



ECO REGIONAL
COORDINATION CENTER
FOR FOOD SECURITY



Food and Agriculture
Organization of the
United Nations



Overview of Food Security in the Countries of the Economic Cooperation Organization

At a Glance

Contents

This booklet summarizes the main points of the publication The Overview of Food Security in ECO Countries 2019. The numbering of tables and figures corresponds to this publication.

Part 1. The concept of food security and nutrition and related goals

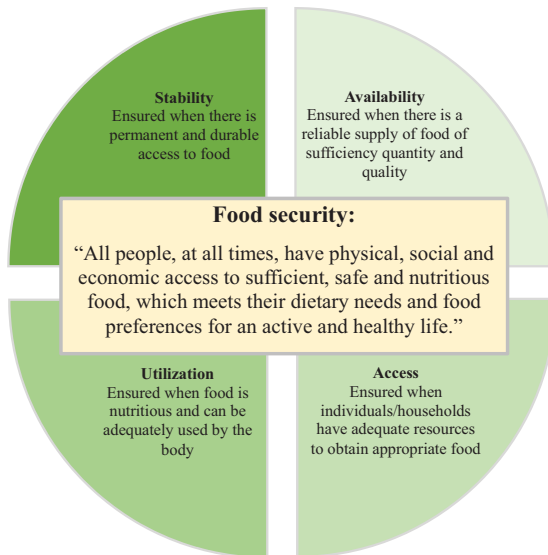
1. The concept of food security

Food security is defined by four dimensions: food availability, access, utilization and stability. Various indicators have been developed to measure the degree of food security.

The Rome Declaration on World Food Security (1996) defines food security as the condition that “all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food, which meets their dietary needs and food preferences for an active and healthy life.” For a food secure situation to be established, four conditions need to be satisfied simultaneously. First, food needs to be *available* for consumption; second, people should have the means to *access* food; third, food needs to be consumed in a healthy consumption environment in order for people to fully *utilize* the nutrients it contains; and fourth, all the processes involved should be *stable* for a foreseeable period of time.

These four conditions constitute the foundation for diverse pathways to food security.

Figure 1. The four dimensions of food security



Various indicators have been developed to measure the degree of food (in) security on the one hand and monitor food security situation on the other. A broad agreement has been reached on the indicators given in Table 1.

Table 1. The suite of food security indicators

FOOD SECURITY INDICATORS	DIMENSION	
Average dietary energy supply adequacy Average value of food production Share of dietary energy supply derived from cereals, roots and tubers Average protein supply Average supply of protein of animal origin	AVAILABILITY	STATIC and DYNAMIC DETERMINANTS
Percentage of paved roads over total roads Road density Rail lines density	PHYSICAL ACCESS	
Domestic food price index	ECONOMIC ACCESS	
Access to improved water sources Access to improved sanitation facilities	UTILIZATION	
Cereal import dependency ratio Percentage of arable land equipped for irrigation Value of food imports over total merchandise exports	VULNERABILITY	
Political stability and absence of violence/terrorism Domestic food price volatility Per capita food production variability Per capita food supply variability	SHOCKS	
Prevalence of undernourishment Share of food expenditure of the poor Depth of the food deficit Prevalence of food inadequacy	ACCESS	OUTCOMES
Percentage of children under 5 years of age affected by wasting Percentage of children under 5 years of age who are stunted Percentage of children under 5 years of age who are underweight Percentage of adults who are underweight Prevalence of anaemia among pregnant women Prevalence of anaemia among children under 5 years of age Prevalence of vitamin A deficiency (forthcoming) Prevalence of iodine deficiency (forthcoming)	UTILIZATION	

Note: Values and detailed descriptions and metadata for these indicators are available on the companion website (www.fao.org/publications/sofi/en/).
Source: FAO.

Source: FAO (2013a: 16).

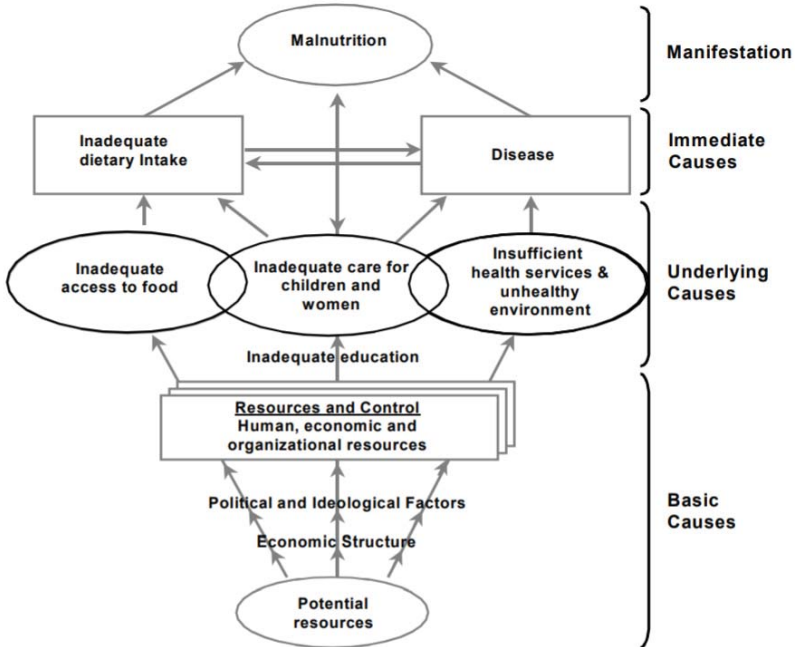
2. Linkages between food security and nutrition

Malnutrition is a complex condition that results from the interaction of multiple factors, including not only diseases and lack of safe public health conditions, but also lack of sufficient food of adequate nutrients and an unhealthy diet.

Escaping from malnutrition requires sufficient food production for human survival, adequate income to access food, a safe and hygiene food consumption environment for the effective utilization of food, a peaceful environment that allows people to be productive and earn income from their livelihoods, and the

ability for people and communities to cope with the shocks and negative effects of climate change. The conceptual framework of nutrition (Figure 2) illustrates these multifactorial determinants of malnutrition.

Figure 2. The conceptual framework of nutrition



Source: UNICEF (1990).

3. Food security and nutrition in the Sustainable Development Goals

Achieving the targets related to access to food, quality nutrition for all and agricultural incomes (SDG 2) will provide key enabling conditions for other SDG targets. However, unsustainable agricultural production can jeopardize long-term food security.

