social dimension through the redistribution of food surpluses. Both food loss and waste, therefore, add to existing pressures on natural resources and an unnecessary addition to greenhouse gas emissions.

242. Addressing food loss and waste calls for public and private sector players to work together to better understand, identify and measure food loss and waste and to propose practical means of reducing it. All actors in the value chain, from farmers to consumers, need to work together to find appropriate solutions. In light of the fact that an estimated 20 percent of its food is wasted, the European Union is now committed to halving per capita food waste by 2030, as part of its SDG strategy, by proposing European Union-level targets for food waste reduction and by revising European Union rules on date marking (“use by” and “best before” dates).

243. The European Union Platform on Food Losses and Food Waste, established in 2016, brought together many European Union institutions, experts and stakeholders to act together in reducing food loss and waste. The FAO SAVE FOOD initiative aims at encouraging dialogue among industry, research, politics and civil society stakeholders on food loss – and effective measures to reduce it – and to raise public awareness of the impact of food waste. Only a very small number of countries in the Europe and Central Asia region have even started to develop food loss and waste reduction strategies. These strategies need to be put in place for Europe and Central Asia countries to produce and consume in a more efficient and sustainable way. FAO and the Turkish Ministry of Agriculture and Forestry recently have convened a meeting of high-level officials from Central Asia to establish a joint Food Loss and Waste Strategy Committee to oversee the development and implementation of a regional food loss and waste reduction programme and to support and monitor the implementation of food loss and waste reduction and management activities at the country level.



## ARMENIA

Legumes and Spices are sold at GUM Market.  
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# **FAO REGIONAL PRIORITY AREAS FOR ACTION FOR THE FUTURE**

244. As the countries are steering their efforts to achieve the SDGs at the national level, the ambition of the 2030 Agenda for Sustainable Development is increasingly calling for integrated programming and policy coherence that builds on synergies and minimizes trade-offs; cross-disciplinary interministerial and multistakeholder dialogue and coordination; new partnerships that can facilitate the engagement of all stakeholders in the achievement of the SDGs; and a strong focus on the principle of leaving no one behind to ensure that the needs of the most marginalized groups are addressed. This will be instrumental in maximizing the impact of the efforts and investment being geared towards sustainable development across the globe. The transformation of agriculture and food systems is crucial to the achievement of multiple SDGs, not just SDG 2.

245. The aim of this chapter is to identify FAO regional priority areas for intervention and action in food, agriculture and rural development. Focusing on the 2022–25 period, with an outlook to the longer-term priorities up to 2030 (linked to the 2030 Agenda for Sustainable Development) and in the light of the regional priorities for 2018–21, endorsed by the Thirty-second Session of the Regional Conference for Europe, four priority areas can be defined.

246. The regional priority areas identified consider the challenges that countries are facing due to the COVID-19 crisis. In this context, the FAO Regional Office for Europe and Central Asia recognizes the urgency of the implementation of the 2030 Agenda as key to building back better in the recovery from the COVID-19 pandemic, since it provides a comprehensive framework to address social, economic and environmental issues, taking account of their interconnected nature.

247. Partnerships, future interagency collaborations and enhanced policy dialogues are efficient tools supporting all priority areas. Partnerships with global, regional and local NGOs and civil society organizations, as well as academia and the private sector, also will help reinforce existing synergies

## IV.1. Formulating effective policies, promoting digital innovation, facilitating rural transformation for smallholders

248. It seems evident from the analysis above that effective policies that facilitate rural transformation are urgently needed in the Europe and Central Asia region. The challenges facing the large number of smallholders and the special problems of women and youth, especially in rural areas, call for action. Job creation in rural areas should be central in future policies to counter outmigration, as should facilitating cooperation among smallholders. These issues are especially important in the time of the COVID-19 pandemic and amid decreasing job opportunities and salaries and collapsing local labour markets. Besides managing specific problems, these actions also should focus on promoting digital agriculture and digital transformation in order to encourage innovation in agriculture and rural areas. By focusing on this priority, and especially on the reduction of poverty among smallholders and youth, SDG 1, SDG 2, SDG 5, SDG 8 and SDG 17 targets are addressed.

249. Promote digital innovation in agriculture. Modern food systems are entering a fundamentally new stage of technological development called digital agriculture. However, in many countries in Europe and Central Asia, the implementation of innovative and digital technologies in food systems is restrained by a lack of relevant research and development, education, information and communications technology infrastructure and digital skills among farmers and the rural population. The promotion of digitalization and innovative actions is much needed at all stages of food value chains. Businesses along the value chain

need to review, innovate and digitalize their food system contributions to optimize the output of food products in line with consumer demand. One particular challenge to be addressed is how to avoid leaving behind smallholders, the elderly and other vulnerable groups in the digital transformation.

250. Support the creation of institutional frameworks and governance for innovative food systems. National legislation in this area constantly should be developed, and it should be a “moving target.” Research and development and education in agriculture should be properly financed from public and private sources, and effective incentive systems for private investments should be established. The digital skills of policy makers, farm managers and the rural population in general should be strengthened significantly. The functioning of institutions should be improved, accompanied by appropriate capacity development. Lessons should be learned and good practices shared across sectors and borders. Knowledge and data should be shared to enable others to design tailored measures and practices and to implement them effectively in the short term.

251. Support reducing the imbalance in the development of urban and rural areas. With nearly one-third of the population living in rural areas, the Europe and Central Asia region remains highly reliant on its agriculture and food sector. However, limited rural employment opportunities is among the major drivers of the rural–urban migration, especially among youth and women, contributing to the decline of the skilled labour force and the ageing of the rural population. In line with FAO’s emphasis on leaving no one behind, creating new job opportunities in rural areas, especially for women and youth, is one of the most effective ways of reducing poverty in rural areas. These opportunities should be attractive for youth as engines of local development in a process of generational renewal and be accompanied by training and capacity development to develop business and technical skills.

252. Support the development of ICT infrastructure and digital skills in rural areas. This will contribute not only to increasing the productivity and sustainability of agriculture, but also to the modernization and revitalization of rural areas. Moreover, support for developing e-agriculture strategies, e-extension systems or e-farm registries could increase the efficiency of the whole sector in the long run.

253. Facilitate equal access to the benefits of innovations and digitalization of agriculture for smallholders and youth. This envisages both the development of extension services that enhance access to new technologies for smallholders and youth and the development of sound agrarian and rural policies that mitigate social and economic risks for the rural population through the adoption of sustainable technologies and the encouragement of diversification.

254. Support smallholders’ access to markets, finance and inputs. Smallholders in the Europe and Central Asia region generally lack access to proper markets, finance and inputs. Supporting such access options would make a major contribution to local development by assisting small farms and expanding job opportunities, both of which would help counter rural outmigration trends. Additionally, supporting the diversification of small farming activities would generate additional income streams through diversification and help make food systems more nutrition sensitive and climate smart.

255. Support inclusive value chains and the participation of family farms and smallholders. Helping family farms and smallholders participate in inclusive value chains will strengthen their capacities, competitiveness and livelihoods and make them more resilient. Increased and more efficient agricultural and food production also will make farmers in Europe and Central Asia more food secure.

256. Support cooperative actions and improve farm structures. Evidence shows that the majority of small and family farms are reluctant to cooperate. Supporting such actions would increase the collective competitiveness of these

farms and would help them better integrate into value chains. Such actions also should include the improvement of existing advisory services. Another and equally important way to increase the productivity and competitiveness of small farms is to support the development and implementation of land management instruments, such as land consolidation and land banking, that in a participatory planning process reduce land fragmentation and facilitate farm enlargement on a voluntary basis. The active use of state-owned agricultural land can make additional land available to small farms and young farmers. It also is important to ensure secure tenure rights as a precondition for private investment in agriculture and to support the development of agricultural land markets.

