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Regional Coordination Centre
for Food Security

ECO-RCCFS



Food and Agriculture
Organization of the
United Nations

Regional Program for Food Security (RPFS) in Member Countries of the Economic Cooperation Organization (ECO)

(ECO-RPFS)

Economic Cooperation Organization
Regional Coordination Centre for
Food Security (ECO-RCCFS)

Food and Agriculture Organization
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Foreword

In these critical times for global food security, the Economic Cooperation Organization Regional Coordination Centre for Food Security (ECO-RCCFS) is honoured to publish the Regional Programme for Food Security in the Member Countries of the Economic Cooperation Organization (ECO-RPFS). The regional narrative of the ECO-RPFS draws on evidence-based policies, analytical tools and data to address the food security issues facing the ECO region.

The design of RPFS is built on four key components of food security: availability, stability, utilization and access. Implementation of the RPFS mission involves the adoption of a strategy “to support evidence-based policy-making and governance of food security and nutrition, to promote inclusive agricultural research and innovation, to create an enabling environment for inclusive market connectivity, and to facilitate knowledge transfer and raise awareness of the health benefits of nutritious food consumption.”

Ongoing analysis of food security by ECO-RCCFS has determined priorities for food security in the countries of the region, while providing an important contribution to the transformation of food systems.

We believe that the RPFS will support development of the region's agriculture through projects aimed at ensuring food security according to priorities determined by the needs of ECO member states.

By working together we hope to address key food security challenges for improved agriculture across the region.

Ahmet Volkan Güngören
Coordinator for ECO-RCCFS

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Programme development was led by Tuğrul Temel under the overall guidance of Ahmet Volkan Güngören, Coordinator of ECO-RCCFS. Technical inputs were provided by Keigo Obara (FAO), Burak Öz (FAO), Özlem Hiçcan (ECO-RCCFS), Ulviye Burcu Serin (ECO-RCCFS), İzzet Yılmaz (ECO-RCCFS) and Aziz Baran Yılmaz (ECO-RCCFS). Representatives of ECO member states who participated in the RPFS Consultation Meeting held in December 2020 offered valuable comments on the document.

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1. Introduction and background

In 2019, the Economic Cooperation Organization Regional Coordination Centre for Food Security (ECO-RCCFS) carried out an Overview of Food Security in the ECO Countries (ECO, 2019a; ECO-RCCFS and FAO, 2019), providing broad recommendations to enhance food security in the ECO region.^a In December of the same year, the 6th ECO Agricultural Ministerial Meeting issued an official declaration affirming the need to develop the ECO Regional Programme for Food Security (RPFS) and nominating the ECO Regional Coordination Centre for Food Security (ECO-RCCFS) to oversee implementation (ECO, 2019b).

In order to ensure synergetic effects between food security and nutrition, the ECO-RPFS is considering the implementation of other complementary initiatives in the ECO region. One such initiative is the ECO Vision and Implementation Framework (ECO, 2017). Some of the objectives and outcomes expected from implementation of the ECO Vision relate directly to regional food security, with a particular focus on nutrition and a general focus on the sustainable development agenda.^b Of equal relevance are FAO's Country Programme Frameworks implemented in each ECO member state in collaboration with national governments.^c These distinct initiatives are complementary and together benefit the ECO-RPFS.

The ECO-RPFS takes the recommendations of the Overview study as its point of departure and considers the achievements of the complementary initiatives carried out in the ECO region. Regarding its operational framework, the ECO-RPFS would be instrumental in approaching potential donors for implementation funds; hence, the food security priority areas of the

ECO region have been coupled with those of donors. However, it is important to note that the food security priorities of the donors and the ECO-RPFS all seek to contribute to the accomplishment of SDG 2 (End hunger, achieve food security and improved nutrition and promote sustainable agriculture).

The structure of this publication is as follows. Following this section, Section 2 presents the key emerging food security and nutrition challenges in the ECO region based on a situation analysis, and rationalizes the need for a comprehensive and focused regional food security programme. Section 3 describes the natural linkages between agriculture and nutrition, and suggests that food security will only be sustainable if aspects related to nutrition are taken into account. Section 4 develops the draft ECO-RPFS based on the four components of a food security and nutrition system. This draft will function as a starting point for the further elaboration of national and regional food security and nutrition priorities and actions which will need to be integrated into the draft programme. Sections (5–9) then elaborate on critical programme implementation and operational issues that need to be considered before and after the programme starts.

a <https://ecorcfs.org/en/eco-publications/overview-of-food-security-in-the-countries-of-eco/33616570-a96f-4e23-98e5-d0ee225ac866/99a0be2a-07ea-4eb9-92ff-11d90fd9ba30>

b ECO (2017) introduces the ECO Framework and how it targets enhanced food security and safety (p. 9) and market connectivity related outcomes (p. 3–5). The Framework also focus on a number of sustainable development outcomes, which can be addressed within the ECO-RPFS. The ECO-RPFS can therefore be regarded as a supporting framework for accomplishment of the overall ECO Vision 2025.

c see www.fao.org/afghanistan/programmes-and-projects/en (Afghanistan); www.fao.org/family-farming/detail/en/c/1129540 (The Islamic Republic of Iran); www.fao.org/countryprofiles/index/en/?iso3=KGZ (Kyrgyzstan); www.fao.org/pakistan/programmes-and-projects/programmes/en (Pakistan); www.fao.org/countryprofiles/index/en/?iso3=TJK (Tajikistan); www.fao.org/turkey/programmes-and-projects/en (Türkiye); www.fao.org/countryprofiles/index/en/?iso3=TKM (Turkmenistan); and www.fao.org/countryprofiles/index/en/?iso3=UZB (Uzbekistan)

2. Rationale for the ECO Regional Programme for Food Security

The ECO already has an existing cooperation framework in place which is designed to: (i) strengthen regional agricultural and food production and trade; (ii) develop regional projects addressing key food security and nutrition issues; (iii) reinforce the capacity of food security decision-making bodies by sharing information, monitoring, and providing early warnings for food security and nutrition; and (iv) support the effective design, implementation and monitoring of food security and nutrition policy interventions (ECO, 2017; Adnan, M., 2017). This framework sets the stage for specific coordinated and collaborative actions to respond to emerging food security and nutrition challenges in the ECO region.

ECO-RCCFS and FAO (2019) identified some of these challenges and made broad recommendations to address food security and nutrition in the ECO region. The organizations also adopted the Rome Declaration on World Food Security in 1996, which defines food security and nutrition as a state in which “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”. The following sections propose broad recommendations together with emerging food security and nutrition challenges elaborated under four components: availability, access, utilization and stability. This process will form the basis of the development of the ECO-RPFS.

2.1. Current state of food security and nutrition in the ECO region

Key food security and nutrition outcomes up to 2020 are used here to summarize the current state of food security and nutrition in the ECO region. Table 1 presents the targets for Sustainable Development (SDG) 2 accompanied by the indicators used to assess progress towards them and the progress for the period 2021–2025 required to remain on track. For quantitative targets the desired level of progress is given; for qualitative targets the desirable direction of change is shown. Table 2 provides the most recent data from an assessment of progress required for 2021–2025. These data can be used to assess the targets given in the last column of Table 1.

For the ECO region to remain on track to fully accomplish the SDG 2 targets given in column 1 of Table 1, the ECO-RPFS should achieve the targets indicated in column T of Table 2. As an example, the prevalence of undernourishment (PoU) given in the first row of Table 2. For the ECO region to be on track, significant progress should be made in Afghanistan, Pakistan, Kyrgyzstan and the Islamic Republic of Iran. With the exception of Tajikistan for which data are not available, other members of the ECO region are likely to achieve the target, although most recent trends signal signs of deterioration.

The reason for this optimistic expectation is that access to food, rather than food availability, is the challenge, pointing to the need for better food security and nutrition governance and policies that positively impact employment and income generation and distribution. The PoU has a clear-cut quantitative target of 50 percent reduction during the period 2021–2025, as stated in the third column of Table 1. However, some indicators, such as the agricultural orientation index (AOI), do not have an associated quantitative target level because the optimal level can only be determined by considering the fundamentals of an economy, which include technology, preferences and endowments. For those qualitative indicators, a reasonable level of progress is assumed.

Regarding the assessment of change in the AOI given in Table 2, Afghanistan, the Islamic Republic of Iran, Kyrgyzstan and Pakistan should increase investment in agriculture, as represented by the symbol “ \uparrow ”. Azerbaijan, Kazakhstan, Türkiye and Uzbekistan present relatively larger shares of between 31 percent and 67 percent, which can be considered sufficient to support agriculture. Tajikistan and Turkmenistan lack sufficient data to conduct such an assessment. The coefficient of variation in cereal prices is another qualitative indicator for which no target level could be specified. In statistical terms, variation above 30 percent is generally regarded as unstable. Based on this rule of thumb, one can assume that cereal prices have been unstable in eight countries of the ECO region. Variation in Turkmenistan has been relatively stable, and Uzbekistan lacks data to make the necessary calculations.

To summarize, the targets indicated in the third column of Table 1 and the assessment of actual (A) versus target (T) levels provided in Table 2 should be used to determine the required progress to achieve the targets for the period 2021–2025.

2.2. Food availability

The main pressures on food availability in the ECO region are food loss and waste (FLW), transboundary animal diseases (TADs) and climate change (CC). Together, these factors will result in substantial declines in food availability if they remain unaddressed.

Food loss and waste

Food loss and waste (FLW) is an issue of great public concern at all regions and levels. The issue not only encompasses wastage of food and agricultural produce but also the wastage of resources used in their production, and the degradation of natural resources and the environment on which production is based. Data show that around 1.3 billion tonnes of all food produced in the world every year is lost or wasted along the food chain from production to consumption, of which about 630 million tonnes occurs in low- and middle-income countries (HLPE, 2014).