Food security and nutrition are central to the United Nations 2030 Agenda for Sustainable Development, which consists of 17 Sustainable Development Goals (SDGs) to end poverty and other forms of deprivation by improving health and education, reducing inequality and spurring economic growth, while tackling climate change and working to preserve the oceans and forests.

Food security and nutrition targets are unified under a single Sustainable Development Goal (SDG) 2 (see Table 2), which calls on countries to “end hunger, achieve food security and improved nutrition and promote sustainable agriculture by 2030.” SDG 2 incorporates eight closely related targets, which are closely related to one another. For instance, in contexts where many of the food insecure depend on agriculture for a living, improvements in agricultural productivity and the incomes of small-scale food producers (Target 2.3) will act as a vehicle to improve access to food (Target 2.1). Making agriculture more resilient and sustainable (Target 2.4) will in turn strongly influence the future availability and stability of food supplies (Targets 2.3 and 2.4). Together, improvements towards Targets 2.3, 2.4 and 2.1 will underpin progress towards Target 2.2, which aims to “end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under five years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons”. Monitoring progress towards SDG 2 targets therefore goes beyond the simple tracking of SDG 2 indicators; it requires an improved understanding of the causal interactions among the determinants of SDG 2 targets.

SDG 2 connects to every SDG in some way. For example, improvements in nutrition contribute to the achievement of healthy lives (SDG 3), while increased income for farmers contributes to ending poverty (SDG 1), improving gender equality (SDG 5), promoting economic growth (SDG 8) and reducing inequalities (SDG 10). SDG 2 is a strong enabler for SDG 1, as increasing agricultural production, productivity and incomes improves access to food for poor and vulnerable communities. These linkages are dynamic and incorporate feedback loops to SDG 2. For example, reduced inequality (SDG 10) reduces food insecurity through improved access to food. Improved diet quality is directly linked to SDG 2 and also supports poverty reduction (SDG 1), health and well-being (SDG 3), cognitive development and learning (SDG 4), reduced inequality (SDG 5 and SDG 10) and improved work and productivity (SDG 8).

However, increased agricultural production and productivity, if not sustainable, can result in deforestation and land degradation, jeopardizing long-term food security. A careful balance is needed between achieving food for all (SDG 2) and conserving and restoring ecosystems (SDG 15). The list of interactions between SDG 2 and other SDGs can be extended at will.¹

¹ ICSU (2017) provides an extensive analysis of potential interactions among all the SDG targets. This section briefly explores selected linkages between SDG 2 and other SDGs in order to show that the interactions concerned are not necessarily positive, and that improvement in an SDG target may also lead to a deterioration in others.



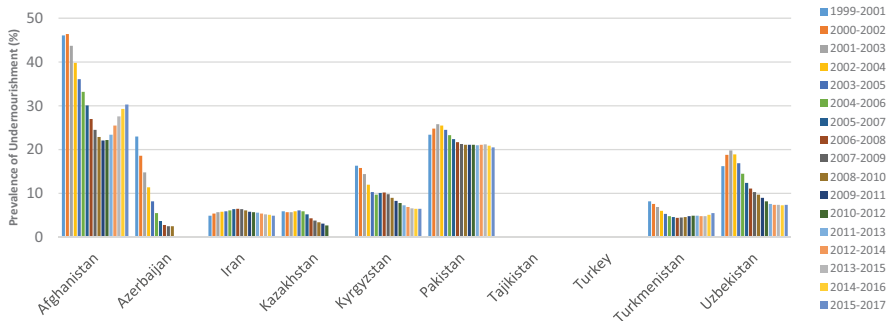
Part 2. Overview of four dimensions of food security and nutrition in ECO countries

1. Progress towards SDG undernourishment targets (SDG 2.1)¹

The ECO region significantly reduced the prevalence of undernourishment during 1999–2017; however, recent years show overall stagnation in almost all ECO countries.

The evolution of progress towards zero hunger is monitored through the use of two SDG indicators (2.1.1 and 2.1.2). Indicator 2.1.1 measures the prevalence of undernourishment (PoU), defined as the proportion of undernourished people relative to total population. It approximates the degree of inadequacy of energy intake of a person in relation to the required energy intake. Figure 4 shows that all Economic Cooperation Organization (ECO) countries successfully reduced the PoU over the period 1997–2017. In more recent years, however, almost all ECO countries exhibit stagnation in the reduction of the PoU, except for Afghanistan where the PoU increased from 22 percent in 2008 to 30 percent in 2017.

Figure 4. Prevalence of undernourishment (PoU, %) (SDG Indicator 2.1.1)



Cross-country differences with respect to changes in the PoU reflect to some extent sub-regional differences in terms of economic growth, natural resources for food production, infrastructure, the macroeconomic and sectoral policy environments, institutional stability, and the internal peace and security situation. This suggests that policies should firmly promote broad-based agricultural and rural development to prevent the upsurge of undernourishment, especially in countries faced with frequent conflicts and high population growth.

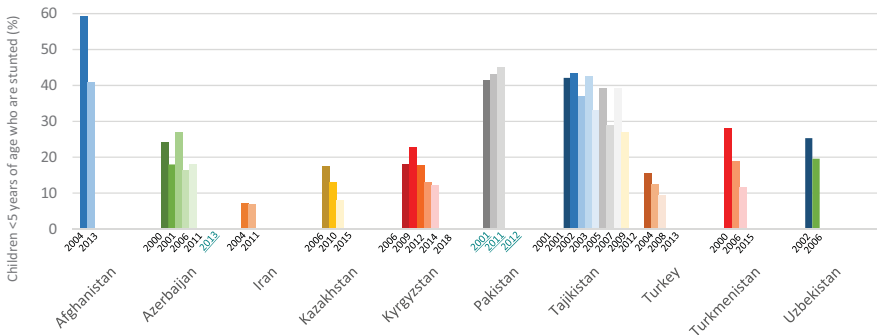
¹ Unless otherwise stated, the data used in Part 2 are taken from FAO Food Security Statistics (last updated 11 September 2018). www.fao.org/economic/ess/ess-fs/ess-fadata/en/#.XJ390pgzaUk.

2. Evolution of the nutrition situation in the ECO region (SDG 2.2)

Achieving the target of a 40 percent reduction in undernutrition by 2025 is especially challenging for four countries in the region, while the prevalence of overweight shows an increasing trend in five countries. Both call for significant investment in agriculture, health-based nutrition and education.