## **IV.2. Food system transformation supporting exploring new markets through the alignment of trade, food safety and sanitary and phytosanitary policies to meet WTO commitments and promote value chain development**

257. Supporting access to markets, including global markets, is a powerful driver for the development of food systems and for unlocking and realizing market potential locally, regionally and internationally. Many countries in Europe and Central Asia are prevented from participating in global value chains by their limited capacity to comply with the requirements of international trade agreements and global food safety and quality standards,

including those addressing sanitary, animal health and phytosanitary issues. The COVID-19 pandemic has made these issues even more important. Targeting these issues should be a high priority in the future so that the Europe and Central Asia region is more connected to global markets through international trade by meeting global safety and quality standards and by focusing on higher-value-added products. In doing so, SDG 1, SDG 2, SDG 5, SDG 8 and SDG 17 are especially highlighted.

258. *Strengthen institutional frameworks and capacities for food safety and animal and plant health and protection.* Strong institutional frameworks and capacities are needed to overcome challenges related to food safety and quality. Compliance with food safety and quality standards (global, regional and national) is of the utmost importance. This includes support for creating robust food control systems to allow full participation in global and local markets through legislation, regulatory schemes, infrastructure development and skills for national systems of food safety and quality standards.

259. *Support the improvement of food safety levels and capacities.* Countries in Europe and Central Asia need to focus on improving food safety for their own populations, ensuring that food produced and sold locally is safe. Governance structures and an enabling environment need to be put in place to improve the safety of domestically produced foods and to provide the essential public good of consumer health protection. Attention also should be given to expanding the range of food products that comply with international and regional food safety requirements, so that food exports can be increased.

260. *Support the development of agrifood trade competitiveness.* Countries of the Europe and Central Asia region aim to expand their agrifood exports to the European Union and elsewhere. Effective strategies are needed for enhancing agrifood trade competitiveness and diversifying exports. There is a related need to build national capacities to enhance policy formulation on international trade issues, including

market access, domestic support measures, technical barriers to trade, trade facilitation, WTO accession, and the effective use of WTO procedures.

261. *Support the production of high-value-added products.* The agrifood exports of many countries in the Europe and Central Asia region are mainly of unprocessed raw materials. Supporting the production and export of more processed, higher-value-added products through infrastructural development and the encouragement of investment would improve the agrifood trade performance of these countries and would enhance their integration into global value chains.

### IV.3. Promoting sustainable natural resources management, and sustainable production and resilience in agriculture, including mitigation and adaptation to climate change

262. Existing agricultural production practices in the Europe and Central Asia region often are unsustainable, and a structural transformation of food systems towards more sustainable models is needed. Changing climatic conditions, including extreme weather events, combined with outbreaks of pests and diseases and a reduction in biodiversity, are damaging the environment and human livelihoods. A transformation towards more sustainable food systems would improve the efficiency of the use, conservation and protection of natural resources and enhance the resilience of ecosystems and communities. Climate change

mitigation and adaptation strategies are key for future development and for achieving greater sustainability. Such an approach should include effective dissemination of information, the raising of awareness concerning sustainable development, and practical support for sound natural resources management activities. Addressing these challenges also would address SDG 1, SDG 2, SDG 6, SDG 12, SDG 13, SDG 14 and SDG 15 targets.

263. *Support the structural transformation of food systems towards more sustainable models.* Support for a transformation of current agricultural production practices is needed to achieve greater sustainability and more efficient use of resources, especially in light of the pressures on natural resources and the impacts of climate change. This should include effective dissemination of information and the raising of awareness concerning more sustainable farming systems and practical support for their implementation through relevant capacity development and the sharing of lessons learned, best practices, knowledge and data.

264. *Better address the sustainability of the food industry.* As with agriculture, the region's food industries also face challenges in improving the management of natural resources and in responding to climate change. They need to review and reformulate current measures and practices in relation to the use of chemicals, packaging materials, waste streams along value chains, antimicrobial resistance in food safety, plant health and animal health, such that their environmental impacts are reduced and that natural resources are used sustainably. Relevant capacity development and the sharing of lessons learned, best practices, knowledge and data with all entities along the farm to fork food value chains is needed.

265. *Disseminate data and knowledge to smallholders on sustainable farming practices.* Many farmers, especially smallholders, are not aware of the latest data and technologies related to sustainable farming practices. To encourage the uptake of innovative technologies and ideas, the dissemination of best practices and country-specific evidence is of utmost

importance. Improved rural institutions are needed, including extension and advisory services, vocational schools and training.

*266. Facilitate resilience in agriculture, forestry and other land-use sectors, including mitigating and adapting to climate change.* Support for increased resilience is a key element in climate change adaptation and mitigation. Risk management practices, contingency planning and post-disaster relief responses need to be adapted to the specific context of the Europe and Central Asia region.

*267. Raise awareness of sustainable development and support the development of governance capacity.* Sustainable development should be mainstreamed with adequate government capacities to make real changes happen locally. Biodiversity and nature conservation practices should be better promoted.

*268. Support the sound management of natural resources at farm, local and national levels.* The encouragement and promotion of sound natural resource management practices at all levels is key for effectively mitigating climate change and enhancing innovative, integrated and climate-smart food systems.

## IV.4. Addressing food insecurity and reduction of all forms of malnutrition

*269. Support reducing all forms of malnutrition.* The current food security situation in the ECA region is dominated by the prevalence of the triple burden of malnutrition – micronutrient deficiencies, undernutrition as well as overweight and obesity. More nutritious, sustainable and healthy diets need to be available and accessible along with the necessary changes in food consumption patterns and behaviours to adopt them. Support is needed to reduce all forms of malnutrition while also providing access to

safe and nutritious food for all. Information on healthy diets should be disseminated to raise awareness and encourage the desirable changes in dietary patterns.

For the poor, social protection networks may be needed to allow their access to safe and nutritious food. The importance of such actions has been underlined by the COVID-19 pandemic which has made proper nutrition even harder to achieve. These food security actions would especially contribute to meeting SDG1, SDG2, SDG3 and SDG12.

*270. Support enhancement of equitable access to safe and nutritious food and healthy diets for all.* Equitable and fair access to safe and nutritious food locally and regionally is a prerequisite for global food security.

*271. Support the dissemination of information on healthy diets.* Healthy food campaigns are needed from schools to workplaces to explain what constitutes a healthy diet and demonstrate how nutritious and safe food can be prepared or bought even under financial constraints. Connections to local production and organic product promotion may also serve as an effective tool for improving diets and making them more diverse. Drawing attention to diet-related non-communicable diseases in the Europe and Central Asia Region is a cross-cutting priority.

*272. Facilitate social protection networks for the poor, especially in rural areas.* The development of social protection networks in rural areas is one of the most effective means for connecting poor people into society, adhering to the principle of leaving no one behind.



# REFERENCES

## I. Introduction and background

1. **FAO.** 2021. *Strategic Framework 2022–2031*. Rome. [also available at <http://www.fao.org/3/ne577en/ne577en.pdf>].
2. **FAO.** 2021. The Director-General's Medium Term Plan 2022–25 and Programme of Work and Budget 2022–23. Rome. 161 pp. [also available at <http://www.fao.org/3/ne576en/ne576en.pdf>].
3. **FAO.** 2015. The Director-General's Medium Term Plan 2014–17 (reviewed) and Programme of Work and Budget 2016–17. Rome. 134 pp. [also available at <http://www.fao.org/3/a-mm710e.pdf>].
4. **FAO.** 2019. The Director-General's Medium Term Plan 2018–21 (reviewed) and Programme of Work and Budget 2020–21. Rome. 139 pp. [also available at <http://www.fao.org/3/my734en/my734en.pdf>].
5. **FAO.** 2020. Results and Priorities for FAO in the Region. ERC/20/5. Thirty-second Session of the FAO Regional Conference for Europe. 20 pp. [also available at <http://www.fao.org/3/nc229en/nc229en.pdf>].