The 2030 Agenda for Sustainable Development emphasized the need for increased global awareness of FLW. Reducing food loss and waste is crucial to achieving Zero Hunger worldwide and achieving the Sustainable Development Goals (SDGs), especially SDG 2 (End hunger, achieve food security and improved nutrition and promote sustainable agriculture) and SDG 12 (Ensure sustainable consumption and production patterns). Target 12.3 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. Since FLW occurs largely during the production, aggregation, processing, distribution and consumption stages (HLPE, 2014: 57), it is essential to identify the sources and (social, policy and economic) causes of FLW along the supply/value chain – in particular at storage facilities – quantify the losses incurred and develop response strategies. Exchanging relevant experiences among ECO member states, especially good practices and innovations (e.g. in packing, labelling and marketing), should contribute to the design of regional strategies and mechanisms aimed at reducing FLW.

Transboundary animal diseases and plant pests

Since human productivity is strongly supported by the consumption of safe and nutritious animal source foods (ASFs), investment in livestock is a priority in national development strategies for a large number of countries. ASFs are a critical source of valuable calories and nutrition

required for reproductive health and the healthy growth of children up to 5 years of age. However, livestock development needs to be properly managed in order to control: (i) nutrient runoff and excessive concentration of nitrogen and phosphorus in surrounding ecosystems, (ii) contamination of water resources due to manure discharges and outflows from abattoirs and food processing, and (iii) adverse health and environmental effects linked to waste management and water quality (FAO, 2018a; Otte, Nugent & McLeod, 2004). In addition, livestock supply chains contribute significantly to global greenhouse gas (GHG) emissions (HLPE, 2012).

Conversely, climate change also affects livestock production in terms of the quality and availability of feed and forage, and threats to livestock resources caused by droughts, natural disasters and animal diseases. Reducing the adverse effects of transboundary animal diseases (TADs) on food security and nutrition lies at the cross section of all the SDGs because livestock plays a catalytic role in the accomplishment of all 17 of the SDGs (FAO, 2018a). Livestock can also play a key role in ending hunger through the direct consumption of healthy and nutritious ASFs (SDG 2), ensuring health and well-being for all at all ages (SDG 3), promoting inclusive and equitable quality education at all levels (SDG 4) and so on. Essentially, animal proteins can contribute to the achievement of all the SDGs. However, animals can, if not managed properly, transmit communicable and non-communicable human illnesses and diseases, and the over-consumption of such ASFs can lead to obesity and other health problems.

Transboundary animal diseases pose a major threat to food security in the ECO region as livestock occupies an important place in the national economies of member states, including Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan and Uzbekistan. As the migration of rural and nomadic people to neighbouring countries due inter alia to the effects of climate change may lead to conflicts, regional governance of animal movements across borders is necessary to minimize the adverse economic and food security effects of TADs. Establishing a regional monitoring and surveillance system and adherence to international trade standards would help to develop regional strategies for responding to new outbreaks. Furthermore, regional livestock policies and regulatory frameworks and robust animal health infrastructure are required to

properly manage cross-border movements of livestock and ASFs. Key actions that can help ensure the sufficient availability of ASFs across the ECO region include: capacity strengthening in decision-making and planning in public bodies; the creation of a regional animal health information system for the generation and exchange of information and knowledge to develop innovative diagnostic methods, tools and solutions for animal diseases; and capacity strengthening in livestock production and trade in private enterprises and small/medium-sized farms. It is also important that national research institutions join forces to implement collaborative actions in the ECO region.

Plant pests also represent a major threat to crop farming in the ECO region. Regional cooperation is therefore necessary to monitor and control cross-border pest activities in order to protect crops from the invasion of transboundary pests. In Afghanistan, the Islamic Republic of Iran, Pakistan and other Central Asian countries, an ongoing desert locust upsurge is threatening large hectares of crops (Pannier, 2020). An intensified desert locust infestation is also looming in the Islamic Republic of Iran which may cause large losses of crops, while the locust situation is worsening in Pakistan after new swarms arrived from Afghanistan and the Islamic Republic of Iran (Swarajya, 2020). Crop losses have been reported in several areas, while the situation in Central Asia is giving cause for concern. Locusts have spread across a wide area in Turkmenistan, devastating crops and provoking measures in neighbouring Uzbekistan. Efforts to battle locusts also continue in Kazakhstan and Kyrgyzstan; however the locusts in Central Asia do not appear to be the same species as the desert locusts plaguing the Islamic Republic of Iran, Pakistan and Afghanistan, which renders pest control more difficult and reinforces the need for regional cooperation.

Climate change

Climate change makes it harder to achieve food security as it reduces the productivity of food systems and harms the livelihoods of those already vulnerable to food insecurity. Climate change is largely a consequence of GHG emissions originating from human activities, and has myriad detrimental effects on plants, animals and natural resources. Agricultural practices including deforestation and other forms of land

conversion, livestock production, and soil and nutrient management practices account for about one-third of total global warming potential from GHG emissions; therefore, reducing direct and indirect emissions from agriculture is crucial to slowing the pace of climate change (HLPE, 2012). Agricultural practices today are among the primary sources of GHGs, with current livestock production accounting for about 15 percent of total emissions (FAO, 2018a). Such levels exert severe pressure on the environment, with emissions released into the air, water and soil through the utilization of natural resources, including land, water and fossil fuels (Afzal, A. & Asad, S.A. 2019). Reducing the impacts of climate change on agriculture and food production lies at the cross-section of a number of SDGs. Progress towards achieving SDG 1 (No Poverty) would reduce stress on forests and land encroachment, while 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) will help reduce and/or mitigate the adverse impacts of climate change.

In the context of the ECO region, most of the adverse effects can be addressed through changes in national and regional policies and regulatory frameworks. However, the effects of climate change extend beyond national boundaries, requiring cooperation at the ECO regional level to reduce GHG emissions and flood and drought frequency. Climate-smart agriculture (CSA) promises a sustainable improvement in food security by capturing potential mitigation co-benefits. Sustainable agriculture and ecosystem-based adaptation (EbA) are integral elements of CSA and should improve the functioning of healthy ecosystems by strengthening resilience to climate change and reversing the widespread degradation of agriculture's natural resource base.

The impacts of climate change effects on ECO member states, as elsewhere, require integrated regional responses, based on innovative approaches involving concurrent changes in agriculture, food production, natural resource management policies and related regulatory frameworks. Institutional learning would facilitate the exchange of nationally generated information and knowledge for better policy design and implementation at the regional level. Through changes in temperature and rainfall

regime, climate change may also have considerable impacts on agricultural productivity. Little is known in general about the impacts of climate change on the pests and diseases that affect crops, livestock and fish, but these could be substantial (HLPE, 2012).

2.3. Food access

The world is going through a series of critical socio-demographic, economic and environmental changes. Population growth is expected to continue through 2050 (Food Security Information Network, 2020; IFPRI, 2020), accompanied by unprecedented rates of urbanization in developing countries (HLPE, 2012). The outcome will be rapid growth in food demand in terms of quantity, quality and variety, and the overuse and deterioration of environmental and natural resources, if not properly managed. The relationships between these trends combined with the adverse effects of COVID-19 will have important implications for food chains and rural-urban market connectivity. Furthermore, COVID-19 slows down the flow of food along food chains while weakening the linkages between rural and urban markets.

For markets and food chains to remain operational and ensure increased income and employment, especially for smallholders and disadvantaged groups, national and regional policies and regulatory changes are necessary. Responsible investment in agricultural and food value chains should facilitate the development of optimal rural-urban linkages, which in turn will help contain rising urbanization through increasing income and employment opportunities in the rural sector. Promoting the development of inclusive agrifood value chains would create many employment opportunities for smallholders and disadvantaged groups; however, their integration into value chains and markets is not automatic. They need support to obtain better access to market information and information on agricultural and farming systems, new technology, business development skills and credit. Disadvantaged groups, such as women and youth, who usually lack the necessary capacities to become part of food chains, should be targeted by effective regulations to ensure their inclusion along the chains and to create off-farm rural employment opportunities. Regional agricultural, food production and trade policies will play an overarching role in

the connectivity of national agrifood chains and food markets.

The 6A global business survey conducted by PWC (2015) shows that a large percentage of businesses expect not only to have a significant impact on many SDGs but also to participate in new business opportunities that will contribute to the achievement of SDG 8 (Decent Work and Economic Growth), followed by SDG 13 (Climate Change), SDG 12 (Responsible Consumption and Production), SDG 3 (Good Health and Well-being) and, to a lesser degree, SDG 2 (Zero Hunger) and SDG 1 (No Poverty). This trend suggests that if markets are re-organized with a view to contributing to the achievement of SDGs, positive impacts in regard to employment, increased incomes, reduced climate effects, responsible food system operations, and improved food security and nutrition will be realized. Interestingly, this trend differs across developing and developed countries, with a larger number of businesses in the developing world expecting significant impacts and opportunities relative to businesses in the developed world. This evidence suggests that the re-organization of markets in developing countries would substantially enhance food security and nutrition.

Networking and ICT use, in particular, promise immense opportunities for both smallholders and disadvantaged groups to benefit from the integration of food chains into intermediate input and final output markets across and beyond the ECO region.

To achieve sustainable food security and nutrition, food chains and markets should be integrated in such a way as to promote inclusive and green growth. "Inclusive" here means implies growth is achieved if economic impacts (e.g. employment, incomes, profits, food production) and social impacts (e.g. improved income distribution, health and nutrition, animal welfare, conformity with social norms) are sustainable over the long term. The use of "green" implies that economic and environmental impacts (e.g. improved biodiversity and soil conservation, reduced food loss and waste and GHG emissions) reinforce each other over the long term. Inclusiveness functions as a deliberate support for the human right to food and nutrition, legitimizing smallholder food producers' access to natural resources, while greenness would ensure that natural resources

are used in a sustainable manner, for example by adopting agro-ecological practices. Implementing inclusive and green economic growth strategies requires institutional arrangements to strengthen regional sustainable food security and nutrition.

Historically, trade across ECO member states has been limited, although ample scope exists for agrifood trade in the ECO region. Trade with the world has also remained limited and unchanged. Central Asian countries continue to trade mostly with the Russian Federation; Türkiye with the European Union, MENA (Mediterranean and North Africa), the United States, the Russian Federation and Asia; Pakistan with Asia, the European Union, MENA, China and India; and the Islamic Republic of Iran with MENA, the European Union and Asia. The expected increase in regional demand for rice, vegetable oil, meat and dairy products provides ECO member states with an opportunity to diversify their trade partners, and would benefit food security of both producers and consumers in the region. Capitalizing on increasing trade opportunities requires ECO member states not only to align their trade policies and priorities but also to harmonize their food regulations with internationally accepted food quality and safety standards. To ensure stable food security in the ECO region, the diversification of trade partners within and beyond the region is particularly important for members (especially those in Central Asia) with very high food imports.