SDG Target 2.2 calls for an end by 2030 to “all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under five years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons”. Three nutrition indicators summarize the dynamics of malnutrition in the ECO region with respect to global nutrition targets. During the period 2000–2015, most countries in the ECO region achieved significant reductions in stunting (Figure 6). A comparison of data for 2015 with 2000 shows that nine out of 10 countries reduced stunting, while Pakistan experienced a continuous increase from 41.5 percent in 2000 to 45 percent in 2015. The prevalence of chronic malnutrition among children under the age of five years (measured by stunting) is currently highest in Afghanistan, Pakistan and Tajikistan, where more than 25 percent of children aged under five are too short for their age. The situation in Azerbaijan is also critical with the proportion reaching 18 percent in 2013.

Figure 6. Children <5 years of age who are stunted (%) (SDG 2.2)



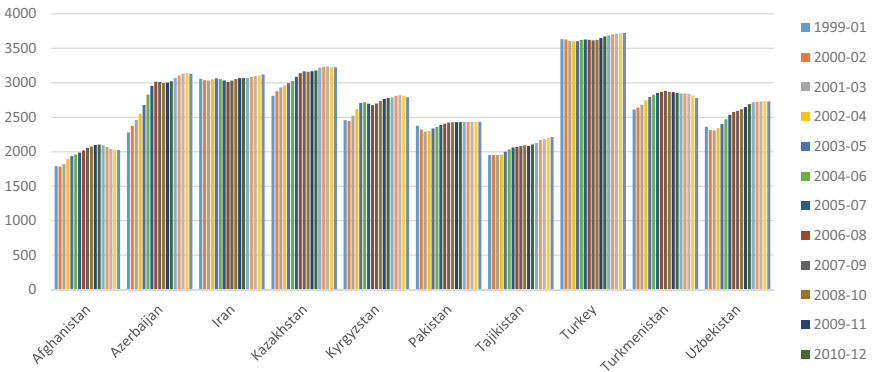
Overweight (being too heavy for height) among children under five years of age reflects a chronic process of excessive weight gain, increasing the risk of developing serious health problems, as well as the risk of obesity, diet-related non-communicable diseases, premature death and disability in adulthood. Five countries (Afghanistan, Azerbaijan, Turkey, Turkmenistan and Uzbekistan) show an increasing trend, two (Kazakhstan and Kyrgyzstan) a decreasing one, while two others (Pakistan and Tajikistan) show no change in the trend. The prevalence is especially high in Azerbaijan and Turkey.

3. Food availability

The amount of available food measured in terms of calories per day per person has significantly increased in the ECO region. The improvement in the Dietary Energy Supply (DES) has been achieved in spite of population growth. However, high food losses and waste and increasing incidence of transboundary animal diseases create serious risks for food security.

Although the DES has increased across the region, differences exist across countries with respect to the levels achieved during 2015–2017, as well as the trends since 1999–2001. Afghanistan has a DES level of 2 000 calories (per day/per person) following a decline from 2 100 calories in 2010–2012.

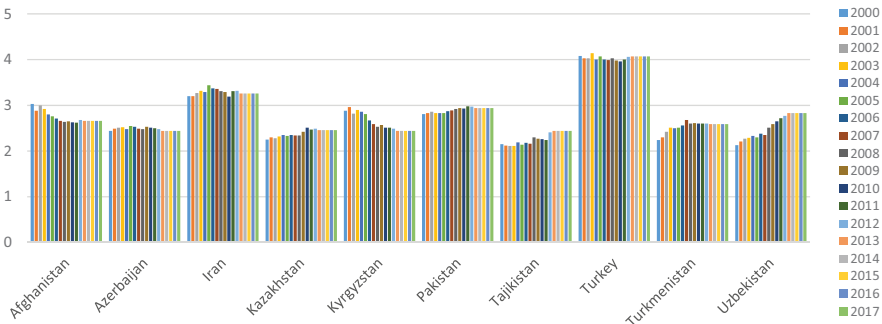
Figure 8 (a). Dietary Energy Supply (DES) (kcal/caput/day)



Food losses and waste decrease food availability and reduce the income of farmers, thereby undermining food security. The underlying causes of food losses and waste vary depending on country-specific technological, economic and social factors, including farmers’ access to post-harvest equipment and technologies, the state of transportation/storage/communication infrastructure, and consumer eating habits and access to food storage technologies. The bulk of losses in middle and low-income countries of the region are observed at the agricultural production, post-harvest and storage stages of food supply chains. Turkey is leading in loss and waste measured in terms of incidence of caloric losses at retail distribution level, followed by Iran, Pakistan, Uzbekistan, Afghanistan and Turkmenistan. Interestingly, food losses and waste remained stable across the region between 2010–2017, implying the presence of structural problems across individual countries.

A rough estimate indicates that cereal losses in the ECO region reached 29 661 000 tonnes during the period 2000–2013, an amount equivalent to sufficient food for an additional 3 125 500 people for each year.

Figure 11. Incidence (frequency) of caloric losses at retail distribution level (%)



Transboundary animal diseases (TADs) are highly contagious diseases that can spread extremely rapidly across national borders. TADs affect food and nutrition security through reductions in the quality, quantity and safety of livestock production and trade. TADs such as foot-and-mouth disease (which affects cattle) and pest of small ruminants (which affects sheep and goats) are extremely prevalent in Central, Southern and Western Asia. The types of threats (and number of occurrences) for Asia are as follows: animal and zoonotic diseases (13), aquatic diseases (9), plant diseases (5), locusts (4) and forest pests (2). Threats from TADs in the ECO region have become more important in large part due to the devastating impacts of natural or man-made crises in conflict zones. These have resulted in the wide-scale migration of rural/nomadic people to neighbouring countries, disrupting the animal health control mechanisms of host governments.

4. Food access

The impact of increased incomes on access to food has not been proportional. Food prices are vulnerable to volatility in international markets and social protection programmes are under stress in some countries due to an increasing number of refugees and internally displaced people. A pro-poor, inclusive development strategy should create livelihood opportunities for rising populations in general, and unemployed youth populations in particular.

National poverty rates indicate that during the period 2000–2015, all countries in the ECO region reduced poverty while the rate and level of reduction varied across

countries. Kazakhstan has achieved a significant reduction from 12.7 percent in 2007 to 2.7 percent in 2015. Turkey and Iran also achieved remarkable progress in reduction of poverty during the same period. Evidence shows that poverty rates are higher in countries with a larger share of agricultural GDP, implying a higher rate of unemployment and low incomes in agriculture and rural areas. Broad-based investment in agriculture and rural areas should unlock the potential of agriculture by linking rural areas to urban areas through the development of inclusive food supply chains.