## II. Regional manifestation of global trends

6. **FAO.** 2018. Sustainable food systems: Concept and framework. 8 pp. [also available at <http://www.fao.org/3/ca2079en/CA2079EN.pdf>].
7. Calculated from FAOSTAT data.
8. **World Bank.** 2020. Recession and growth under the shadow of a pandemic. July 6, 2020: Russia Economic Report 43. <https://www.worldbank.org/en/country/russia/publication/rer>
9. **OECD.** 2021. The COVID-19 crisis in Ukraine. 26 July 2021. 7 pp. <https://www.oecd.org/eurasia/competitiveness-programme/eastern-partners/COVID-19-CRISIS-IN-UKRAINE.pdf>
10. **EBRD.** 2021. Kyrgyz Republic overview. In: European Bank for Reconstruction and Development [online]. <https://www.ebrd.com/where-we-are/kyrgyz-republic/overview.html>
11. **World Bank.** 2020. Recession and growth under the shadow of a pandemic. July 6, 2020: Russia Economic Report 43. <https://www.worldbank.org/en/country/russia/publication/rer>
12. For example, see:
  - **World Bank.** 2020. Recession and growth under the shadow of a pandemic. July 6, 2020: Russia Economic Report 43. <https://www.worldbank.org/en/country/russia/publication/rer>
  - **World Bank.** 2021. The World Bank in Europe and Central Asia. In: The World Bank [online]. <https://www.worldbank.org/en/region/eca/overview>
13. **World Bank.** 2020. World Bank Predicts Sharpest Decline of Remittances in Recent History. In: World Bank News [online]. April 2020. <https://www.worldbank.org/en/news/press-release/2020/04/22/world-bank-predicts-sharpest-decline-of-remittances-in-recent-history>
14. **FAO.** 2020. Coronavirus disease 2019 [COVID-19] and family farming. 8 pp. [also available at <http://www.fao.org/3/cb0417en/CB0417EN.pdf>].
15. **FAO, IFAD, UNICEF, WFP & WHO.** 2020. The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets. Rome [available at <https://doi.org/10.4060/ca9692en>].

16. **IPBES.** 2018. The Regional Assessment Report on Biodiversity and Ecosystem Services for Europe and Central Asia. 894 pp. <https://ipbes.net/assessment-reports/eca>

17. **IPCC.** 2019. Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems. 906 pp. <https://www.ipcc.ch/srccl/>.

18. **FAO.** 2017. The State of Food and Nutrition Security in Europe and Central Asia. Rome. 80 pp. [also available at <http://www.fao.org/3/i8194e/i8194e.pdf>].

19. **IPBES.** 2018. The Regional Assessment Report on Biodiversity and Ecosystem Services for Europe and Central Asia. 894 pp. <https://ipbes.net/assessment-reports/eca>

20. **World Bank.** 2020. Fighting COVID-19: Europe and Central Asia Economic Update, Spring 2020. 96 pp. <https://openknowledge.worldbank.org/handle/10986/33476>.

21. **World Bank.** 2020. Fighting COVID-19: Europe and Central Asia Economic Update, Spring 2020. 96 pp. <https://openknowledge.worldbank.org/handle/10986/33476>

22. **FAO/IAEA.** 2010. Climate Change and the Expansion of Animal and Zoonotic Diseases – What is the Agency's Contribution? In: Joint FAO/IAEA Programme [online]. <http://www.naweb.iaea.org/nafa/aph/stories/2010-climate-change.html>.

23. **FAO.** 2020. Forecasting threats to the food chain affecting food security in countries and regions. Food Chain Crisis Early Warning Bulletin No. 36, July–September 2020. Rome. 72 pp. [also available at <http://www.fao.org/3/cb0160en/cb0160en.pdf>].

24. **FAO.** n.d. Climate change: Implications for food safety. 49 pp. [also available at <http://www.fao.org/3/i0195e/i0195e00.pdf>].

25. **FAO.** 2016. FAOSTAT. In: FAO [online]. <http://www.fao.org/faostat/en/>.

26. **FAO.** 2017. The State of Food and Nutrition Security in Europe and Central Asia. Rome. 80 pp. [also available at <http://www.fao.org/3/i8194e/i8194e.pdf>].

27. **FAO.** 2019. The State of Food and Agriculture 2019: Moving forward on food loss and waste reduction. Rome. 182 pp. [also available at <http://www.fao.org/3/ca6030en/ca6030en.pdf>].

28. **FAO.** 2016. Regional Strategic Review Paper: Europe and Central Asia. Budapest. 51 pp. [also available at <http://www.fao.org/3/i6102e/i6102e.pdf>].

29. **FAO.** 2018. The State of Food and Agriculture 2018: Migration, agriculture and rural development. Rome. 199 pp. [also available at <http://www.fao.org/3/i9549en/i9549en.pdf>].

30. **ILO.** 2017. What future for decent work in Europe and Central Asia: Opportunities and challenges. Tenth European Regional Meeting Istanbul, 2–5 October 2017. 82 pp. [https://www.ilo.org/wcmsp5/groups/public/-europe/-ro-geneva/documents/meetingdocument/wcms\\_567104.pdf](https://www.ilo.org/wcmsp5/groups/public/-europe/-ro-geneva/documents/meetingdocument/wcms_567104.pdf).

31. **FAO.** 2018. The State of Food and Agriculture 2018: Migration, agriculture and rural development. Rome. 199 pp. [also available at <http://www.fao.org/3/i9549en/i9549en.pdf>].

32. **FAO.** 2018. Regional Overview of Food Security and Nutrition in Europe and Central Asia 2018. Budapest. 112 pp. [also available at <http://www.fao.org/3/CA2703EN/CA2703EN.pdf>].