2.4. Food utilization

Diversified diets are crucial to obtain the micro-nutrients necessary for a healthy and productive life. It is particularly critical to invest in maternal nutrition and reproductive health and to ensure access to nutritious and safe food during the first five years of life. Such investment provides a high return in terms of reduced chronic disease in adulthood, while increasing human capacity for sustained access to safe, healthy and nutritious food. It further reduces preventable lifestyle diseases such as obesity, overweight and non-communicable diseases. However, evidence shows that accelerating urbanization and rising incomes promote dietary changes, notably the consumption of more processed food with a higher fat and sugar content, as well as the consumption of more

animal products and less staple food (FAO, 2017). Conventional food supply chains often provide food that has a high calorie intake but is low in nutritional content, resulting in many people particularly in urban areas consuming food that is poor in the nutrients essential for a healthy and productive life. Combined with sedentary lifestyles and higher ASF consumption, dietary changes in urban areas have resulted in over-nutrition and micronutrient deficiencies, resulting in diet-related diseases that represent a heavy socio-economic burden.

The solution lies in more diversified agricultural production and improved access to nutrient-rich food, while advocating for better understanding of the role of nutrition in preventing diet-related health problems, especially among urban populations. However, enhancing the quality of diets of the poor in the face of climate-related supply shocks and growing food demand represents a challenge, and highlights 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. In order to achieve dietary diversification, a large number of actors must organize around a common goal. On the consumer side, diversification of food consumption requires sufficient income and knowledge of the effects of quality diets on health. On the producer side, it demands responsible investment in food production and marketing. Achieving sustainable food and nutrition security thus necessitates the design and implementation of agricultural diversification policies that address the needs and expectations of both consumers and producers. Together, SDG 1 (No Poverty), SDG 2 (Zero Hunger) and SDG 3 (Good Health and Well-being) directly target mechanisms that lead to the consumption of safe, nutritious and healthy foods, and hence good health.

In most ECO member states, adequate food in terms of calories is available, but equitable access to safe, nutritious and sufficient food remains problematic, indicating that nutrition security is largely an equity issue. Food security is compromised mainly by the lack of access to food and/or excessive consumption of high calorie foods. Vulnerable groups of people, such as those living on or near the food poverty

line, refugees and internally displaced persons (IDPs), all face the risk of being food insecure. Social protection schemes are therefore critical to improve their resilience against adverse circumstances both natural and human-made. In ECO member states, social safety net programmes cover a large sphere of services, including cash and in-kind food transfers, school feeding, other social assistance programmes and public works programmes (cash and food for work). Institutionalization of these services would represent an important step towards a commitment for the right to food as an integral element of the sustainable development agenda in these countries. Furthermore, embedding nutrition objectives into mixed cropping and integrated farming systems, and ensuring a quality and diversified diet for the poor through targeted social protection, would pave the way for the consumption of more safe and diversified food, which is a prerequisite for improved livelihoods.

Productivity-oriented agricultural policies often prioritize a limited number of commodities, which in turn undermine the availability, especially in rural areas, of diversified food. As a consequence, people's nutritional status eventually deteriorates. Conversely, the promotion of nutrition-sensitive agriculture and food systems ensures the delivery of safe and nutritious food all year round. The identification of nutrition deficiencies in household dietary habits, targeting nutrition education and awareness programmes and promoting the consumption of locally grown nutritious food, would not only foster a vibrant local economy but also improve the nutritional status of the population.

2.5. Stability

The effects of the COVID-19 pandemic have destabilized social and economic sectors worldwide with devastating adverse effects. Imposed health measures, such as travel restrictions, border closures, physical distancing and lockdowns, have severely disrupted income-generation activities and slowed the flow of food and agricultural produce to markets. Large quantities of perishable food have been lost due to logistical challenges facing affecting value chains and markets, with particularly severe impacts on smallholders. Food and agricultural production and next-season farming preparations have also been disrupted due to the scarcity of imported

external production inputs. Food safety and quality, especially of animal-based foods, has been compromised by the reduction in food hygiene inspections linked to lockdown measures, which in turn leads to scarcity and price spikes in markets. Poor and vulnerable populations are likely to incur the most damage as these measures exacerbate under-employment and income loss. Recent assessments by FAO, the International Labour Organization (ILO), the International Monetary Fund (IMF), the Organisation for Economic Co-operation and Development (OECD), the United Nations (UN), the United Nations Department of Economic and Social Affairs (UNDESA), the World Health Organization (WHO) and the World Trade Organization (WTO), among others,^d emphasize that ensuring social protection measures reach rural populations is key to avoiding the further spread of poverty and hunger. The key challenges in this respect are identifying and reaching the target populations, and delivering the required benefits.

FAO highlights the critical role of policy and legislation mechanisms in responding to COVID-19, specifically to: (i) ensure transparent market information against speculation (ii) strengthen social safety nets, (iii) avoid uncertainty about food availability, (iv) mitigate disruptions in the food supply chain, (v) preserve the economy's productive capacity, (vi) minimize food loss and waste and post-harvest loss, (vii) take advantage of technologies and digital trade, and (viii) scale up regional pandemic response. Exploring these issues in the context of the ECO region should shed light on potential food security issues that may arise in the future and promote the development of coordinated regional responses to safeguard the poor and vulnerable. Using the SDG framework, the UN has conceptually mapped the linkages from the COVID-19 pandemic to each of the SDGs (UN, 2020b: 12, Figure 5) – a process that has highlighted the relative resilience of the national and world food security systems to the adverse effects of the crisis, with late and uncoordinated policy responses, together with limited public resources and social protection, exacerbating the health crisis in many countries.

Across countries and regions, political instability and internal conflicts are both a primary cause of food insecurity and a consequence. Even

^d There is a voluminous number of reports on the impact of COVID-19 on food security and nutrition (Cullen, 2020; FAO, 2020; ILO, 2020; IMF, 2020; OECD, 2020a, 2020b; UN, 2020a; WFP, 2020; WTO, 2020)

when conflicts take place at the national level, they can quickly spread to neighbouring states. Improvement in regional food security and nutrition would therefore underpin peace and reduce the potential for armed conflicts within a country. Some ECO member states suffer from such conflicts, while others are prone to the adverse effects of armed conflicts on their neighbour's territory. Political instability and conflicts in Afghanistan and Pakistan, and large refugees flows from the Syrian Arab Republic to Türkiye and from Afghanistan to the Islamic Republic of Iran, risk undermining successes achieved to date, especially in view of the fact that these countries account for 66 percent of the regional population. Weak social protection, low investment in health, the potential negative effects of climate change, and high rates of urbanization and income inequality all undermine economic growth and progress made towards food security.

SDG 16 (Peace, Justice and Strong Institutions) envisages peaceful and inclusive societies as the basis for sustainable development. Mechanisms such as sound national development strategies that reflect the interests of people in an equitable manner, as well as well-defined property rights, clear legislation to organize the use of the commons, confidence in local institutions and robust infrastructure, can enhance social peace, stability, and food security and nutrition.

Human, plant and animal diseases, natural disasters, climate events and, in some cases, armed conflicts do not recognize national boundaries, making disasters contagious. In such contexts, regional efforts are necessary to collectively respond to regional emergencies. For example, the establishment of regional inspection and diagnostic laboratories contributes to effective food trade in the region. Disaster risk prevention and mitigation mechanisms, emergency response plans, agricultural insurance schemes, and social and nutrition safety nets are among the key tools that can be employed to strengthen the resilience of farming systems, markets and communities – especially vulnerable populations – against the increasing frequency of natural, social and political threats.

3. Agriculture and nutrition nexus

The interlinkages between agriculture and nutrition and between nutrition and development are undeniable. Agriculture produces food that provides nutrition, which is fundamental to good health, effective learning and sustainable economic development. Improved nutritional status is essential to create a resilient society, since the malnourished are more susceptible to diseases that interrupt development processes. Some ECO member states have made important strides in nutritional development, while others lag behind in terms of food security and nutrition outcomes, including stunting, wasting, obesity, micronutrient deficiencies and diet-related non-communicable diseases. Lagging behind in this area jeopardizes future economic development in the region. Stunting is particularly evident in Afghanistan, Azerbaijan, Pakistan and Tajikistan, as shown in Table 2. A recent ECO food security and nutrition overview report^e shows that obesity is increasing in the region, putting a strain on government budgets and economic growth due to rising health expenses and income lost from reduced work hours. Current obesity trends in the region also pose a risk to the productive capacity of labour due to the growth in diet-related non-communicable diseases and disability in adulthood. Azerbaijan, the Islamic Republic of Iran, Kazakhstan and Türkiye all present high obesity rates. Anaemia, an indicator of poor nutrition and health, is also rising across the ECO region, threatening the health of future generations and development.

Current data makes a strong case for evidence-based cross-sectoral policy-making. While linkages between agriculture, nutrition, health and development have been known to exist, recent technological innovations in crop and animal breeding, as well as ICT use in agriculture, health and environment, has enabled these linkages to be quantified. Improved knowledge generation underpins the shift from single sector to cross-sectoral policy perspective and enables a systemic investigation of factors that determine the state of food security and nutrition. To accommodate the ongoing change in food security and nutrition policy design, structures such as food security and nutrition committee are required to govern processes that involve multiple sectors.

From a food security and nutrition policy perspective, agriculture and nutrition need to be treated in an integrated manner, while related policies and institutions must be governed by cross-sectoral bodies due to the strong interlinkages between agriculture, food production, nutrition and health. Concerns over soil fertility, land productivity, irrigation water quality, environmental degradation and so on can be viewed as mere acceptance of the presumption that agricultural and environmental policies would affect nutrition availability. It is also known that certain agricultural practices, including organic farming, ecosystem-based approaches, climate-smart agriculture and biodiversity considerations, among others, favour nutritious and environmentally responsible food production. As the production and consumption of nutritious food is influenced by multiple factors derived from the nexus of agriculture, environment and health, the health outcomes of food consumption should be addressed through coordinated efforts among these sectors. All these linkages constitute evidence for the need for a horizontal food security and nutrition governance structure to formulate and implement cross-sector food security and nutrition policies and programmes. This structure would simultaneously address food supply and the nutrition-related, long-term adverse health outcomes of food consumption. These are the objectives of the ECO Regional Programme for Food Security (ECO-RPFS).