Increases in food prices reduce the purchasing power of consumers by depressing real incomes. Experience from the food and fuel price crisis in 2007 and 2008 shows that domestic market food prices are highly vulnerable to volatility in international markets due to the ECO region's high dependence on food imports. As shown in Figure 13 (a, b, c), wheat prices in the ECO region followed the same trend as international prices, with significant increases in 2007–2008 and in 2010. The prices of other basic food items such as meat and potatoes were also volatile.

Figure 13(a). Market prices of wheat flour (USD/kg)

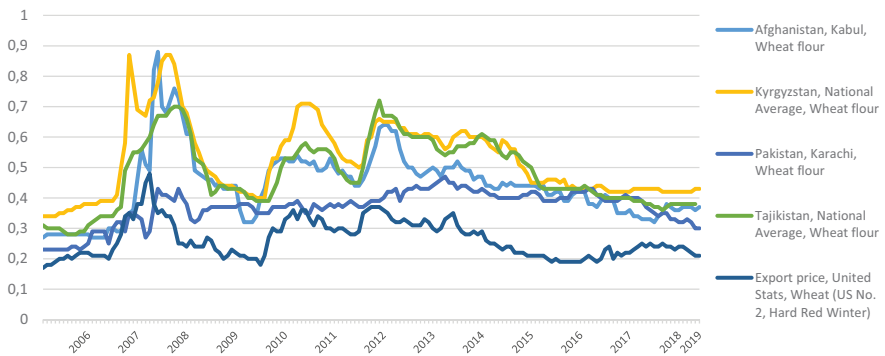


Figure 13(b). Market prices of meat (beef)

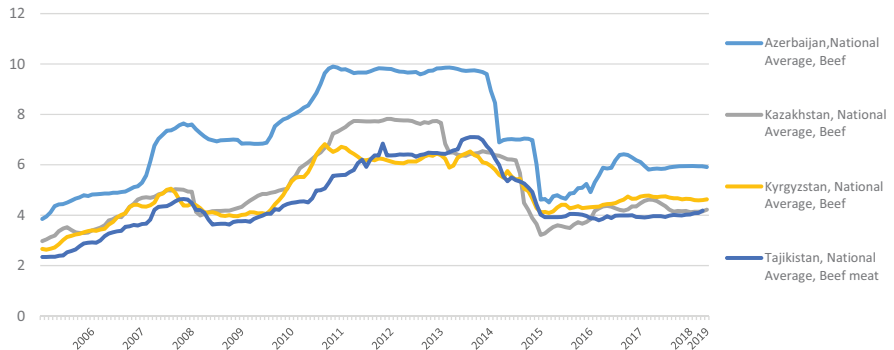
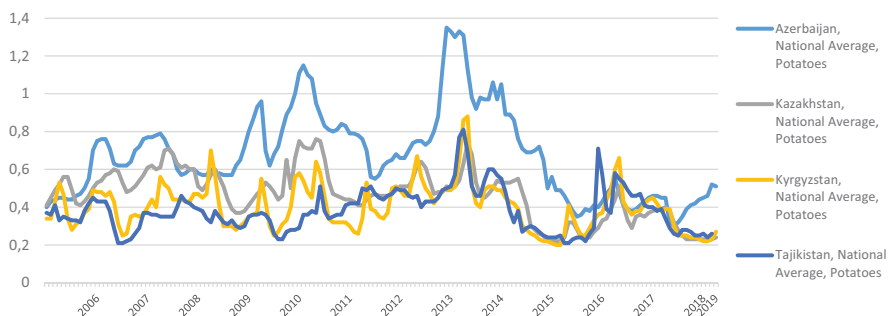


Figure 13(c). Market prices of potato


Social protection programmes are important instruments for securing access to food for the poorest people. Data from the World Bank show that coverage of social safety net programmes (as a percentage of the population) is highest in Kazakhstan and Turkey at 31 percent and 18 percent, respectively, followed by Uzbekistan at 12 percent, and Tajikistan, Afghanistan and Kyrgyzstan at about 9 percent.² These programmes cover a wide range of social support services, including cash transfers, disability benefits, in-kind food transfers, school feeding programmes and public works programmes. Ensuring access to social protection programmes for all vulnerable populations is a challenging task, especially for Turkey, which is facing a rising influx of about 3.6 million refugees as of 2018. Refugee numbers are also increasing in Pakistan (about 1.4 million), Iran (about 1 million) and Afghanistan (about 76 000) (Figure 14).³ These people are more vulnerable to food and nutritional insecurity than the citizens of their host countries as they lack access to land for crop cultivation and do not qualify fully for public social protection programmes. Afghanistan and Azerbaijan are also facing challenges related to ensuring access to food and other livelihood assets.

According to World Bank data,⁴ in the ECO region, overall employment as a percentage of the population did not change significantly during the 2009–2016 period, varying within the 39–72 percent range. Employment in agriculture as a percentage of total employment did not experience substantial change either, varying within the 40–66 percent range. This suggests that GDP growth observed in ECO countries has remained neutral in terms of effects on employment creation. The type of economic growth (labour-intensive versus capital-intensive) affects the food security situation in different ways. In ECO

² See World Bank databank: databank.worldbank.org/data/home.aspx.

³ See World Bank databank: databank.worldbank.org/data/home.aspx.

⁴ See the World Bank databank: databank.worldbank.org/data/home.aspx.

member countries, this distinction is especially important because poverty and food insecurity are usually widespread in rural areas compared to urban areas. Hence, labour-intensive technological change should produce immediate effects in the agricultural sector by creating employment. A pro-poor, inclusive growth strategy should therefore be labour-intensive from the perspective of food and nutrition security, especially in the light of increasing populations and youth unemployment in the region.

5. Food utilization

Undernutrition has declined, but obesity is rising in many ECO countries. Anaemia levels also remain high across the ECO region. The transition from traditional, short food supply chains to technologically advanced, long supply chains contributes to the increased consumption of highly processed food rich in fat, sugar and salt, but poor in micro-nutrient content.

Food consumption patterns and individual and public health conditions in ECO member countries point to the coexistence of undernutrition and overnutrition. The transition from traditional, short food supply chains to technologically advanced, long supply chains, accompanied by rising GDP per capita, contributes to the increased consumption of highly processed foods rich in fat, sugar and salt, but poor in micro-nutrient content. Combined with sedentary lifestyles in urbanized areas, both excess and unbalanced nutrients ultimately lead to diet-related health problems.