33. **FAO.** 2020. Empowering smallholders and family farms in Europe and Central Asia. Regional Synthesis Report 2019. Budapest. 166 pp. [also available at <http://www.fao.org/3/ca9586en/CA9586EN.pdf>].
34. **FAO.** 2019. Regional Overview of Food Security and Nutrition in Europe and Central Asia 2019. Structural Transformations of Agriculture for Improved Food Security, Nutrition and Environment. Budapest. 104 pp. [also available at <http://www.fao.org/3/ca7153en/ca7153en.pdf>].
35. **FAO.** 2018. The future of food and agriculture: Alternative pathways to 2050. Summary version. Rome. 64 pp. [also available at <http://www.fao.org/3/CA1553EN/ca1553en.pdf>].
36. **FAO.** 2019. Regional Overview of Food Security and Nutrition in Europe and Central Asia 2019. Structural Transformations of Agriculture for Improved Food Security, Nutrition and Environment. Budapest. 104 pp. [also available at <http://www.fao.org/3/ca7153en/ca7153en.pdf>].
37. **Independent Group of Scientists appointed by the Secretary-General.** 2019. Global Sustainable Development Report 2019: The Future is Now – Science for Achieving Sustainable Development. New York, United Nations. 252 pp. [https://sustainabledevelopment.un.org/content/documents/24797GSDR\\_report\\_2019.pdf](https://sustainabledevelopment.un.org/content/documents/24797GSDR_report_2019.pdf).
38. **International Sustainability Unit.** 2015. Food in an urbanized world. The Role of City Region Food Systems in Resilience and Sustainable Development. <http://www.fao.org/urban-food-actions/resources/resources-detail/en/c/1043628/>.
39. **World Bank.** 2019. World Development Report 2020. Trading for Development in the Age of Global Value Chains. Grey Cover Draft. June 24, 2019. <https://www.worldbank.org/en/publication/wdr2020>.
40. **OECD.** 2013. Agricultural Innovation Systems: A framework for analysing the role of government. Paris. <https://www.oecd.org/publications/agricultural-innovation-systems-9789264200593-en.htm>
41. **FAO.** 2018. FAO, European Union see prospects for a strong digital agriculture. In: FAO Regional Office for Europe and Central Asia News [online]. <http://www.fao.org/europe/news/detail-news/en/c/1118399/>.
42. **FAO.** 2019. Digital technologies in agriculture and rural areas. Briefing paper. Rome. 26 pp. [also available at <http://www.fao.org/3/ca4887en/ca4887en.pdf>].
43. **FAO.** 2018. Thirty-first Session of the FAO Regional Conference for Europe. Voronezh, Russian Federation, 16–18 May 2018. <http://www.fao.org/about/meetings/erc31/en/>.
44. **OECD.** 2020. Global value chains connect producers to consumers across the world. In: Global value chains and agriculture [online]. <https://www.oecd.org/agriculture/topics/global-value-chains-and-agriculture/>.
45. **World Bank.** 2020. The new face of trade. In World Development Report 2020. Trading for Development in the Age of Global Value Chains. [https://openknowledge.worldbank.org/bitstream/handle/10986/32437/9781464814570\\_Ch01.pdf](https://openknowledge.worldbank.org/bitstream/handle/10986/32437/9781464814570_Ch01.pdf)
46. **FAO.** 2021. Smallholders and family farming. In: Family Farming Knowledge Platform [online]. <http://www.fao.org/family-farming/themes/small-family-farmers/en/>.
47. **FAO.** 2020. Report of the Thirty-second Session of the FAO Regional Conference for Europe. Tashkent, Uzbekistan, 2–4 November 2020. 27 pp. [also available at <http://www.fao.org/3/ne289en/ne289en.pdf>].
48. **FAO.** 2018. The future of food and agriculture: Alternative pathways to 2050. Summary version. Rome. 64 pp. [also available at <http://www.fao.org/3/CA1553EN/ca1553en.pdf>].
49. **FAO.** 2018. The future of food and agriculture: Alternative pathways to 2050. Summary version. Rome. 64 pp. [also available at <http://www.fao.org/3/CA1553EN/ca1553en.pdf>].
50. **FAO, IFAD, UNICEF, WFP & WHO.** 2020. The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets. Rome. [also available at <https://doi.org/10.4060/ca9692en>].
51. **FAO.** 2018. The future of food and agriculture: Alternative pathways to 2050. Summary version. Rome. 64 pp. [also available at <http://www.fao.org/3/CA1553EN/ca1553en.pdf>].
52. **FAO.** 2019. Regional Overview of Food Security and Nutrition in Europe and Central Asia 2019. Structural Transformations of Agriculture for Improved Food Security, Nutrition and Environment. Budapest. 104 pp. [also available at <http://www.fao.org/3/ca7153en/ca7153en.pdf>].
53. **ICMSF.** 2020. ICMSF opinion on SARS-CoV-2 and its relationship with food safety. 8 pp. [https://www.icmsf.org/wp-content/uploads/2020/09/ICMSF2020Letterhead-COVID-19-opinion-final-03-Sept-2020.BF\\_.pdf](https://www.icmsf.org/wp-content/uploads/2020/09/ICMSF2020Letterhead-COVID-19-opinion-final-03-Sept-2020.BF_.pdf).
54. **FAO.** 2020. Food safety in the time of COVID-19. Rome. 5 pp. [also available at <http://www.fao.org/documents/card/en/c/ca8623en>].
55. **Worldometer.** 2021. Current world population. In: Worldometer [online]. <https://www.worldometers.info/world-population>
56. **OECD.** 2019. Innovation, productivity and sustainability in food and agriculture: Main findings from country reviews and policy lessons. OECD Working Party on Agricultural Policies and Markets. [https://www.oecd-ilibrary.org/agriculture-and-food/innovation-productivity-and-sustainability-in-food-and-agriculture\\_c9c4ec1den](https://www.oecd-ilibrary.org/agriculture-and-food/innovation-productivity-and-sustainability-in-food-and-agriculture_c9c4ec1den).
57. **ITC.** 2021. ITC Trade Map. In: International Trade Centre [online]. <https://www.trademap.org/>.
58. **Russian Federation.** 2017. Federal Program for Scientific and Technical Development of Agriculture for 2017–25. In: Consultant Plus [online]. [http://www.consultant.ru/document/cons\\_doc\\_LAW\\_223631/](http://www.consultant.ru/document/cons_doc_LAW_223631/).
59. **Republic of Kazakhstan.** 2010. State Program on Forced Industrial-Innovative Development of Kazakhstan for 2010–2014. In: National Academy of Education named after Alynsarin [online]. <https://nao.kz/blogs/view/2/57?lang=ru>.
60. **TÜBİTAK.** 2010. The Republic of Turkey's Model of Instigating an STI Impetus. S&T and Innovation in the Republic of Turkey. [https://www.tubitak.gov.tr/tubitak\\_content\\_files/BTYPD/arsiv/Special\\_Brief\\_Guncel19\\_Web.pdf](https://www.tubitak.gov.tr/tubitak_content_files/BTYPD/arsiv/Special_Brief_Guncel19_Web.pdf)
61. **Presidency of the Republic of Turkey Investment Office.** 2020. Why invest in Turkish agrifood industry? 46 pp. <https://www.invest.gov.tr/tr/library/publications/lists/investpublications/tarim-gida-sektoru-raporu.pdf>.
62. **ITU & FAO.** 2020. Status of digital agriculture in 18 countries of Europe and Central Asia. 102 pp. [also available at <http://www.fao.org/publications/card/en/c/CA9578EN/>].
63. **World Bank.** 2021. Digital CASA - Kyrgyz Republic. In: The World Bank [online]. <https://projects.worldbank.org/en/projects-operations/project-detail/P160230>.
64. **OECD.** 2019. Innovation, productivity and sustainability in food and agriculture: Main findings from country reviews and policy lessons. OECD Working Party on Agricultural Policies and Markets. <https://www.oecd-ilibrary.org/sites/c9c4ec1den/index.html?itemId=/content/publication/c9c4ec1den>.
65. **IMF.** 2019. World economic outlook 2019. Growth slowdown, precarious recovery. 216 pp. <https://www.imf.org/~e/media/Files/Publications/WEO/2019/April/English/text.ashx?la=en>.
66. **FAO.** 2016. Land resources and food security of Central Asia and Southern Caucasus (2016). 434 pp. [also available at <http://www.fao.org/3/i5914b/i5914b.pdf>].
67. **FAO.** 2016. Land resources and food security of Central Asia and Southern Caucasus (2016). 434 pp. [also available at <http://www.fao.org/3/i5914b/i5914b.pdf>].
68. **UNEP.** 2019. Global Environment Outlook Geo-6: Healthy planet, healthy people. 745 pp. <https://wedocs.unep.org/20.500.11822/27539>.
69. **FAO.** 2016. Land resources and food security of Central Asia and Southern Caucasus (2016). 434 pp. [also available at <http://www.fao.org/3/i5914b/i5914b.pdf>].

70. **Turkish Statistical Institute.** 2021. Turkstat Organic Crop production/ Agricultural Land Data. In: Turkish Statistical Institute [online]. <http://www.turkstat.gov.tr/UstMenu.do?metod=temelst>.

71. **UNEP.** 2011. Organic Agriculture: A step towards the Green Economy in the Eastern Europe, Caucasus and Central Asia region. Case studies from Armenia, Moldova and Ukraine. 52 pp. <https://europa.eu/capacity4dev/file/15878/download?token=OjHZSbaQ>.

72. **UNECE.** 2010. Environmental performance reviews: Uzbekistan. Second review. New York and Geneva. 27 pp. [http://www.unece.org/fileadmin/DAM/env/epr/epr\\_studies/uzbekistan%2011%20e.pdf](http://www.unece.org/fileadmin/DAM/env/epr/epr_studies/uzbekistan%2011%20e.pdf).

73. **Dronin, N. & Kirilenko, A.** 2011. Climate change, food stress, and security in Russia. *Regional Environmental Change*, 11: 167–178. <https://link.springer.com/article/10.1007/s10113-010-0165-x>.

74. **FAO.** 2017. The State of Food and Nutrition Security in Europe and Central Asia 2017. 80 pp. [also available at <http://www.fao.org/3/i8194e/i8194e.pdf>]. P. 1.

75. **FAO.** 2017. The State of Food and Nutrition Security in Europe and Central Asia 2017. 80 pp. [also available at <http://www.fao.org/3/i8194e/i8194e.pdf>]. P. 53.

76. **FAO.** 2017. The State of Food and Nutrition Security in Europe and Central Asia 2017. 80 pp. [also available at <http://www.fao.org/3/i8194e/i8194e.pdf>]. P. 30.

77. **FAO.** 2013. Food losses and waste in Turkey. 71 pp. Paper prepared within the "Food Losses and Waste in Europe and Central Asia" component of the Agrarian Structures Initiative. [also available at <http://www.fao.org/3/a-au824e.pdf>].