^e A forthcoming overview of food security and nutrition in the ECO region, 2020.

4. The ECO Regional Programme for Food Security

Vision

Drawing on the 1996 Rome Declaration on World Food Security and the 2030 Agenda for sustainable development as key implementation frameworks, the stated vision of the ECO-RPFS is: “to ensure food security and nutrition at all levels for underpinning sustainable development towards the improved well-being of the populations in all ECO member countries.”

Mission

There are several possible pathways to achieve this vision. As noted by the ECO Framework for Cooperation (ECO, 2017), regional project and programme development can be instrumental in paving the way towards better food security and nutrition. Regional collaboration in areas that concern agriculture and food production, policy-making capacity development, food security and nutrition information generation and dissemination, food security monitoring, and nutrition interventions and impacts, can accelerate progress on sustainable development in ECO member states. Efforts targeting sustainable agriculture and food systems, inclusive market connectivity, agricultural and food policies, and regulations governing healthy, safe and nutritious food and disaster risk management can contribute to the overall mission of the ECO-RPFS – “to promote sustainable agriculture and safe and nutritious food production, while ensuring smallholders’ access to markets and agrifood value chains, and supporting the development of pro-poor and inclusive food security and nutrition projects and programmes in ECO member countries.”

Strategy

In order to effectively implement its mission, the ECO-RPFS has adopted a strategy characterized by policy interventions covering research and innovation, markets and knowledge transfer cutting across four components (see next section). The overall objective of the strategy is: “to support evidence-based policy-making and governance of food security and nutrition, to promote inclusive agricultural research and innovations, to create an enabling environment for inclusive market connectivity, and to facilitate knowledge transfer and raise aware-

ness of the health benefits of nutritious food consumption.”

4.1. Programmatic components

The ECO’s goal is pursued through the following thematic priorities (i.e. objectives as definable outcomes) under four components.

Component 1 aims to promote sustainable agriculture and food systems to ensure the availability of sufficient food for all. **Component 2** targets inclusive market connectivity to improve physical and economic access to sufficient food for all. **Component 3** focuses on nutrition and balanced diets, healthy food consumption environment and food and nutrition safety.

Component 4 concerns the stability of all aspects of food security and nutrition processes. As ECO member states differ in their food security and nutrition contexts, regional cooperation for enhanced food security and nutrition requires some changes in national food security and nutrition policy and regulatory frameworks. Such cooperation also necessitates structures such as agricultural research networks; mechanisms such as the participation of private sector actors in food security and nutrition processes, public-private partnerships or coordinated research funding as part of food security and nutrition policy interventions; policy instruments such as funds for disaster prevention or emergency food assistance, and so on. The following sections describe the motivation behind each of the four components. A wide range of indicators^f (additional to those proposed in conjunction with the priorities under each Component) to measure implementation of the ECO-RPFS are provided in Tables 16, 17 and 18.

Component 1: Sustainable agriculture and food systems

To achieve sustainable agriculture and food systems, agricultural and food production activities should have certain qualifications to support sustainable processes, including resource efficiency and environmental, nutritional, ecological and climate change considerations, among others. Promoting resource-efficient agricultural practices would enhance soil fertility, land and

^f A significant number of studies provide potential indicators that can be used to quantify the impacts of food systems, food security and nutrition, and inclusive markets. These include, but are not limited to: Fowler and Dunn (2014); Herforth et al. (2016); Ingram (2011); Lele et al. (2016); Moores and Hunters (2018); Pangaribowo, Gerber and Torero (2013); Reyntar, Hanso and Henninger (2014) and Yli-Viikari (1999).

water use efficiency, while ecosystem-based adaptation strategies, such as agro-biodiversity, would play a critical role in the provision of ecosystem services, and nutrition-sensitive agriculture and food production activities would support the regeneration capacity of renewable resources. Information generation and research could provide the needed evidence for informed policy-making and regulations to support the development of sustainable agriculture and food systems, which in turn would contribute to the achievement of the 2030 agenda for sustainable development.

Food production activities affect the natural environment through changes in land use patterns, water quality, climate and forest ecosystems, as well as by inducing changes in individual and population health through the consumption of food produced. Food loss and waste represents a global challenge that results not only in the wastage of food, but also the loss of the resources used for its production. Every year the world loses, or wastes, about a third of the food it produces. Such huge losses produce GHG emissions which contribute to climate change and thereby constrain agricultural and food production. Reducing losses and waste and encouraging re-use would contribute to sustainable development in various ways. In most ECO member states, levels of food loss and waste are higher than the global average. Identification of potential sources of waste and loss as well as the development of assessment methods and mechanisms for effective information flow are critical to promote sustainable practices along value and supply chains. The provision of critical information about key food loss and waste patterns can also be a valuable input for evidence-based policy-making. The necessary actions require regional cooperation, with regional priorities in some cases necessitating assistance to national governments and institutions as part of a regional cooperation plan for enhanced food security and nutrition.

Animal and plant diseases continue to play a major limiting role in agriculture and food production. Transboundary animal diseases pose risks not only to agricultural and food production but also to human health. Such risks can be direct through the transmission of zoonotic pathogens, the development of bacteria resistant to antimicrobials, and increasing concentrations in the environment of the residues of medicines and contaminants. They can also be

indirect as in the example of non-communicable diseases such as cardiovascular disorders, which occur if ASFs are consumed in excess. However, it should be noted that ASFs are also sources of high-value nutrition for human health, particularly for reproductive women and children aged under 5. Concerning plant pests, increasing environmental and climatic shifts pose risks to future cropping systems, especially concerning plant protection. Climate change and human activities also alter ecosystems, reduce biodiversity and create new pockets where pests can multiply.

New plant diseases continue to emerge, while existing ones take a severe toll on cropping systems. FAO estimates that up to 40 percent of food crops are lost due to plant pests and diseases annually, leaving millions of people without enough food to eat and seriously damaging agriculture. Protecting plants from pests and transboundary plant pests is far more cost effective than dealing with plant health emergencies. Prevention is also critical to avoiding the devastating impact of pests and diseases on agriculture, livelihoods and food security. Enhancing plant nutrients plays an important role in the prevention of plant diseases and contributes to the achievement of sustainable development.

Natural resources are critical for healthy agriculture and nutritious food production. Water is essential to human life and ecosystems. The agriculture sector is the number user of water for crops and livestock, accounting for 70 percent of all water withdrawals globally, and up to 95 percent in some developing countries (FAO, 2018b). Population growth will increase water demands for agriculture in order to produce sufficient food to feed the world. Land and soil health are also essential for agriculture; however, deforestation to create agricultural land and sub-optimal use of external inputs have led to productivity declines and accelerated climate change.

Enhanced sustainable agriculture and food systems would contribute to the achievement of several SDGs (see Table 15). First, growth in sustainable agriculture contribute significantly to achieving SDG 1 (No poverty) by effectively reducing poverty, as rural people represent the largest segment of the world's extreme poor, accounting for more than 70 percent of the total poor population.

Second, sustainable agriculture and food sys-

tems would contribute directly to achieving SDG 2 (Zero hunger) and its targets: SDG 2.3 (productivity and incomes), SDG 2.4 (sustainability and resilience of food production systems), SDG 2.5 (biodiversity), SDG 2.a (investment in infrastructure and research/extension services and technology), and SDG 2.c (timely access to market information on food reserves).

Sustainable agriculture and food production would also improve health and contribute to cognitive development, thereby ensuring progress towards SDG 3 (good health and well-being). Animal-source food production substantially contributes to the development of cognitive and reproductive health, making highly nutritious food available for all at all ages, particularly for women at reproductive ages and children aged under 5. Plant nutrients play an important role in the prevention of plant diseases, and healthy plants are a source of critical micronutrients that boost the human immune system against diseases (i.e. functional food to protect and strengthen human health).

Sustainable agriculture and food production will contribute to SDG 4 (education), as agricultural extension enables farmers to access the skills, tools, inputs and technology they need to implement sustainable agricultural practices. It is also pertinent to SDG 6 (water use), as global water demand will increase more than 50 percent and agriculture demands more water than can be sustained to feed the world. Likewise, energy demand (SDG 7) is expected to increase by as much as 50 percent, mostly in the developing world, with more crops likely to be allocated for use as biofuels. Average per capita consumption is also expected to increase despite population growth, while one-third of food produced is wasted. Accordingly, sustainable agriculture and food production would contribute to the achievement of SDG 12 (sustainable consumption and production). Agriculture's carbon mitigation potential could reach as much as 7.5 percent of total global emissions, depending on the adoption of agricultural productivity measures; hence sustainable agriculture and food production would contribute to achieving SDG 13 (climate change). Lastly, improving the efficiency of farmland can help meet the world's growing consumption demand, while minimizing the loss of natural habitats and forests for additional cultivation (Farming First, 2015, thereby contributing to SDG 15 (ecosys-

tem management).

The sustainable management and development of natural resources and the protection of ecosystems and biodiversity are essential for sustainable agriculture and food production (FAO, 2018b), which would contribute to the achievement of SDG 2 (targets 4 and 5), SDG 6 (targets 3, 4 and 6), SDG 12 (targets 2,3, 4, 5, 6 and 12.c), SDG 14 (targets 1, 2 and 5) and SDG 15 (targets 1, 2, 3, 4, 5, 6, 8 and 9).

The specific priorities and actions under Component 1 are presented in Tables 3, 4, 5, 6 and 7.

Component 2: Inclusive market connectivity

To ensure more productive and sustainable agriculture and rural development, connecting rural and urban markets and smallholders through inclusive agrifood values chains is essential. This will enhance access to food as effective, operating markets offer employment and raise incomes. Viewed in the context of inclusive rural transformation, investment in post-harvest storage and distribution, information and communication, and market services (finance and technology) support the development of connected markets and allow for physical and timely access to food. Economic access to food, however, requires changes in policies and regulations to foster inclusive and equitable market connectivity that will empower disadvantaged market participants (including smallholders, women and marginalized groups).