Figure 15 (a, b) shows that in most ECO countries per capita supply of vegetable oil and sugar increased between 1995 and 2013. The high calorie content of these foods is reflected in the reduction of the PoU, while their adverse effects commonly take the form of obesity, which has experienced high growth rates in recent years (Figure 16).

Figure 15(a). Daily per capita supply of vegetable oil (kcal/capita/day)

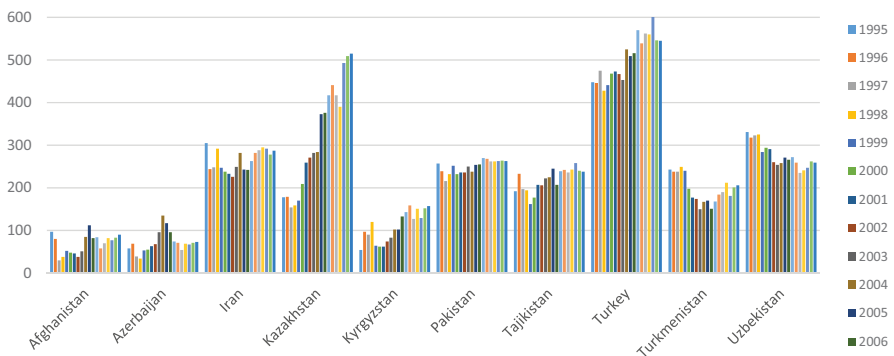


Figure 15(b). Daily per capita supply of sugar (kcal/capita/day)

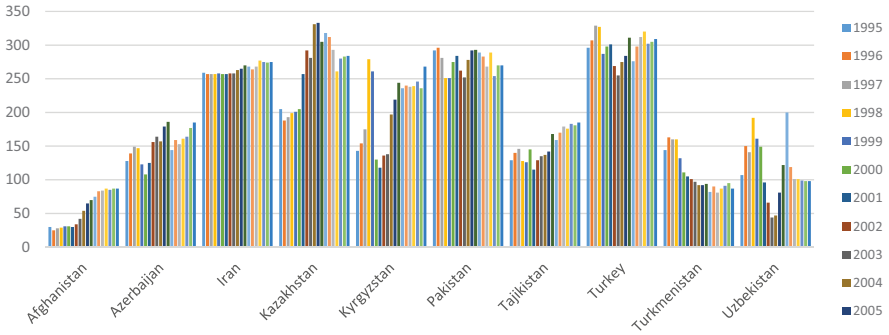
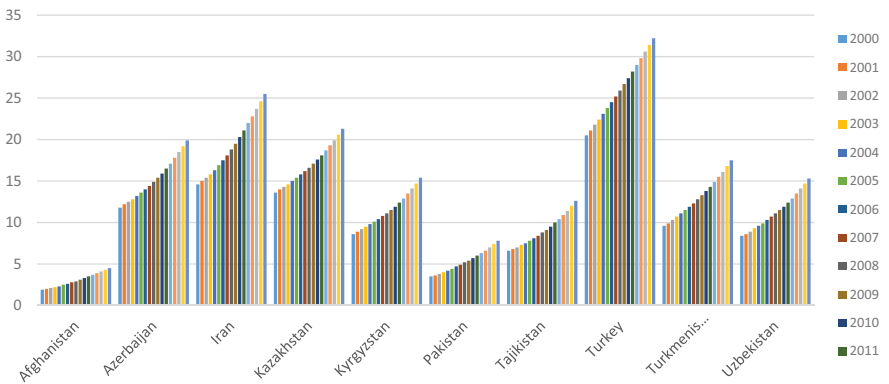


Figure 16. Prevalence of obesity in the adult population (18 years and older) (%)



6. Stability

High cereal import dependency and a high share of food imports in export earnings may pave the way for future difficulties in food availability especially when world prices increase abruptly. Population growth and urbanization demand productive and stable food systems to meet rising food demand. Climate-related disasters further threatens the stability of food production and consumption.

Of 10 countries, six have high cereal imports, including Tajikistan (imports increased from 35 percent in 2000 to 47 percent in 2013), Iran (imports increased from 24 percent in 2006 to 37 percent in 2013), Azerbaijan (imports increased from 28 percent in 2001 to 38 percent in 2013), Uzbekistan (imports

increased from 4 percent in 2002 to 22 percent in 2013) and Afghanistan (imports increased from 19 percent in 2003 to 22 percent in 2013). Turkey has a low level of cereal imports, and Kazakhstan and Pakistan were net exporters of cereals during the period 2000–2013. A similar situation is observed when the share of food imports in total exports is considered (Figure 21). Afghanistan has an exceptionally high rate with the share of food imports increasing from 65 percent in 2000 to 300 percent in 2013, while the share in Tajikistan rose from 20 percent to 40 percent, and the share in Kyrgyzstan increased from 14 percent to 29 percent. Since export earnings of other countries in the region increased substantially during the period 2000–2013, they were able to finance food imports for their populations. Together, high cereal import dependency and a high share of food imports in export earnings may pave the way for future difficulties in food availability, especially when world prices increase abruptly due to oil price shocks or political instability in trade partners.

Figure 20. Cereal import dependency ratio (%)