78. **FAO.** 2014. Reduction of food losses and waste in Europe and Central Asia for improved food security and agrifood chain efficiency. Paper prepared within the "Food Losses and Waste in Europe and Central Asia" component of the Agrarian Structures Initiative. Synthesis Report of country studies ordered and submitted to FAO [2013]. [also available at <http://www.fao.org/3/au844e/au844e.pdf>]. P. 5.

79. **FAO.** 2017. The State of Food and Nutrition Security in Europe and Central Asia 2017. 80 pp. [also available at <http://www.fao.org/3/i8194e/i8194e.pdf>]. P. 53.

80. **FAO.** 2014. Reduction of food losses and waste in Europe and Central Asia for improved food security and agrifood chain efficiency. Paper prepared within the "Food Losses and Waste in Europe and Central Asia" component of the Agrarian Structures Initiative. Synthesis Report of country studies ordered and submitted to FAO [2013]. [also available at <http://www.fao.org/3/au844e/au844e.pdf>]. P. 8.

81. **FAO.** 2020. Food loss and waste reduction campaign of FAO and Turkey takes off. In: SAVE FOOD: Global Initiative on Food Loss and Waste Reduction [online]. <http://www.fao.org/save-food/news-and-multimedia/news/news-details/en/c/1276400/>.

82. **FAO.** 2020. SAVE FOOD: Global Initiative on Food Loss and Waste Reduction. <http://www.fao.org/save-food/news-and-multimedia/news/en/>

### III. Trends, challenges and drivers by subregion in Europe and Central Asia

83. The Food Security Doctrine of the Russian Federation, adopted in 2010, set minimal requirements for local production's share of the total supply of the main agricultural commodities. These were expanded in the new Food Security Doctrine adopted in 2020, which also focused on increased production, including production in the regions with the least favourable conditions for agriculture. Other countries in the Caucasus, Central Asia and Eastern Europe also adopted the same approach by signing the Food Security Concept of the CIS countries (adopted 19 December 2010), which declared that food self-sufficiency is fundamental for food security and set minimal requirements for share of domestic production in total resources of main commodities (<https://tsvps.gov.ru/tsvps-docs/ru/news/files/3143/>

concept.pdf). In most countries of the Caucasus, Central Asia and Eastern Europe region, subsidies to producers are seen as the main instrument to achieve these goals.

84. In response to Western economic sanctions, Russian Federation decreed a ban on agricultural products and foodstuffs from the European Union, United States of America, Norway, Canada and Australia on 6 August 2014.

85. Total budgetary support estimate in United States dollars. Source: OECD PSE/CSE database [OECD. 2020. Agricultural Policy Monitoring and Evaluation 2020. Paris. <https://doi.org/10.1787/928181a8-en>].

86. **OECD.** 2020. Agricultural Policy Monitoring and Evaluation 2020. Paris. <https://doi.org/10.1787/928181a8-en>.

87. **FAO.** 2018. Review of agricultural trade policies in the post-Soviet countries, 2016–2017. Summary report. Rome. 68 pp. [also available at <http://www.fao.org/3/CA0879EN/ca0879en.pdf>].

88. **FAO.** 2020. Review of agricultural trade policies in the post-Soviet countries, 2017–2018. Rome. 160 pp. [also available at <http://www.fao.org/3/ca7674en/CA7674EN.pdf>].

89. For Turkey, the source is FAOSTAT. For the other countries, the source is: FAO. 2020. Review of agricultural trade policies in the post-Soviet countries, 2017–2018. Rome. 160 pp. [also available at <http://www.fao.org/3/ca7674en/CA7674EN.pdf>].

90. Azerbaijan, Belarus, Turkmenistan and Uzbekistan still are not members of the World Trade Organization.

91. **FAO.** 2020. Review of agricultural trade policies in the post-Soviet countries, 2017–2018. Rome. 160 pp. [also available at <http://www.fao.org/3/ca7674en/CA7674EN.pdf>].

92. **FAO.** 2020. Review of agricultural trade policies in the post-Soviet countries, 2017–2018. Rome. 160 pp. [also available at <http://www.fao.org/3/ca7674en/CA7674EN.pdf>].

93. Georgia, Republic of Moldova and Ukraine signed Association Agreements, including Deep and Comprehensive Free Trade Areas (DCFTA), in 2014. The DCFTAs with Georgia and Republic of Moldova were applied provisionally in the same year of 2014. In 2016, after the ratification procedures were completed, the Association Agreements and the DCFTAs entered into full force. In the case of Ukraine, the provisional application of the DCFTA began in January 2016, while from April 2014 until the end of December 2015, the European Union autonomous trade preferences were in place, fully replicating the conditions for market access within the first year of the DCFTA. The Association Agreement between Ukraine and the European Union entered into force in 2017.

94. **FAO.** 2020. Trade policy review in Europe and Central Asia. Quarterly Bulletin No. 1. Rome. 19 pp. [also available at <http://www.fao.org/3/ca9102en/CA9102EN.pdf>].

95. All references to Kosovo should be understood to be in the context of United Nations Security Council resolution 1244 (1999).

96. **Republic of Turkey Ministry of Trade.** 2021. Applicable STAs [in Turkish]. In: T.C. Ticaret Bakanlığı [online]. <https://ticaret.gov.tr/dis-lisikiler/serbest-ticaret-anlasmalari/yurur-lukie-bulunan-stalar>.

97. **Anadolu Ajansi.** 2021. Minister Pakdemirli: Agricultural supports will increase to 22 billion liras in 2020 [in Turkish]. In: Anadolu Ajansi [online]. <https://www.aa.com.tr/tr/politika/bakan-pakdemirli-tarimsal-destekler-2020de-22-milyar-liraya-cikacak/1643693>.

98. **Presidency of the Republic of Turkey Investment Office.** 2020. Why invest in Turkish agrifood industry? 46 pp. <https://www.invest.gov.tr/tr/library/publications/lists/investpublications/tarim-gida-sektoru-raporu.pdf>.

99. "EBA" refers to the Enabling the Business of Agriculture score. See <https://eba.worldbank.org/> for more. The scores range from 0 to 100, with 100 meaning the highest performance.

100. "GCI" refers to the Global Competitiveness Index Score. For more, see: <https://www.weforum.org/reports/how-to-end-a-decade-of-lost-productivity-growth>. Scores range from 0 to 100, with 100 meaning the highest performance. "ICT" refers to information and communications technology.