Promoting non-farm opportunities along agri-food value chains such as processing industries would create greater employment opportunities for vulnerable households as well as higher income opportunities for smallholders and small-scale food producers. By providing opportunities for both farm and off-farm activities, market connectivity can also serve as insurance against disruptions in farming systems. It would create employment for smallholders and/or disadvantaged groups, enabling them to earn incomes in the face of extreme climate events and/or during the lean season. More connected markets should also substantially improve access to food; however, there are also risks associated with long food value chains in which external factors play a bigger role and smallholder farmers have less control over input and output prices. While international commodity markets bring greater demand, they generally offer lower margins for smallholders and are

more likely to be affected by speculation and accessed through contracts (FAO, 2018b). To overcome this bias, smallholders, subsistence farmers and other disadvantaged groups should coordinate concerted action to protect their interests. This will require support from the public sector in business skill development, micro-credit and access to extension/technology, in order to elevate them to become powerful peers along agrifood value chains.

National policy-making and regulatory capacity development would pave the way for the connectivity of agricultural and food markets within the ECO region as well as within international markets, which would in turn facilitate the participation of smallholders and farmers, especially women and disadvantaged enterprises, in regional and international trade. ICT-based trade, information and codified knowledge exchange networks would be instrumental in helping smallholders access modern agrifood value chains in the ECO region and beyond. However, capturing the full benefits of integration into markets and agrifood value chains is not automatic and necessitates the removal of specific obstacles facing smallholders, including limited access to logistics and market information, and poor business skills and financial knowledge. Farmer field schools, for example, can improve smallholders' understanding of value chain operations and their niche within them.

Although ample scope exists for agrifood trade across ECO member states that share a common culinary culture, historically, regional trade has been limited. Trade with the rest of the world has also remained limited and unchanged. Central Asian countries continue to trade mostly with the Russian Federation; Türkiye with the European Union, MENA (Mediterranean and North Africa), the United States, the Russian Federation and Asia; Pakistan with Asia, the European Union, MENA, China and India; and the Islamic Republic of Iran with MENA, the European Union and Asia. The expected increase in regional demand for rice, vegetable oil, meat and dairy products provides ECO member states with an opportunity to diversify their trade partners, and would benefit food security of both producers and consumers in the region. Capitalizing on increasing trade opportunities requires ECO member states not only to align their trade policies and priorities but also to harmonize their food regulations

with internationally accepted food quality and safety standards. To ensure stable food security in the ECO region, the diversification of trade partners within and beyond the region is particularly important for members (especially those in Central Asia) with very high food imports. From a realistic perspective, creating intra-regional agrifood trade opportunities depends on the ability of ECO countries to organize around regional food security and nutrition priorities.

Inclusive and connected markets promise broad opportunities for sustainable development within a country, catalysing the development effects of many other SDGs (see Table 15). They would help reduce poverty (SDG 1) and food insecurity (SDG 2) through improved productive capacity, employment creation and empowerment of the poor, and would reduce malnutrition via better access to more nutritious food. Inclusive and connected markets would also enhance child education (SDG 4) by increasing household incomes that reduce pressure on households for child labour and increase opportunities for education for all girls and boys. Empowering women (SDG 5) can reduce economic discrimination against women and indirectly boost women's participation in market activities, creating decent work opportunities (SDG 8) and promoting equalities (SDG 10), not only for women, but also for young people and persons with disabilities. By broadening market participation, inclusive and connected markets would make communities more inclusive and sustainable (SDG 11). Furthermore, inclusive markets promote peaceful and inclusive societies for sustainable development (SDG 16), empowering poor and marginalised groups and thereby reducing unjust practices such as forced child labour. Lastly, inclusive markets would provide platforms for partnerships between governments, civil society and businesses (SDG 17).^g

The specific priorities and actions under Component 2 are presented in Tables 8 and 9.

Component 3: Healthy, safe and nutritious food consumption

Healthy, safe and nutritious food consumption is crucial for improving maternal nutrition, reproductive health and the healthy growth of children under 5 years of age. Healthy mothers

^g Moores and Hunters (2018) and Fowler and Dunn (2014) exploring the linkages listed in this paragraph.

and children significantly reduce the risk of chronic disease in adulthood, while increasing human capacity for sustained access to safe, healthy and nutritious food and, thus, for building productive lives. Healthy, safe and nutritious food also further reduces the likelihood of preventable lifestyle diseases, such as obesity, overweight and non-communicable diseases. Increasing incomes and urbanization lead to dietary changes favouring the consumption of processed food with higher content of oil, salt and sugar. Conventional food supply chains often provide food with a high calorie intake but low in nutrition content, leaving many people in urban areas with food low in the nutrients needed for good health and a productive life. This may lead to further overnutrition and micronutrient deficiencies, which in turn impose unacceptably high economic and social costs on all countries. Raising awareness about and advocating for a direct link between the consumption of diversified and nutrient-rich food and the prevention of diet-related health problems, especially among urban groups who are not familiar with nutrient-rich foods, would not only reduce health problems, improve labour productivity and foster a vibrant economy, but also reduce the social cost of disease through declines in public health spending.

Agriculture and food systems are often assumed to automatically provide nutritious food; however, this is not the case. Agricultural and food policies generally prioritize productivity improvement for a limited number of commodities, which in turn undermines the availability of diversified food, especially in rural areas. Eventually, people's nutritional status is tied to nutrient intake from the consumption of only a few commodities. Conversely, the promotion of diversified and nutrition-sensitive agriculture and food systems can deliver safe and nutritious food all year round. Embedding nutrition objectives into mixed cropping and integrated farming systems, on the one hand, and ensuring a quality and diversified diet for the poor through targeted social protection, on the other, would pave the way for the consumption of safe and diversified food essential for nutrition security. Accordingly, improved nutrition and balanced diets contribute to the realization of SDG 1 (No poverty), SDG 2 (Zero hunger, specifically Targets 2.1 and 2.2), SDG 3 (Good health and well-being), SDG 5 (Gender equality), SDG 8 (Decent work and economic growth) and SDG 12 (Sustainable consumption and produc-

tion) (see Table 15).

In most ECO member states, adequate food in terms of calories is available, but equitable access to safe, nutritious and sufficient food remains problematic, indicating that nutrition security is largely an equity issue. Food security is compromised mainly by the lack of access to food and/or excessive consumption of high calorie foods. Vulnerable groups of people, such as those living on or near the food poverty line, refugees and internally displaced persons (IDPs), all face the risk of being food insecure, and have limited options for building reliable and sustainable livelihoods. National social protection schemes are therefore critical to improve their resilience against adversities, both natural and created.

When combined with relevant health services, well-designed social protection programmes result in improved height, reduced anaemia, increased dietary diversity and raised consumption of nutrient-dense foods, especially in low-income households with infants and children (UNSCN, 2016). In ECO member states, social safety net programmes cover a large sphere of services, including cash transfers, in-kind food transfers, school feeding, other social assistance programmes and public works programmes (cash for work and food for work). Institutionalization of these services would represent an important step towards a commitment for the right to food as an integral element of the sustainable development agenda in these countries. It is also imperative that policy and regulatory frameworks aim to strengthen national dietary guidelines, nutrition education and information to empower people to make informed healthy dietary and lifestyle choices. Creation of an enabling environment for effective nutrition action and food safety also calls for national planning, coordination and ensuring coherence among sectoral policies and mechanisms.

The specific priorities and actions under Component 3 are presented in Tables 10 and 11.

Component 4: Stability of food availability, access and utilization

Disaster risk prevention and mitigation mechanisms, emergency response plans, agricultural insurance schemes, and social and nutrition safety nets are among the key tools that can be employed to strengthen the resilience of

farming systems, markets and communities – especially vulnerable populations – against the increasing frequency of natural, social and political threats. The stability of food security and nutrition is a public good; therefore, the public sector should bear the main responsibility for funding the establishment of an information and early warning system for monitoring and forecasting food emergencies. Timely availability of new information and knowledge together with strong policy-making capacity and institutions would make a significant contribution to the stability of food supply, markets, employment, income and a healthy food consumption environment.

Emergency situations mostly affect smallholder producers and family farmers. As part of disaster risk reduction and resilience-building efforts, vulnerable people should have access to information to avoid, respond to and cope with the effects of shocks, such as floods, storms and droughts, and react to health crises that threaten to damage agricultural and human resources. Investing in early warning alerts can help minimize or completely avoid damages to assets and resources. Strengthening preparedness involves the preparation of risk profiles, action plans and contingency plans for different farming systems. Action plans with dedicated emergency funds will strengthen preparedness, for example, against high-threat plant and animal diseases or pest outbreaks. They should also include a plan for minimizing the burden of outbreaks in post-disaster situations and for restoring local production and market capacities such as irrigation schemes or roads or electricity infrastructure. Improved preparedness and resilience to high-threats or shocks contribute to the realization of SDG 1 (No poverty), SDG 2 (Zero hunger), SDG 9 (Industry, innovation and infrastructure), SDG 13 (Climate action) and SDG 14 (Life below water).

Human, plant and animal diseases, natural disasters, climate change effects and, in some cases, armed conflicts do not recognize national boundaries, making disasters contagious. Therefore, regional cooperation is necessary to establish a regional information network to capitalize on potential gains, for example, from stable regional trade of livestock or crops. This would also require ECO member states to cooperate at the policy level in order to collectively respond to regional threats. For example, the establishment of regional inspection and diagnostic

laboratories would contribute to effective food trade in the region.

Enhancing the resilience of people, communities and ecosystems would contribute to the realization of a large number of SDGs (Table 15) to varying degrees. Enhancing the resilience of communities and ecosystems would help achieve SDG 2 (target 2.4 (major)), SDG 13 (Climate action, target: 13.1, 13.2, 13.3 and 13.b (major)), SDG 1 (target 1.5 (medium)), SDG 9 (target 9.a (medium)), SDG 11 (target 11.5 (medium)), SDG 14 (Life below water, targets: 14.5 and 14.b (medium)), and SDG 15 Life on land (targets 15.1, 15.3, 15.4, 15.5, 15.9, 15.a and 15.b (medium)) (FAO, 2018b).