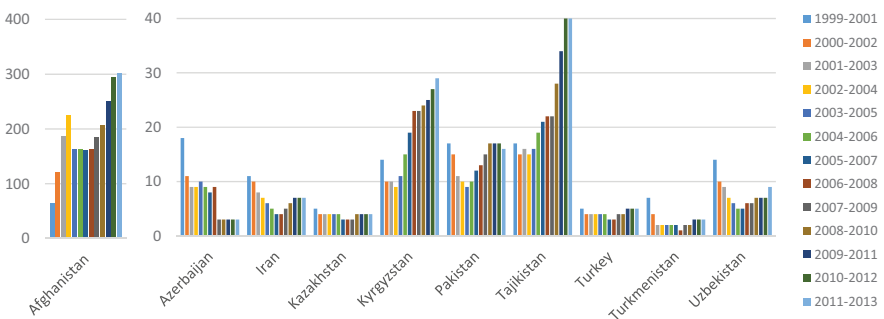
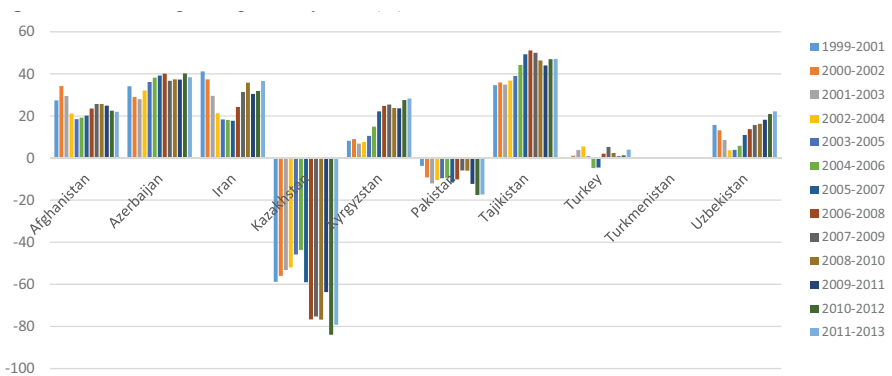
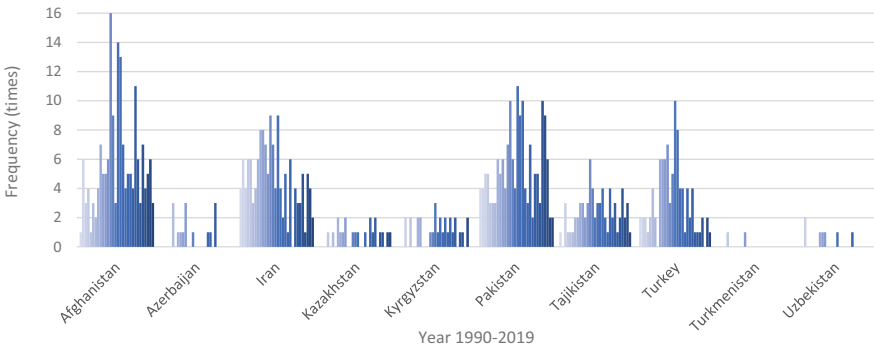


Figure 21. Share of food imports in total exports (%)

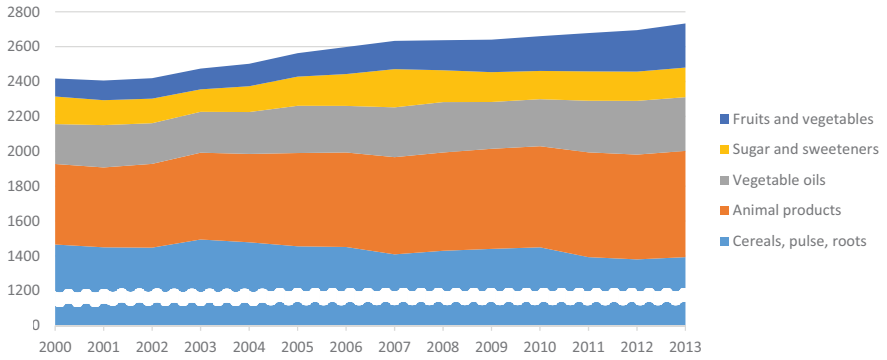
Many of the countries in the ECO region are frequently affected by climate-related disasters such as droughts and floods that cause damage to agricultural land and soil, and transportation and water infrastructure, decreasing both food supply and access to markets. Climate change will exacerbate such threats through a combination of increasing magnitude of climate hazards, diminishing agricultural yields and production, and intensifying competitions over scarce resources. Climate-related disasters have become more frequent over the last three decades (Figure 22).

Figure 22. Frequency of climate-related natural disasters (floods, landslides, extreme temperature, storm) by year



Economic and population growth accompanied by rising urbanization and changing dietary habits place increasing stress on agricultural and food systems. In general, decline in cereal intake has been offset by increases in vegetable oils, sugars and meat products (Figure 23). In regard to consumers, there is a need to control excessive food consumption, and to adopt more nutritious and varied diets. Both consumption and production should move towards increasing the economic, social and environmental sustainability of agricultural and food systems. The development of a sustainable food system is key to the stability of food and nutritional security, as these systems are geared to meeting the food needs of both present and future generations without jeopardizing their economic, social and environmental bases.

Figure 23. Changes in dietary energy supply by food type (countries in the Central Asia subregion, 2000–2013)



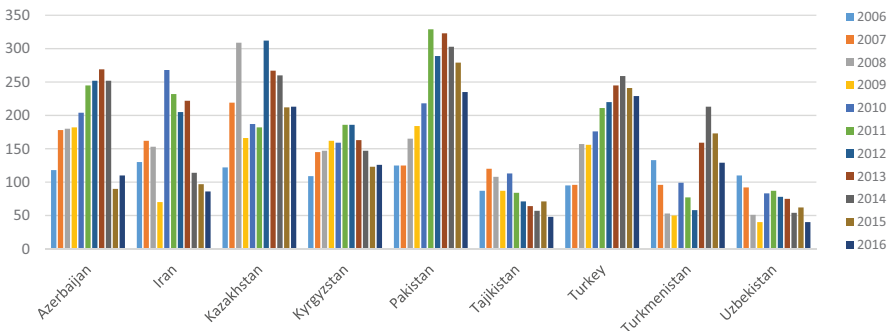
Part 3. Food and agricultural trade in the ECO region

While ample scope exists for growth in agri-food exports in the ECO region, agricultural exports declined recently in almost all countries. Major trade policy differences across ECO member countries risk potential gains from food trade. Food safety remains to be the most challenging issue facing the ECO region as a whole.

Across almost the entire ECO region, agricultural exports have deteriorated since 2012–2013 (Figure 25). This pattern may be attributed partially to structural constraints on agricultural productivity, in particular land, soil and water, coupled with rising population and incomes. In Turkey, for example, the major driver of soil degradation is economic transition, while in Central Asia and the Caucasus, the main drivers are population growth and climate change, coupled with unsustainable land and water management and risks of droughts.

Since the dissolution of the Soviet Union, the countries in Central Asia and the Caucasus have established trade flows among the post-Soviet economies, and explored new international markets such as China and the European Union. Agricultural production in these countries has been diversified in favour of crops that are commercially more attractive, such as vegetables and fruits. Agricultural production in these countries has been diversified in favour of crops that are commercially more attractive, such as vegetables and fruits. However, agri-food exports are hampered by food safety issues, and addressing these challenges requires investment in agricultural and food technology development/transfer/innovations. High-level political commitment is necessary to implement policies that favour agricultural growth and the integration of these economies with world markets.