101. • **OECD**. 2020. Agricultural Policy Monitoring and Evaluation 2020. Paris. <https://doi.org/10.1787/928181a8-en>.
- **World Bank**. 2020. World Development Report 2020: Trading for Development in the Age of Global Value Chains. Washington, DC. <https://elibrary.worldbank.org/doi/abs/10.1596/978-1-4648-1457-0>.
102. **FAO**. 2019. Regional Overview of Food Security and Nutrition in Europe and Central Asia 2019. Structural Transformations of Agriculture for Improved Food Security, Nutrition and Environment. Budapest. 104 pp. [also available at <http://www.fao.org/3/ca7153en/ca7153en.pdf>].
103. Final workshop of the pilot study on agricultural policy monitoring in six post-Soviet countries. In: FAO Markets and Trade [online]. <http://www.fao.org/economic/est/est-events-new/final-workshop-of-the-pilot-study-on-agricultural-policy-monitoring-in-six-post-soviet-countries/en/>.
104. **World Bank**. 2019. Doing business 2020. Washington, DC. <https://elibrary.worldbank.org/doi/abs/10.1596/978-1-4648-1440-2>.
105. **World Bank**. 2020. World Development Report 2020: Trading for development in the age of global value chains. Washington, DC. P. 118. <https://documents1.worldbank.org/curated/en/310211570690546749/pdf/World-Development-Report-2020-Trading-for-Development-in-the-Age-of-Global-Value-Chains.pdf>.
106. **Searchinger, T.D., Malins, C., Dumas, P., Baldock, D., Glauber, G., Jayne, T., Huang, J. & Marenya, P.** 2020. Revising public agricultural support to mitigate climate change. Working paper, Development Knowledge and Learning. Washington, DC. <https://openknowledge.worldbank.org/handle/10986/33677>.
107. **World Bank**. 2020. Fighting COVID-19: Europe and Central Asia Economic Update. Spring 2020. Washington, DC. <https://elibrary.worldbank.org/doi/abs/10.1596/978-1-4648-1564-5>.
108. **FAO**. 2020. Europe and Central Asia: Regional food market situation and policy bulletin in response to the COVID-19 pandemic. Rome. [also available at <http://www.fao.org/documents/card/en/c/cb0450en>].
109. "... governments made overtures for improving demand for domestic agrifood goods." OECD. 2020. Agricultural Policy Monitoring and Evaluation 2020. Paris. <https://doi.org/10.1787/928181a8-en>.
110. "many questions were raised regarding major economies' large farm support packages in response to the crisis" (special meeting of the World Trade Organization's Committee on Agriculture in June 2020). WTO. 2020. COVID-19 farm support packages and export-restrictive measures under scrutiny. In: World Trade Organization [online]. [https://www.wto.org/english/news\\_e/news20\\_e/agri\\_18jun20\\_e.htm](https://www.wto.org/english/news_e/news20_e/agri_18jun20_e.htm)
111. **Fan, S.** 2020. Rethinking of Food Systems for the Post-COVID World. Online presentation on FBII platform. 13 August 2020. <https://fbii.foodbanking.org/fbii-sessions/rethinking-food-systems-for-a-post-covid-world/>.
112. **FAO**. 2021. Turkey at a glance. In: FAO in Turkey [online]. <http://www.fao.org/turkey/fao-in-turkey/turkey-at-a-glance/en/>.
113. **FAO**. 2020. Review of agricultural trade policies in the post-Soviet countries 2017–2018. Rome. 160 pp. [also available at <http://www.fao.org/3/ca7674en/CA7674EN.pdf>].
114. **FAO**. 2020. Review of agricultural trade policies in the post-Soviet countries 2017–2018. Rome. 160 pp. [also available at <http://www.fao.org/3/ca7674en/CA7674EN.pdf>].
115. **World Bank**. 2020. Fighting COVID-19: Europe and Central Asia Economic Update. Spring 2020. Washington, DC. <https://elibrary.worldbank.org/doi/abs/10.1596/978-1-4648-1564-5>.
116. **TÜBİSAD**. 2021. Reports. In: TÜBİSAD [online]. <http://www.tubisad.org.tr/en/library/reports-list/Reports/133/0/0>.
117. **Shodiev, H.** 2020. Digital CASA and Tajikistan. When to expect high-speed and cheap internet [in Russian]. In: ASIA-Plus [online]. <https://asiaplusj.info/ru/news/tajikistan/economic/20200806/digital-casa-i-tadzhikistan-kogda-zhdat-skorostnogo-i-deshyovogo-interneta>.
118. **FAO**. 2020. Empowering smallholders and family farms in Europe and Central Asia. Regional Synthesis Report 2019. Budapest. [also available at <http://www.fao.org/documents/card/en/c/ca9586en>].
119. **FAO**. 2020. Empowering smallholders and family farms in Europe and Central Asia. Regional Synthesis Report 2019. Budapest. [also available at <http://www.fao.org/documents/card/en/c/ca9586en>].
120. **Turkish Statistical Institute**. 2021. <http://www.turkstat.gov.tr/PreHaberBultenleri.do?id=24869>.
121. **World Bank**. 2020. World Development Report 2020: Trading for Development in the Age of Global Value Chains. Washington, DC. 293 pp. <https://documents1.worldbank.org/curated/en/310211570690546749/pdf/World-Development-Report-2020-Trading-for-Development-in-the-Age-of-Global-Value-Chains.pdf>.
122. **OECD**. 2019. Monitoring the Development of agricultural Co-operatives in Kazakhstan. Paris. 59 pp. <https://www.oecd.org/eurasia/competitiveness-programme/central-asia/Kazakhstan-Monitoring-Agricultural-Co-operatives-2019-EN.pdf>. P. 9.
123. **OECD & FAO**. 2016. OECD–FAO guidance for responsible agricultural supply chains. Paris. <https://www.oecd.org/daf/inv/investment-policy/rbc-agriculture-supply-chains.htm>.
124. **OECD & FAO**. 2016. OECD–FAO guidance for responsible agricultural supply chains. Paris. <https://www.oecd.org/daf/inv/investment-policy/rbc-agriculture-supply-chains.htm>.
125. **OECD**. 2020. Food supply chains and COVID-19: Impacts and policy lessons. <https://www.oecd.org/coronavirus/policy-responses/food-supply-chains-and-covid-19-impacts-and-policy-lessons-71b57aea/>.
126. **OECD**. 2020. Food supply chains and COVID-19: Impacts and policy lessons. <https://www.oecd.org/coronavirus/policy-responses/food-supply-chains-and-covid-19-impacts-and-policy-lessons-71b57aea/>.
127. **FAO**. 2020. Coronavirus disease 2019 (COVID-19) and family farming. Rome. 9 pp. [also available at <http://www.fao.org/documents/card/en/c/cb0417en>].
128. **World Bank**. 2020. Fighting COVID-19: Europe and Central Asia Economic Update, Spring 2020. 96 pp. <https://openknowledge.worldbank.org/handle/10986/33476>.
129. **FAO**. 2020. Coronavirus disease 2019 (COVID-19) and family farming. Rome. 9 pp. [also available at <http://www.fao.org/documents/card/en/c/cb0417en>].
130. **FAO**. 2017. The State of Food and Nutrition Security in Europe and Central Asia. Rome. 80 pp. [also available at <http://www.fao.org/3/i8194e/i8194e.pdf>]. P. 16.
131. **FAO**. 2021. Suite of food security indicators. In: FAOSTAT [online]. <http://www.fao.org/faostat/ru/#data/FS>.
132. **FAO**. 2019. Regional Overview of Food Security and Nutrition in Europe and Central Asia 2019. Structural Transformations of Agriculture for Improved Food Security, Nutrition and Environment. Budapest. 104 pp. [also available at <http://www.fao.org/3/ca7153en/ca7153en.pdf>].
133. **FAO**. 2017. The State of Food and Nutrition Security in Europe and Central Asia. Rome. 80 pp. [also available at <http://www.fao.org/3/i8194e/i8194e.pdf>]. P. 6.
134. **FAO**. 2021. Suite of food security indicators. In: FAOSTAT [online]. <http://www.fao.org/faostat/ru/#data/FS>.
135. **FAO**. 2021. Suite of food security indicators. In: FAOSTAT [online]. <http://www.fao.org/faostat/ru/#data/FS>.
136. **FAO**. 2017. The State of Food and Nutrition Security in Europe and Central Asia. Rome. 80 pp. [also available at <http://www.fao.org/3/i8194e/i8194e.pdf>]. P. 11.
137. **OECD**. 2020. COVID-19 crisis response in Central Asia. <https://www.oecd.org/coronavirus/policy-responses/covid-19-crisis-response-in-central-asia-5305f172/>.
138. **OECD**. 2020. COVID-19 crisis response in Central Asia. <https://www.oecd.org/coronavirus/policy-responses/covid-19-crisis-response-in-central-asia-5305f172/>.