The specific priorities and actions under Component 4 are presented in Tables 12, 13 and 14.

5. Governance and management

Established with the approval of the 19th Council of Ministers in 2010 and publicly announced at the 5th ECO Ministerial Meeting on Agriculture in 2012, the ECO Regional Coordination Centre for Food Security (ECO-RCCFS) has been mandated to govern the implementation of the ECO-RPFS (ECO, 2012: 1). In collaboration with the ECO Secretariat and FAO-SEC, the ECO-RCCFS aims to coordinate ECO-RPFS projects and activities in ECO member states to enhance cooperation in the fields of agriculture and food security. As stated in its activity programme, the ECO-RCCFS will coordinate and facilitate all projects in the ECO region, including information exchange between all stakeholders, awareness raising, the organization of training, seminars and workshops on food security, as well as the search for potential donors to support implementation of the ECO-RPFS. Of particular importance is monitoring of all activities planned and carried out to keep track of progress towards the SDGs listed under each component. In case of lack of progress or deviations from the programme objectives, the ECO-RCCFS would need to apply pressure or re-orient the planned activities towards the SDG targets concerned.

6. Programme sustainability and risk management

Programme sustainability and risk management calls for concerted attention to various dimensions, including financial stability, effective programme and risk management. Regarding financial stability, the search for funding and allocations across programme priorities should be internalized. Here, a proactive approach is essential to ensure the sustainability of the ECO-RPFS. A roster of potential donors distributed across ECO-RPFS priorities should be developed to enable the ECO-RCCFS to approach relevant donors for financial support. Advocacy workshops, regional meetings and conferences are among the tools that can be used to keep donors informed of progress and potential future projects that need funding. Concerning programme risk management, financial stability is essential but not sufficient in and of itself to minimize the risks involved in programme implementation.

The changing priorities of donors and other conditions in ECO member states likely to influence implementation of the ECO-RPFS would need to be monitored and addressed in sufficient time to ensure continuity of programme activities. Developing effective and complementary linkages between the ECO-RPFS and other regional initiatives of international organizations would be important not only to promote wider coordinated initiatives involving ECO member states, but also to reduce the risks of programme failure. The most significant risk affecting implementation and continuity of the ECO-RPFS is weak political, economic and social commitment to programme priorities on the part of national policy-makers and other stakeholders. A secondary issue concerns the measurement of programme results and impacts as these can be observed only after a gestation period. Difficulties may also arise when establishing causality between programme activities and impact. Lastly, cost inefficiencies may occasionally become an issue, although strict cost controls and requirements regarding achieved results, as well as careful selection and targeted audits limit such risks.

7. Monitoring and reporting

Specific, Measurable, Achievable, Relevant and Time-bound (SMART) indicators are often adopted to monitor and evaluate programme progress (Doran, 1981). Such indicators should be developed to establish programme-impact causality and easily measure progress towards specified programme targets. Although a strict causality of food security and nutrition policies to population welfare is difficult to identify and prove, in spite of the methodological challenges, monitoring of the ECO-RPFS will be based on SMART indicators and ECO-RPFS reporting, which is committed to producing measurable results.^h

For monitoring, evaluation and policy-informing purposes, systematic and regular data collection, management and analysis processes should be established. This should involve timely collection and analysis of data and the preparation of evaluation reports and evidence-based policy briefs to inform policy-making. SMART indicators will be used for periodic assessments of progress made towards the targets concerned, with regular monitoring of the ECO-RPFS to track the relevance, effectiveness and efficiency of the programme portfolio. In addition to quantified assessment, annual reporting will involve descriptive methods to account for results, notably outcomes that cannot be measured quantitatively.

^h An indicator must be specific (S) to allow for its translation into operational terms. While the programme result/outcome can be broad, the indicator should be narrow and focus on the who and what of an intervention. Given a specific target, a good indicator should provide information on who is doing what. The indicator concerned must be measurable (M), implying that it has the capacity to be counted, observed and analysed. If one cannot measure the indicator, then the progress cannot be measured quantitatively. The measurement of the indicator should be attainable (A) (or feasible) if the target accurately specifies the amount/level of what is to be measured in order to meet the result/outcome. The target attached to the indicator should be attainable or feasible. The indicator should be relevant (R) to the issue measured. A sound conceptual framework is required to establish the relevance of the indicator. For that, the conceptual framework adopted should rationalize what the indicator measures. The quantification of the indicator should be timely (T), meaning that the time should be right for measurement of the result/output in order to substantiate the causality between programme activity and its impact.

8. Results and resources framework

In order to implement the ECO-RPFS over the period 2020–2025, the overall programme budget will be allocated across four components, drawing on the ranking of all food security and nutrition priorities in the ECO region. During the first stage all priorities listed under the four components will be ranked based on importance (expressed as a score) for the ECO region. During the second stage priority scores within a component will be aggregated to determine the overall importance of that component within the ECO-RPFS. The overall budget will then be distributed across components and priorities. In certain cases, donors may provide conditional support to certain priorities. Such supports should be dealt with separately in the final distribution of funds across the four components. Component-specific priorities (i.e. objectives as definable outcomes), actions and/or outputs, indicators for the assessment of progress, expected outcomes and potential implementing government agencies are presented in Tables 3–14.

Concerning the distribution of resources across components, assessment of actual resource allocation of international organizations for agricultural and rural development shows that priorities related to agricultural innovation and extension systems, reduction of ecological footprints of agriculture and food production, and securing tenure and access to land, account for the largest portion of total available resources. Moreover, priorities concerning improved governance for food security and nutrition, responsible agricultural investment or sustainable use of agro-biodiversity and ecosystem demand less resources. However, this observation based on previous experience by no means implies a fixed scheme for resource allocation. Flexibility and creativity are desirable to create synergy across priorities and hence use resources accordingly to achieve them. However, resource allocation across components is premature at this stage of formulation of the ECO-RPFS, and should be preceded by preparation of a regional investment plan.

9. Linking the ECO-RCCFS with potential donors

The food security and nutrition sector attracts a large number of donors, including national and international research and development agencies, regional development organizations, and national and international NGOs. These organizations adopt certain principles designed to generate useful, practical, qualitative, transparent and accessible information with high-level standards. The challenge is to harness synergies between the ECO-RPFS' mandate and the mandates of global food security and nutrition programmes, and hence secure part of the funds required for RPFS activities. Various instruments and mechanisms are of particular relevance to the ECO-RPFS, including but not limited to the following:

- The UN Network of Scaling Up Nutrition (SUN) is a movement organized by countries committed to the understanding that good nutrition is the best investment in the future. The SUN movement is backed by different stakeholders, including civil society, the United Nations system, development partners, business enterprises and researchers. Kyrgyz Republic, Pakistan and Tajikistan are partners.
- The UN Standing Committee on Nutrition (UNSCN) is a dedicated platform where UN agencies can share their knowledge, best practices and cutting-edge information among its members and with other stakeholders.
- Multi-donor Trust Funds (MDTF), for example, those supported the European Union budget (EuropeAid (DG DEVCO)) provide funds for specific reconstruction programmes and global challenges such as climate change and food security, natural disasters, wars, etc.ⁱ
- Bilateral project and programme support.
- Partnerships with the private sector bring more outreach and higher development impact (e.g. as public-private development

partnerships, joint ventures on blended financing, impact investments and others) in the spirit of the SDGs.

- The A&FS network provides strategic orientation on agriculture and food security and nutrition.
- Environmental climate financing from sources such as the Green Climate Fund (GCF) and the Global Environment Facility (GEF) supports the transition to more climate-resilient, sustainable agriculture and food systems.
- The Network for Environmental Funding by European Foundations.
- The Network for Sustainable Cities Funding by European Foundations.
- The Network for Sustainable Agriculture and Food Funding by European Foundations.
- The Central Asia and Caucasus Regional Nutrition Capacity Development and Partnership Platform.

ⁱ For various MDTFs that contribute to development efforts in areas including environment, health and food security in ECO member states, see pages 7–24 of https://ec.europa.eu/international-partnerships/system/files/info-note-multidonor-trust-fund-eu-support-2003-2016_en.pdf. Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan have already received support from various MDTFs.

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Table 1: SDG 2 targets and indicators

SDG 2 Targets	Indicators for assessment	Targets to achieve during 2021-2025
<p>[2.1] By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round</p>	2.1.1 Prevalence of undernourishment (PoU)	2.1.1 Reduce PoU by 50 percent
	2.1.2 Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)	2.1.2 Reduce FIES by 50 percent
<p>[2.2] By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons^a</p>	2.2.1 Prevalence of stunting (height for age <-2 standard deviation from the median of the World Health Organization (WHO) Child Growth Standards) among children under 5 years of age	2.2.1 Reduce stunting by 40 percent
	2.2.2 Prevalence of malnutrition (weight for height >+2 or <-2 standard deviation from the median of the WHO Child Growth Standards) among children under 5 years of age, by type (wasting and overweight)	2.2.2 No increase in childhood overweight
	2.2.3 Prevalence of anaemia in women aged 15 to 49 years, by pregnancy status (percentage)	2.2.3 Reduce anaemia by 50 percent
<p>[2.3] By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, Indigenous Peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment</p>	2.3.1 Volume of production per labour unit by classes of farming/pastoral/forestry enterprise size	2.3.1 Increase per labour agriculture production and income by 134 percent relative to 2015 levels
	2.3.2 Average income of small-scale food producers, by sex and Indigenous status	
<p>[2.4] By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality</p>	2.4.1 Proportion of agricultural area under productive and sustainable agriculture	2.4.1 Increase % of land under sustainable agriculture practices

^a Internationally agreed nutrition targets by 2025 by WHO: (1) 40 percent reduction in the number of stunted children <5, (2) reduce or maintain childhood wasting to less than 5 percent, (3) 50 percent reduction in anaemia in women of reproductive age, (4) no increase in childhood overweight, and (5) increase the rate of exclusive breastfeeding in the first 6 months up to at least 50 percent