Figure 25. Agricultural export value index (2004–2006 = 100)





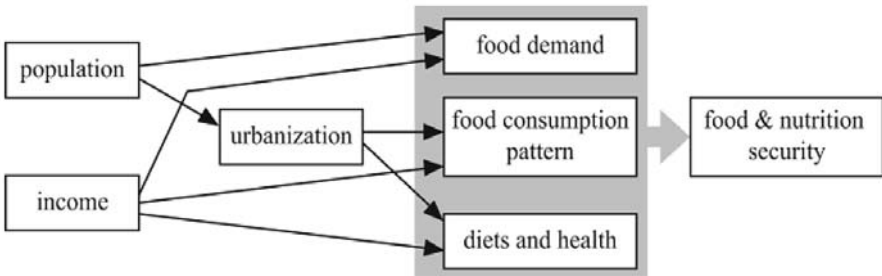
Part 4. Outlook towards 2030

1. The impact of demographic changes and income growth on food and nutrition security

Growing populations in ECO countries mean higher demand for food in the future, while increasing urbanization and rising incomes provoke changes in food consumption patterns. Avoiding adverse effects on food and nutrition security requires cross-sector collaboration and broad-based investment.

Food security and nutrition is linked to four types of changes: changes in population, incomes, urbanization and agricultural production (Figure 26).

Figure 26. Pathways of linkages from population and income to food and nutrition security



During the period 2009–2017, the regional population increased about 67 million people. According to the latest projection by UN DESA,¹ the total population of all ECO member countries will increase by 188 million people by 2050. The population growth rates in most ECO countries are significantly higher than the world average. This current and expected population growth in the ECO region needs to be met by increased food production, which would in turn place extra strain on agricultural resources and the environment. Sustainable agricultural practices should therefore be adopted to ensure the livelihoods of current and future generations.

It is also expected that people’s income levels will continue to rise in all ECO member countries. Higher purchasing power would mean easier access to food, especially prepared food and highly processed, nutritionally low-quality food, due to the higher opportunity cost of time in urban areas. This trend is particularly relevant for Turkey, which has experienced a rise in population and incomes, as well as the growth of long food supply chains marketing processed

¹ See www.un.org/development/desa/en.

food in bulk. Another trend, related to income growth, that has emerged in the ECO region over the past two decades is the shift in food availability (in terms of calories) away from cereals, roots and tubers towards meat, fat and sugar (see Figures 12 (a, b and c)). These trends have important implications for food and nutrition security in the ECO region. First, agriculture needs to respond to the changing pattern of food demand, which calls for a reorientation of the use of agricultural endowments (environment and natural resources), technology development and transfer strategies, and agricultural trade policies. A new agricultural orientation will affect not only food availability but also give shape to food access through its effects on agricultural growth, employment and incomes. Second, the changes in food consumption patterns, created by urbanization, will affect people's health through a rise in diet-related health problems. They will also result in environmental degradation since diets based on higher meat consumption are more likely to result in deforestation and the release of CO₂ gas emissions. Unhealthy food consumption coupled with lives that are increasingly sedentary is producing large numbers of people who are obese (see Figure 16).

Concerted action by multiple sectors is required to manage the effects on agriculture of increasing demand for food, and the effects on food utilization of changing food consumption patterns and diets, including those related to agriculture, the environment, health, nutrition and social protection. A broad-based rural development strategy is necessary to enhance the capacity of agriculture to meet the increase in food demand. Improvement of soil fertility and the development of drought-resistant crops by investing in agricultural R&D, as well as investment in rural infrastructure such as roads, irrigation and storage facilities, would likewise increase agricultural productivity. These investments, if made, could also have serious environmental impacts. Thus, investment in sustainable technologies able to support increased agricultural intensity will be crucial for both meeting the demands of a growing population and adapting to environments increasingly affected by climate change.

2. Impact of climate change on food security and nutrition

Climate change is a threat to food and nutrition security and exacerbates gender inequalities. Climate-smart agricultural practices promise substantial improvements to food and nutrition security under climate change.

Meeting SDG 2 in the ECO region calls for the development of sustainable food and agricultural systems that are resilient to natural hazards and climate change. Reducing the adverse effects of climate change on food security and nutrition lies at the cross section of a number of the SDG goals. Progress towards SDG 1

(No Poverty) would decrease the stress on forests and land encroachment. Progress towards SDG 7 (Affordable and Clean Energy), SDG 11 (Sustainable Cities and Communities), SDG 12 (Sustainable Consumption and Production), SDG 13 (Climate Action), SDG 14 (Life Below Water), and SDG 15 (Life in Land) would all contribute to the reduction or control of GHG emissions.

The effects of climate change are not limited to agricultural production and food prices, and may further affect the nutritional properties of some crops in terms of lower mineral (e.g. wheat, rice) and protein concentrations, and higher carbohydrates concentrations (FAO, 2015). They may also increase the incidence of diseases, particularly water-borne diseases, such as diarrhoea, that contribute to undermining the body's ability to utilize the nutrition in food. Higher temperatures and less rainfall will make clean water less available in many areas, compromising hygiene and facilitating the spread of water-borne pathogens. The World Health Organization (WHO) estimates that in the future (2030–2050) climate change will cause an additional 48 000 deaths per year from diarrhoea (WHO, 2015).

Climate change also exacerbates gender inequalities. Women farmers make up more than half of the agricultural workforce in some low and middle-income countries, but are disadvantaged with fewer endowments, entitlements, and limited access to information and services. The development of inclusive agri-food value chains represents an opportunity for women, however, the benefits can only be accrued if existing inequalities are addressed at all stages in value chains.

Climate-smart agriculture (CSA) aims to sustainably increase food and nutrition security and incomes, and adapt and build resilience to climate change, while capturing potential mitigation co-benefits. It addresses the interlinked challenges of food security, poverty and climate change through the sustainable use of ecosystems and their services. Two integral elements of CSA are sustainable agriculture and Ecosystem-based Adaptation (EbA). However, in order to encourage adoption, improvements will also be necessary in infrastructure, extension, climate information, and access to credit and social insurance – conditions which are at the heart of rural development. In many cases, impoverished, food-insecure farmers, pastoralists and fishers simply may not have the assets required to make significant changes in their production methods. Overcoming these barriers to adoption requires effective social protection systems to improve access to such technologies and services.



Vandam, Azerbaijan - A vendor displays jams on sale at her stall in a local market.

Part 5. Considerations for ECO Regional Food Security Programme

Build a smallholder-inclusive value chain

Ample scope exists for smallholder farmers to benefit from increasing food demand if they are integrated into modern agri-food value chains on an equal footing with large farmers. The obstacles to smallholder farmer participation in modern value chains generally include low productivity, lack of storage and transportation, and limited access to information as well as financial and investment skills and knowledge. Support may include productivity enhancing technical assistance, the creation of smallholder cooperatives, and the strengthening of collection and storage facilities. Farmer field schools can also help smallholders improve their understanding of the value chain and their niche within its operations. Effort should be made to understand specific opportunities and priorities through value chain analysis.