139. **OECD.** 2020. COVID-19 crisis response in Eastern Partner countries. <http://www.oecd.org/coronavirus/policy-responses/covid-19-crisis-response-in-eu-eastern-partner-countries-7759afa3/#back-endnotea0z8>.
140. **Interstate Statistical Committee of the Community of Independent States.** 2020. Socio-Economic Situation of the Community of Independent States Member-Countries. P. 12.
141. **Interstate Statistical Committee of the Community of Independent States.** 2020. Socio-Economic Situation of the Community of Independent States Member-Countries. P. 33–35.
142. **Interstate Statistical Committee of the Community of Independent States.** 2020. Socio-Economic Situation of the Community of Independent States Member-Countries. P. 40.
143. **OECD.** 2020. COVID-19 crisis response in Eastern Partner countries. <http://www.oecd.org/coronavirus/policy-responses/covid-19-crisis-response-in-eu-eastern-partner-countries-7759afa3/#back-endnotea0z8>.
144. **FAO & WFP.** 2020. Tajikistan COVID-19 and Food Security – Monthly Update, June 2020. (also available at <https://reliefweb.int/report/tajikistan/tajikistan-covid-19-and-food-security-monthly-update-june-2020>).
145. **FAO & WFP.** 2020. Tajikistan COVID-19 and Food Security – Monthly Update, June 2020. (also available at <https://reliefweb.int/report/tajikistan/tajikistan-covid-19-and-food-security-monthly-update-june-2020>).
146. **OECD.** 2020. COVID-19 crisis response in Central Asia. <https://www.oecd.org/coronavirus/policy-responses/covid-19-crisis-response-in-central-asia-5305f172/>.
147. **FAO & WFP.** 2020. Tajikistan COVID-19 and Food Security – Monthly Update, June 2020. (also available at <https://reliefweb.int/report/tajikistan/tajikistan-covid-19-and-food-security-monthly-update-june-2020>).
148. **FAO.** 2020. Forecasting threats to the food chain affecting food security in countries and regions. Food Chain Crisis Early Warning Bulletin. No. 36, July–September 2020. Rome. (also available at <http://www.fao.org/3/cb0160en/cb0160en.pdf>).
149. **FAO.** 2020. Forecasting threats to the food chain affecting food security in countries and regions. Food Chain Crisis Early Warning Bulletin. No. 36, July–September 2020. Rome. (also available at <http://www.fao.org/3/cb0160en/cb0160en.pdf>).
150. **FAO.** 2017. Antimicrobial resistance (AMR): the loss of a major defence to the emerging challenge. European Commission on Agriculture (ECA) Fortieth Session, Budapest, Hungary, 27–28 September 2017. (also available at <http://www.fao.org/publications/card/en/c/33fc8e61-e3d9-4689-a837-c67490625935/>).
151. **WHO.** 2021. Central Asian and European Surveillance of Antimicrobial Resistance (CAESAR). In: WHO Regional Office for Europe [online]. <https://www.euro.who.int/en/health-topics/disease-prevention/antimicrobial-resistance/surveillance/central-asian-and-european-surveillance-of-antimicrobial-resistance-caesar>.
152. **Russian Statistics Service.** 2021. Population of the Russian Federation by municipalities [in Russian]. In: Russian Statistics Service [online]. <https://rosstat.gov.ru/compendium/document/13282>.
153. Given in terms of the international poverty line of USD 1.90 per day per capita. For more information, see <http://povertydata.worldbank.org/poverty/home>.
154. **Knoema.** 2021. Proportion of poor people at the rural poverty line [In Russian]. In: Knoema [online]. <https://knoema.ru/atlas/ranks/Уровень-бедности-по-сельскому-порогу-бедности>
155. **World Bank.** 2018. Moving for prosperity: Global migration and labor markets [overview]. Policy research report. Washington, DC. <https://openknowledge.worldbank.org/bitstream/handle/10986/29806/211281ov.pdf>.
156. **World Bank.** 2020. World Bank predicts sharpest decline of remittances in recent history. In: The World Bank News [online]. 22 April 2020. <https://www.worldbank.org/en/news/press-release/2020/04/22/world-bank-predicts-sharpest-decline-of-remittances-in-recent-history>.
157. **Testaverde, M.** 2020. Social protection for migrants during the COVID-19 crisis: The right and smart choice. In: World Bank Blogs [online]. 28 April 2020. <https://blogs.worldbank.org/voices/social-protection-migrants-during-covid-19-crisis-right-and-smart-choice>.
158. **World Bank.** 2020. World Bank predicts sharpest decline of remittances in recent history. In: The World Bank News [online]. 22 April 2020. <https://www.worldbank.org/en/news/press-release/2020/04/22/world-bank-predicts-sharpest-decline-of-remittances-in-recent-history>.
159. **Asian Development Bank.** 2021. Tracking COVID-19's devastating toll on Asia's remittances. In: Asian Development Blog [online]. <https://blogs.adb.org/blog/tracking-covid-19-s-devastating-toll-asia-s-remittances>.
160. **Vedmosti.** 2021. Experts estimate that labour migrants in Russia do not receive 40-50% of their earnings. In: Vedmosti [online]. <https://www.vedmosti.ru/society/articles/2020/11/29/848719-zamesit-gastarbaiterov>.
161. **FAO.** 2020. Empowering smallholders and family farms in Europe and Central Asia. Regional Synthesis Report 2019. Budapest. (also available at <http://www.fao.org/documents/card/en/c/ca9586en>).
162. BHAS, 2018b; INSTAT, 2018; MAKSTAT, 2017.
163. ASK, 2015; FSS 2019; Eurostat, 2017a; MONSTAT, 2019; SORS, 2019.
164. Eurostat, 2018
165. **FAO.** 2017. The State of Food and Nutrition Security in Europe and Central Asia. Rome. 80 pp. (also available at <http://www.fao.org/3/i8194e/i8194e.pdf>).
166. **FAO.** 2019. Law on Food Safety in Serbia. In: FAOLEX [online]. <http://www.fao.org/faolex/results/details/en/c/LEX-FAOC100429>. The law governs all aspects of production, circulation, control and consumption of food; general conditions for ensuring the safety of food and feed; rights and responsibilities of persons performing food and feed businesses; early warning systems; and hygiene and quality of food and feed. The law does not apply to primary food production and preparation, handling, and storage of food for private domestic use.
167. For more, see: <http://fva.gov.mk/index.php/mk/ahv>.
168. **WTO.** 2019. Trade policy review: The Republic of North Macedonia. Report by the Secretariat. [https://www.wto.org/english/tratop\\_e/tpr\\_e/s390\\_e.pdf](https://www.wto.org/english/tratop_e/tpr_e/s390_e.pdf).
169. **FAO.** 2019. Law on Food Safety in Serbia. In: FAOLEX [online]. <http://www.fao.org/faolex/results/details/en/c/LEX-FAOC100429>
170. For more, see: [https://mek.gov.me/en/WTO/LIBRARY/tg\\_actual\\_legislation/Sanitary\\_measures/Food\\_safety](https://mek.gov.me/en/WTO/LIBRARY/tg_actual_legislation/Sanitary_measures/Food_safety)
171. **ISO.** 2018. ISO survey of certifications to management system standards. In: ISO Standards Development [online]. <https://isotc.iso.org/livelink/livelink?func=ll&objid=18808772&objAction=browse&viewType=1>.
172. **Vesna, P., Predrag, V. & Milivoje, C.** 2017. Food safety and quality policy in the Republic of Serbia. *Ekonomika poljoprivrede*, 64(4): 1607–1617. January 2017. <http://scindeks.ceon.rs/Article.aspx?artid=0352-34621704607P>.
173. **FAO.** 2020. EBRD and FAO continue raising food safety standards in Serbia while preserving traditions. In: FAO Investment Centre [online]. <http://www.fao.org/support-to-investment/news/detail/en/c/1270013/>.
174. **Zmaić, K., Sudarić, T. & Tolić, S.** 2011. Održivost i diverzifikacija ruralne ekonomije. 46th Croatian and 6th International Symposium on Agriculture, 341–345.