SDG 2 Targets	Indicators for assessment	Targets to achieve during 2021-2025
<p>[2.5] By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed</p>	<p>2.5.1 Number of (a) plant and (b) animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities</p> <p>2.5.2 Proportion of local breeds classified as being at risk of extinction</p>	<p>2.5.1 Maintain or improve crop collections enrichment (index)</p>
<p>[2.a] Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries</p>	<p>2.a.1 The agriculture orientation index (AOI) for government expenditures</p> <p>2.a.2 Total official flows (official development assistance plus other official flows) to the agriculture sector</p>	<p>2.a.1 Increase in AOI</p>
<p>[2.b] Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round.</p>	<p>2.b.1 Agricultural export subsidies</p>	<p>2.b.2 Reduction in agriculture expenditure subsidy</p>
<p>[2.c] Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility</p>	<p>2.c.1 Indicator of food price anomalies</p>	<p>2.c.1 Reduction in food price variability</p>

Table 2: food security and nutrition targets for the period 2012–2025

Food security and nutrition indicators ^a	AFG		AZE		IRN		KAZ		KYR	
	A	T	A	T	A	T	A	T	A	T
Prevalence of undernourishment (2017-19)	30	15	<2.5	<2.5	4.7	2.3	<2.5	<2.5	6.4	3.2
Prevalence of severe food insecurity in pop (FIES) (2017-19)	22.7	11.3	<0.5	<0.5	8.3	4.1	<0.5	<0.5	0.8	0.4
Prevalence of moderate/severe food insecurity in pop (FIES) (2017-19)	60.8	30.4	9.6	4.3	39.7	19.3	2.1	1.1	6.3	3.1
Children < 5 affected by wasting (%) (2017-19)	5.1	2.1	3.2	1.6	3.1	1.5	2	1	2	1
Children < 5 who are stunted (%) (2015-19)	38.2	19.1	17.8	8.4	6.8	3.4	8	4	11.8	5.9
Average value of food production (pc) ^b (2014-16)	102	"	266		321		434		269	
Incidence of caloric losses at retail distribution level (%) (2018)	2.7	1.3	2.4	1.2	3.3	1.6	2.5	1.3	2.4	1.2
Agriculture orientation index for government expenditure ^c (2018)	0.17	"	0.50		0.16	"	0.38	#	0.13	"
Variability of food production value (pc) ^d (2015)	3.5	#	5.7	#	9.6	#	47.4	47.4	3.9	#
Variability of food supply (cal/pc/day) ^e (2017)	20		48		29		57	#	43	
Coefficient of variation (cereal price) ^f (2000-18)	0.32	#	0.38	#	0.90	#	0.45	#	0.44	#

Food security and nutrition indicators ^a	PAK		TAJ		TUR		TRM		UZB	
	A	T	A	T	A	T	A	T	A	T
Prevalence of undernourishment (2017-19)	12.3	6.1	na	-	<2.5	<2.5	4	<2.5	2.6	<2.5
Prevalence of severe food insecurity in population (FIES) (2017-19)	na	-	na	-	na	-	na	-	2.8	1.4
Prevalence of moderate/severe food insecurity in population (FIES) (2017-19)	na	-	na	-	na	-	na	-	17.2	8.6
Children < 5 affected by wasting (%) (2017-19)	7.1	3.5	5.6	2.8	1.7	0.9	4.2	2.1	1.8	0.9
Children < 5 who are stunted (%) (2015-19)	37.6	18.8	17.5	8.8	6	3	11.5	5.8	10.8	5.4
Average value of food production (pc) ^b (2014-16)	186	"	143	"	483		325		321	
Incidence of caloric losses at retail distribution level (%) (2018)	3	1.5	2.4	1.2	4.1	2.1	2.6	1.3	2.8	1.4
Agriculture orientation index for government expenditure ^c (2018)	0.02	"	na	-	0.67		na	-	0.31	
Variability of food production value (pc) ^d (2015)	3.2	#	6.2	#	13.8	#	17.8	#	7.7	#
Variability of food supply (cal/pc/day) ^e (2017)	16		59		63		64	#	94	
Coefficient of variation (cereal price) ^f (2000-18)	0.52	#	0.50	#	0.41	#	0.24	#	na	-

a The letters A and T denote Actual and Target, respectively. Actual refers to the most recently realized data as of the date indicated in bracket; target, the level of change needed to be achieved during the period 2021-2025. For those indicators without any specific target level, arrows are used to indicate the desirable direction to reach the optimal level: " implies Increase, # implies Decrease; and blank implies a change around the current level.

b Defined as the food net per capita production value (in constant 2004-06 int'l dollars), as published by FAOSTAT.

c Defined as the agriculture share of government expenditure, divided by the agriculture value added share of GDP, where agriculture refers to the agriculture, forestry, fishing and hunting sector.

d Corresponds to the variability of the food net per capita production value in constant 2004-2006 international dollars, as published by FAOSTAT.

e Corresponds to the variability of the food supply in kcal/caput/day, as published in FAOSTAT.

f Defined as the ratio of the standard deviation to the mean of cereal price data available over 2000-2018. The higher (lower) the coefficient of variation, the greater(smaller) the level of dispersion around the mean.

Table 3: Logical framework for Priority 1.1 under Component 1

Component 1: Sustainable agriculture and food systems

Priority 1.1: To increase sustainable agricultural and food production

Actions/Outputs: 1.1	Indicators for assessment	Expected outcome	Implementing Agencies
Output 1.1.1: Promote farming practices that improve biodiversity (through safeguarding land, water, energy resources, and wetland and forest areas) and ecosystem services (including pollination, soil formation, nutrient cycling) necessary for food production	<ul style="list-style-type: none"> • Agriculture/forestry energy use as (% total) • Access to clean energy • Access to clean water • Fish stocks (%) within safe biological limits • % of land under sustainable agricultural practices • Soil quality index • Area of degraded land (% forest/wood land) • Animal and plant health index 	<p>Sustainable farming practices adopted</p> <p>Safeguarded/improved biodiversity and ecosystem services</p>	<p>Ministry of Environment and Ecology (MoEE),</p> <p>Ministry of Agriculture (MoA), Ministry of Natural Resources (MoNR)</p>
Output 1.1.2: Promote reconciliation of biological and ecological processes within agricultural and food production processes (through nutrient cycling, soil regeneration nitrogen fixation)	<ul style="list-style-type: none"> • Soil quality improvement • Rate of regaining mineral nutrients (carbon, nitrogen, phosphorus in the soil environment) • Rate of nitrogen fixation in soil 	<p>Integrated processes in agricultural and food production</p>	<p>MoEE, MoA</p>
Output 1.1.3: Promote environmentally and nutritionally sensitive agriculture and food production (through multiple crops cultivation, sustainable intensification, nutrition sensitive processing and livestock farming)	<ul style="list-style-type: none"> • % of land under sustainable agriculture practices • Sustainable cultivation and external input use • Soil quality index • Soil erosion rate • Reduction in land degradation, deforestation and forestry energy use 	<p>Improved sensitivity of agriculture and food production to environment/nutrition concerns</p>	<p>MoEE, MoA, Ministry of Health (MoH)</p>
Output 1.1.4: Strengthen smallholders' capacity (extension, technology, skills) for agro-ecological farming (promoting biodiversity, soil health/organic matter, organic fertilization, biological pest control and pest regulation/weed control without external inputs causing pollution of soils and waterways)	<ul style="list-style-type: none"> • Information/extension services for agro-ecological farming • Rate of external input use • Area of degraded land (% of forest/woods land) 	<p>Improved capacity of smallholders for agro-ecological farming</p>	<p>MoEE, MoA</p>

Table 3: Logical framework for Priority 1.1 under Component 1

Component 1: Sustainable agriculture and food systems

Priority 1.1: To increase sustainable agricultural and food production

Actions/Outputs: 1.1	Indicators for assessment	Expected outcome	Implementing Agencies
Output 1.1.5: Support evidence-based policy-making for promoting agro-ecological practices, environmentally and nutritionally sensitive agriculture and food production (while protecting biodiversity and ecosystems, and improving soil, plant and livestock productivity)	<ul style="list-style-type: none"> • Regulations on climate change, ecosystem conversion and pesticide/chemical use • Agriculture information/research, (dis)incentives for soil conservation, nutrient management practices • Information/extension services for agro-ecological farming 	<p>Evidence-based policy-making strategy adopted</p> <p>Strengthened linkage between policy-making and science-based evidence</p>	MoEE, MoA, MoH
Output 1.1.6: Promote exchange of best practices to support learning for sustainable agriculture and food production	<ul style="list-style-type: none"> • Availability/access/use of AIKS (agriculture information/knowledge systems) and EIKS (environmental/ecological information/knowledge systems) 	Improved learning for sustainable agriculture and food production	MoEE, MoA, MoH

Table 4: Logical framework for Priority 1.2 under Component 1

Component 1: Sustainable agriculture and food systems

Priority 1.2: To reduce food loss and food waste throughout food supply chains

Actions/Outputs: 1.2	Indicators for assessment	Expected outcome	Implementing Agencies
Output 1.2.1: Adopt integrated pest control (emphasizing the least possible disruption to agro-eco-systems and encouraging natural pest control mechanisms, for example, for locust control, control of virus and virus-like diseases of fruit crops) to keep pesticides to levels economically justified and minimize risks to human health and the environment	<ul style="list-style-type: none"> • Scale of sustainable farming practices • Rate of external input use (pesticide) • Soil quality index • Water pH as quality indicator plant health index • Environment policy: regulations on pesticide use 	Improved pest control with low-cost, high welfare gains	MoEE, MoA,
Output 1.2.2: Support the development of food loss and waste (FLW) information collection/assessment/monitoring tools	<ul style="list-style-type: none"> • No. of tools for information collection, measuring and monitoring FLW 	Improved FLW data and information collection tools	MoA, Ministry of Economy (MoE)
Output 1.2.3: Improve evidence-based policy-making and regulatory changes to minimize FLW along the agrifood value chains (AVCs)	<ul style="list-style-type: none"> • No. of policies concerning FLW • No. of regulations on the reduction of FLW 	Improved policy and regulatory framework for FLW management	MoA, MoE, Ministry of Education (MoEd)
Output 1.2.4: Strengthen market infrastructure (storage, distribution, processing, packing, information infrastructure) for effective and nutritious food supply	<ul style="list-style-type: none"> • Investment in food supply logistics • Presence/efficient use of MIS (ICT investment/capacity) • No. and use of food packaging methods 	Improved market operations	MoA, MoE
Output 1.2.5: Improve information, research and extension services for effective pre-harvest and post-harvest methods for reducing climate change (CC) effects of food waste	<ul style="list-style-type: none"> • Methods/regulations on CC-effects of FLW • Public investment in farm capacity development to minimize FLW 	Improved information, research, extension system	MoEE, MoA
Output 1.2.6: Raise awareness of adverse effects on food security and nutrition of resources lost and food wasted	<ul style="list-style-type: none"> • FLW information products produced/distributed • FLW integrated into food security and nutrition agenda 	FLW awareness raised and economic loss reduced	MoA, MoH, MoEd