Agri-food value chains have the potential to link rural and urban sectors, thus paving the way for social, economic and environmental benefits. The creation of off-farm employment opportunities, especially for women and youth, will be a key contribution to the sustainable development of value chains, but there is a need for social, economic and environmental sustainability principles to guide the development process. Only in this way will smallholders and disadvantaged groups of people be integrated into value chains, thus reducing food insecurity in the face of increasing urbanization and changing patterns of food consumption.

Expand agri-food trade among ECO member countries

There is scope for agri-food trade across ECO countries that share a common culinary culture; however, historically, intra-regional agri-food trade has been limited among ECO member countries. The demand for rice, vegetable oil, meat and dairy is expected to increase and trade of these items within ECO member countries can benefit the food security of both producers and consumers. During the period 2000–2016, the agri-food trade orientation of countries in the ECO region remained unchanged. The countries in Central Asia continued to trade most with the Russian Federation; Turkey traded most with the European Union, the Mediterranean and North Africa (MENA), the United States, the Russian Federation and Asia; Pakistan traded most with Asia, the European Union, MENA, China and India; and Iran traded most with MENA, the European Union and Asia. Capitalizing on the increasing scope for intra-regional trade requires ECO member countries not only to align their trade policies and priorities, but

also to invest in the promotion of agri-food trade in the region. Diversification of trade partners within the ECO region is especially important in terms of stable food security for those members (countries in Central Asia) with very high food imports. Realistically, the creation of intra-regional, agri-food trade opportunities depends the ability of ECO member countries to organize around regional food and nutrition security priorities.

Reduce food losses and waste

Since food losses and waste occur as part of production, distribution and consumption activities, it is critical, first, to understand the underlying causes of food losses and waste in each country; then, second, to quantify the actual losses and wastes incurred; and third, to develop and implement solution-based strategies to reduce the losses at farm, food chain and macro levels. Most important of all, exchanging relevant experiences among ECO countries, particularly good practices and innovations, should contribute to the establishment of strategies and mechanisms for reducing food losses and waste. The challenge lies in weighing the economic, social and environmental costs and benefits of different strategies and mechanisms, and in determining the approach that best ensures food security, improves environmental sustainability and strengthens resilience to climate change in ECO countries.

A relationship has been observed between income level and food loss and waste along the food chain (FAO, 2017a). In medium and high-income countries, significant food loss and waste occur early in the food supply chain. In low-income countries, however, food is mainly lost during the early and middle stages of the food supply chain; much less food is wasted at the consumer level. Uncovering such patterns in food loss and waste should support evidence-based informed policy-making processes in ECO countries. It will help both to identify the sources of losses and waste and to design strategies to recover the loss and redistribute the recovered food for final consumption.

Collaborate to manage transboundary animal diseases

The livestock sector contributes substantially to the national economies of Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan and Uzbekistan, by providing high-value food, income and employment. The threats from TADs have become more important as a result of the devastating impacts of natural or man-made crises in conflict zones, causing significant outflows of rural/nomadic people to neighbouring countries that disrupt the animal health control mechanisms put in place by the host governments. Furthermore, growth in populations and the availability of fat supplies in ECO member countries underline the potential transformation of livestock farming and natural landscapes, underscoring the

potential benefits from investing in an enabling environment for animal health services. The strengthening of national regulatory systems in collaboration with international monitoring and surveillance organizations is therefore necessary to prevent and respond effectively to the emergence of new outbreaks.

The socio-economic burden of TADs is high and cannot be remedied by the efforts of a single country alone. It calls for collaboration to prevent and monitor the situation at the regional as well as the global level. For ECO countries, participation in international action is crucial to tackling TADs at the source. It is especially critical for countries where livestock farming contributes substantially to economic growth. In the context of globalization and liberalization, countries exporting animal products are concerned with maintaining or expanding their market shares, while importing countries are concerned with protecting their domestic livestock populations. Those countries that have the ability to meet and demonstrate adherence to international standards regarding TADs would increase their competitiveness in the regional and international markets for livestock, commodities and products of animal origin.

Strengthen social protection for the most vulnerable to ensure their access to a nutritious diet

While all ECO member countries have made significant progress in increasing food availability and incomes, vulnerable populations such as those living on the food poverty line, refugees and IDPs are still at risk of food insecurity. These groups tend to have limited options for building reliable and sustainable livelihoods for a variety of reasons. However, the basis of their livelihoods, particularly their human capital, can be strengthened through national social protection schemes, such as skills development training and farmers schools.

In the context of sustainable development, there is a need to integrate a social safety net into the national development agenda rather than loosely defining it as a public support programme. In ECO countries, social protection institutions and structures exist, but social protection policies operate more like social support programmes with a limited time period. Therefore, public resources allocated for social protection do not represent a significant share of total public spending, implying a low level of political commitment. Public social spending across the OECD, for example, amounts to 20 percent of GDP on average, estimated for 2018. As of 2016, public social spending in Turkey was 12 percent of GDP, the highest rate among ECO countries.

Support the diversification of diets

Rising incomes and increasing urbanization lead to dietary changes, notably the consumption of more processed food with a higher fat and sugar content. The solution lies in diversified agricultural production and improved access to nutrient-rich food, while advocating (especially among urban groups who are not familiar with nutrient-rich foods) for better understanding of the role of nutrition in preventing diet-related health problems. However, protecting the diet quality of the poor in the face of climate-related supply shocks and growing food demand due to urbanization is a challenge, underlying the need for targeted social protection.

The broad elements of a dietary diversification strategy consist of the promotion of mixed cropping and integrated farming systems, and a wider variety of food crops, the integration of nutrition objectives into farming systems, and nutrition-based education to encourage the consumption of a healthy and nutritious diet year round. To achieve dietary diversification, a large number of actors should be organized around a common goal – the diversification of food consumption for a healthy life. These actors include government agencies through extension services, agricultural banks, farmer groups, fertilizer and seed companies, food industries and other private sector agencies who may wish to profit from policies for food diversification. On the consumer side, diversification of food consumption is a matter of having sufficient income and knowledge of the effects of quality diets on health. On the producer side, it is a matter of ensuring efficient food production, effective demand and marketing. Achieving sustainable food and nutrition security thus requires the design and implementation of agricultural diversification policies that address both the needs of consumers and the expectations of producers.



Bishkek, Kyrgyzstan - A waiter serves a cooked dish of fish from a local fish farm



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