175. This is a World Bank staff calculation based on data from the IMF Balance of Payments Statistics database and data releases from central banks, national statistical agencies, and World Bank country desks. See Migration and Development Brief 28, Appendix A for details: <https://www.worldbank.org/en/topic/migrationremittancesdiasporaissues/brief/migration-remittances-data>.
176. OECD. 2020. The COVID-19 Crisis in the Western Balkans: Economic impact, policy responses, and short-term sustainable solutions. <https://www.oecd.org/south-east-europe/COVID-19-Crisis-Response-Western-Balkans.pdf>.
177. European Commission. 2009. Council Regulation (EC) No 1215/2009 of 30 November 2009 introducing exceptional trade measures for countries and territories participating in or linked to the European Union's Stabilisation and Association process (codified version). [OJ L 328, 15.12.2009, p. 1]. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02009R1215-20160101>.
178. European Commission. 2020. Accession negotiations in agriculture. In: Agriculture in European Union enlargement [online]. Accessed 07 August 2020. [https://ec.europa.eu/info/sites/default/files/food-farming-fisheries/farming/international-cooperation/enlargement/agriculture-eu-enlargement\\_en#accessionnegotiations](https://ec.europa.eu/info/sites/default/files/food-farming-fisheries/farming/international-cooperation/enlargement/agriculture-eu-enlargement_en#accessionnegotiations).
179. European Commission. 2019. Consumer conditions scoreboard: Consumers at home in the single market. Luxembourg. 116 pp. [https://ec.europa.eu/info/sites/default/files/consumers-conditions-scoreboard-2019\\_pdf\\_en.pdf](https://ec.europa.eu/info/sites/default/files/consumers-conditions-scoreboard-2019_pdf_en.pdf).
180. European Commission. 2019. European Union Agricultural Outlook for Markets and Income, 2019-2030. 2 June 2020. Brussels. <https://policycommons.net/artifacts/295145/eu-agricultural-outlook-for-markets-and-income-2019-2030/1189791/>.
181. European Commission. 2019. European Union Agricultural Outlook for Markets and Income, 2019-2030. 2 June 2020. Brussels. <https://policycommons.net/artifacts/295145/eu-agricultural-outlook-for-markets-and-income-2019-2030/1189791/>.
182. FAO. 2019. Regional Overview of Food Security and Nutrition in Europe and Central Asia 2019. Structural Transformations of Agriculture for Improved Food Security, Nutrition and Environment. Budapest. 104 pp. (also available at <http://www.fao.org/3/ca7153en/ca7153en.pdf>).
183. European Commission. 2019. European Union Agricultural Outlook for Markets and Income, 2019-2030. 2 June 2020. Brussels. <https://policycommons.net/artifacts/295145/eu-agricultural-outlook-for-markets-and-income-2019-2030/1189791/>.
184. European Commission. 2021. Aims of European Union quality schemes. In: Quality schemes explained [online]. [https://ec.europa.eu/info/food-farming-fisheries/food-safety-and-quality/certification/quality-labels/quality-schemes-explained\\_en](https://ec.europa.eu/info/food-farming-fisheries/food-safety-and-quality/certification/quality-labels/quality-schemes-explained_en).
185. European Commission. 2017. Modernising and simplifying the CAP: Economic challenges facing European Union agriculture. Brussels. 42 pp. [https://ec.europa.eu/info/sites/default/files/food-farming-fisheries/key\\_policies/documents/eco\\_background\\_final\\_en.pdf](https://ec.europa.eu/info/sites/default/files/food-farming-fisheries/key_policies/documents/eco_background_final_en.pdf).
186. European Commission. 2020. Farm to Fork Strategy: For a fair, health and environmentally-friendly food system. Brussels. 23 pp. [https://ec.europa.eu/food/system/files/2020-05/f2f\\_action-plan\\_2020\\_strategy-info\\_en.pdf](https://ec.europa.eu/food/system/files/2020-05/f2f_action-plan_2020_strategy-info_en.pdf).
187. European Commission. 2017. Modernising and simplifying the CAP: Economic challenges facing European Union agriculture. Brussels. 42 pp. [https://ec.europa.eu/info/sites/default/files/food-farming-fisheries/key\\_policies/documents/eco\\_background\\_final\\_en.pdf](https://ec.europa.eu/info/sites/default/files/food-farming-fisheries/key_policies/documents/eco_background_final_en.pdf).
188. European Commission. 2017. Modernising and simplifying the CAP: Economic challenges facing European Union agriculture. Brussels. 42 pp. [https://ec.europa.eu/info/sites/default/files/food-farming-fisheries/key\\_policies/documents/eco\\_background\\_final\\_en.pdf](https://ec.europa.eu/info/sites/default/files/food-farming-fisheries/key_policies/documents/eco_background_final_en.pdf).
189. ITU & FAO. 2020. Status of digital agriculture in 18 countries of Europe and Central Asia. 102 pp. (also available at <http://www.fao.org/publications/card/en/c/CA9578EN/>).
190. European Commission. 2019. European Union Agricultural Outlook for Markets and Income, 2019-2030. 2 June 2020. Brussels. <https://policycommons.net/artifacts/295145/eu-agricultural-outlook-for-markets-and-income-2019-2030/1189791/>.
191. European Commission. 2020. Farm to Fork Strategy: For a fair, health and environmentally-friendly food system. Brussels. 23 pp. [https://ec.europa.eu/food/system/files/2020-05/f2f\\_action-plan\\_2020\\_strategy-info\\_en.pdf](https://ec.europa.eu/food/system/files/2020-05/f2f_action-plan_2020_strategy-info_en.pdf).
192. European Commission. 2020. Farm to Fork Strategy: For a fair, health and environmentally friendly food system. Brussels. 23 pp. [https://ec.europa.eu/food/system/files/2020-05/f2f\\_action-plan\\_2020\\_strategy-info\\_en.pdf](https://ec.europa.eu/food/system/files/2020-05/f2f_action-plan_2020_strategy-info_en.pdf).
193. FUSIONS EU. 2016. Estimates of European food waste levels. Stockholm. 80 pp. <https://www.eu-fusions.org/phocadownload/Publications/Estimates%20of%20European%20food%20waste%20levels.pdf>.
194. European Commission. 2013. Overview of CAP Reform 2014–2020. Agricultural Policy Perspectives Brief No. 5, December 2013. [https://ec.europa.eu/info/sites/default/files/food-farming-fisheries/farming/documents/agri-policy-perspectives-brief-05\\_en.pdf](https://ec.europa.eu/info/sites/default/files/food-farming-fisheries/farming/documents/agri-policy-perspectives-brief-05_en.pdf).
195. European Commission. 2000. White paper on food safety. Brussels. 52 pp. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:51999DC0719>.
196. European Commission. 2002. General Food Law Regulation. Regulation [EC] No. 178/2002. <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex:32002R0178>.
197. European Food Safety Authority. 2015. Science protecting consumers: From farm to fork. 12 pp. [https://www.efsa.europa.eu/sites/default/files/corporate\\_publications/files/TM-01-16-287-EN-N.PDF](https://www.efsa.europa.eu/sites/default/files/corporate_publications/files/TM-01-16-287-EN-N.PDF).
198. European Union. 2021. Food safety in the EU. In: Europa.eu [online]. [https://europa.eu/european-union/topics/food-safety\\_en](https://europa.eu/european-union/topics/food-safety_en).
199. European Commission. 2021. RASFF - food and feed safety alerts. In: Food Safety [online]. [https://ec.europa.eu/food/safety/rasff\\_en](https://ec.europa.eu/food/safety/rasff_en).
200. European Commission. 2021. New Single Market programme to empower and protect Europeans. In: Internal Market, Industry, Entrepreneurship and SMEs [online]. [https://ec.europa.eu/growth/content/new-single-market-programme-empower-and-protect-europeans\\_en](https://ec.europa.eu/growth/content/new-single-market-programme-empower-and-protect-europeans_en).
201. European Commission. 2018. Fitness check of General Food Law. Regulation [EC] No. 178/2002. In: Food Safety [online]. [https://ec.europa.eu/food/horizontal-topics/general-food-law/fitness-check-general-food-law\\_en](https://ec.europa.eu/food/horizontal-topics/general-food-law/fitness-check-general-food-law_en).
202. European Commission. 2020. Farm to Fork Strategy: For a fair, health and environmentally-friendly food system. Brussels. 23 pp. [https://ec.europa.eu/food/system/files/2020-05/f2f\\_action-plan\\_2020\\_strategy-info\\_en.pdf](https://ec.europa.eu/food/system/files/2020-05/f2f_action-plan_2020_strategy-info_en.pdf).
203. European Food Safety Authority. 2019. 2019 Eurobarometer on food safety in the EU. <https://www.efsa.europa.eu/en/corporate/pub/eurobarometer19>.
204. Jaffee, S., Henson, S., Unnevehr, L., Grace, D. & Cassou, E. 2019. The Safe Food Imperative: Accelerating progress in low- and middle-income countries. Agriculture and Food Series. Washington, DC, World Bank. <https://openknowledge.worldbank.org/handle/10986/30568>.



# THE FUTURE OF FOOD SYSTEMS IN EUROPE AND CENTRAL ASIA

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## 2022–2025 AND BEYOND

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ISBN 978-92-5-136754-4



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CC1546EN/1/11.22