Table 5. Logical framework for Priority 1.3 under Component 1

Component 1: Sustainable agriculture and food systems

Priority 1.3: To enhance sustainable management of natural resources

Actions/Outputs: 1.3	Indicators for assessment	Expected outcome	Implementing Agencies
Output 1.3.1: Strengthen the development of the environmental and natural resources information, assessment and monitoring tools	<ul style="list-style-type: none"> Investment in natural resources (NR)/environmental/ecological (NREE) information/knowledge system and its operation No. of information and assessment products developed 	Enhanced NREE information/knowledge system	MoEE, MoA, MoE
Output 1.3.2: Enhance research and innovation capacity to develop: (1) new/improved farming methods (adaption to climate change, integrated pest management, soil nutrient enhancing farming, i.e. optimal tilling, stress resistant crops, efficient use for irrigation water); (2) methods to measure and reduce the environmental and ecological footprints of agriculture; (3) methods to promote sustainable use of biodiversity/ecosystem (forestry, fishery)	<ul style="list-style-type: none"> No. of sustainable farming methods applied against CC effects, pest control, soil degradation No. of new methods developed to measure/reduce carbon and water footprint of agriculture No. of new methods developed for sustainable use of biodiversity and ecosystems 	Enhanced capacity for science, innovation and technology development for sustainable farming	MoEE, MoA
Output 1.3.3: Enhance capacity for evidence-based NR policy-making: (1) to govern land/water use for non-food production (i.e. for biofuel production, monetization of land market, industrial water use); (2) to conserve environmental amenities (i.e. clean rivers/blue coasts/water/forest for freshwater supply), biodiversity, genetic resources; (3) to promote climate smart agriculture (CSA) (i.e. increase productivity while reducing GHG emissions); (4) to promote ecosystem-based adaptation to build resilience to climate change-effects; (5) to promote ecological/organic agriculture in public policies and investment plans (standards/certification procedures, advisory/information practices, organization of markets/value chains)	<ul style="list-style-type: none"> Changes in land/water allocation for agriculture (i.e. in biofuel production) Policy/regulations for conservation of environmental amenities and wildlife Reduction in GHG emissions from agriculture Fish stocks (%) within safe biological limits Policy/regulations promoting organic agriculture Policy/regulations for optimal use of agriculture/forestry No. of CSA practices implemented 	Evidence-based NR policy-making capacity enhanced	MoEE, MoA

Table 6: Logical framework for Priority 1.4 under Component 1

Component 1: Sustainable agriculture and food systems

Priority 1.4: To control transboundary animal diseases and plant pests

Actions/Outputs: 1.4	Indicators for assessment	Expected outcome	Implementing Agencies
Output 1.4.1: Strengthen regulatory requirements for traceability and rapid response systems against animal diseases and plant pests	<ul style="list-style-type: none"> • No. of regulations adopted for traceability of animal diseases and plant pests • Presence of animal/plant health warning system 	Enhance regulatory framework for animal/plant health	MoA
Output 1.4.2: Improve animal/plant health services in trade buffer zones	<ul style="list-style-type: none"> • Change in plant/animal health index 		MoA
Output 1.4.3: Coordinate research, innovation, extension (RIE) in: (1) animal/plant disease information, assessment and monitoring tools; (2) genetic resources preservation (a seedbank, a gene bank); (3) high-yield, CC-resilient and disease-resistant seed varieties (through seed testing, production and surveying) and new livestock-breeding methods; (4) organic farming and nutrition for plant health	<ul style="list-style-type: none"> • Presence of agriculture and environmental policies and governance • Presence of policy priorities and funding RIE • Improved information/knowledge generation/use in (1-4) • Extent of organic farming • No. of new CC- and disease-resilient, high-yield seeds 	Improved policy coordination and RIE services concerning (1-4)	MoEE, MoA

Table 7: Logical framework for Priority 1.5 under Component 1

Component 1: Sustainable agriculture and food systems

Priority 1.5: To enhance agriculture information system, rural advisory, extension services for sustainable/inclusive productivity increase

Actions/Outputs: 1.5	Indicators for assessment	Expected outcome	Implementing Agencies
Output 1.5.1: Technology transfer to smallholder/farmer organizations and networks for wider application	<ul style="list-style-type: none"> • Presence of regional framework for farmer networks • No. of new agriculture cooperatives/networks for technology transfer 	Enhanced productivity/incomes	MoA
Output 1.5.2: Capacity building for applying climate-resilient seeds, promoting plant genetic resources and optimal use of external inputs (i.e. pesticides, fungicides, herbicides)	<ul style="list-style-type: none"> • Presence of agriculture research/extension service for applying new seeds/external inputs • No. of newly developed seeds/input use methods 	Increased capacity for seed development/input use methods	MoA, MoEE

Table 8: Logical framework for Priority 2.1 under Component 2

Component 2: Inclusive market connectivity

Priority 2.1: To enhance market connectivity for improved rural livelihoods and poverty reduction

Actions/Outputs: 2.1	Indicators for assessment	Expected outcome	Implementing Agencies
Output 2.1.1: Establish an integrated regional market information system for food trade/timely access to adequate food/nutrition during and after natural disasters	<ul style="list-style-type: none"> • Presence of food security and nutrition governance body • Institutionalize evidence-based policy-making • Presence of food security information system (FSIS) • Institutionalize regional food security information exchange 	Improved capacity for regional exchange of market information	MoE, MoA, MoEE, MoH
Output 2.1.2: Develop regulatory frameworks to harmonize regional agriculture/food trade policy and enforce trade contracts for supply/price stability in ECO member states	<ul style="list-style-type: none"> • No. of regulations passed concerning agriculture trade policy harmonization • No. of trade contracts in dispute and resolved 	Improved regional agriculture trade policy harmonization and supply/price stability	MoE, MoA, MoH
Output 2.1.3: Support sustainable and inclusive AVCs for the benefit of smallholder/family farms (SFF), women/men, poor and marginalized	<ul style="list-style-type: none"> • Rate of SFF/female labour participation along AVCs • SFF/women's access to land and credit • Support for fair trade organizations to access AVCs • % of population with access to functioning markets 	Improved equitable AVCs	MoE, MoA, MoH
Output 2.1.4: Remove investment barriers impeding: (1) SFFs to benefit from market infrastructure (storage, transportation, ICTs, extension services); (2) rural/urban linkages for off-farm employment and income creation	<ul style="list-style-type: none"> • Public support for SFFs to have better access to market information, storage, ICTs and extension services • % of paved roads • Rail lines density (per 100 sq km land) 	Improved enabling environment for SFF employment/incomes	MoE, MoA
Output 2.1.5: Create and link regional networks of SFFs and cooperatives for better access to agriculture /food markets (i.e. access to market information, food safety technology, ICT services) and supermarkets to procure local food	<ul style="list-style-type: none"> • Regulatory framework for SFF, cooperative and supermarkets to engage in networking • No. of platforms on nets/rural-urban linkages • No. of mobile phone subscriptions per 100 people 	Improved policy/regulatory environment for networking	MoE, MoA, MoH

Table 9: Logical framework for Priority 2.2 under Component 2

Component 2: Inclusive market connectivity

Priority 2.2: To strengthen the connectivity of markets within the ECO region and with the international trade system

Actions/Outputs: 2.2	Indicators for assessment	Expected outcome	Implementing Agencies
Output 2.2.1: Invest in agriculture and food trade facilitation across the ECO region (i.e. food safety regulatory framework, advantageous trade rules, transportation, labour migration)	<ul style="list-style-type: none"> Investment in institutional capacity development for trade facilitation Regulatory frameworks for expert/knowledge mobilization across the ECO countries 	Enhanced capacity for trade policy/regulation making	MoE, MoA, MoH
Output 2.2.2: Support SFF's equitable market participation in the ECO region: (1) access to information, knowledge, advisory services, cooperatives for technology/finance, agriculture/food trade nets; (2) promote market institutions (crop/disaster risk insurance, access to credit/technology institutions); (3) protect SFFs from ill-effects of financialization of agriculture commodity/food markets	<ul style="list-style-type: none"> Public support for access to information/credit/technology Support for investment in market institution development No. of regulations limiting use of agriculture land for non-food purposes Public expenditure on agriculture R&D and extension 	Equitable market participation enhanced	MoE, MoA, MoH
Output 2.2.3: Develop institutional capacity for negotiating international trade agreements	<ul style="list-style-type: none"> Investment in institutional/technical capacity for international trade negotiations 	Trade-related institutional capacity enhanced	MoE, MoA, MoH
Output 2.2.4: Promote policy/regulatory changes for accession to the WTO	<ul style="list-style-type: none"> No. of trade policy/regulations adopted to comply with WTO policy 	Trade-related institutional adjustments enhanced	MoE, MoA, MoH

Table 10: Logical framework for Priority 3.1 under Component 3

Component 3: Healthy, safe and nutritious food consumption

Priority 3.1: To promote nutrition and balanced diets

Actions/Outputs: 3.1	Indicators for assessment	Expected outcome	Implementing Agencies
<p>Output 3.1.1: Establish a health/nutrition (HN) information system to facilitate: (1) evidence-based food policy; (2) nutrition surveillance/early warning; (3) nutrition/diet awareness</p>	<ul style="list-style-type: none"> • Cross-sector FN policy governance body • No. of new regulations to protect nutritional value of food • Curriculum promoting health benefits of nutritious/safe diets • National nutrition programmes/dietary guidelines • Micro-nutrient interventions 	<p>Public/private HN information systems integrated</p>	<p>MoH, MoA, MoEd</p>
<p>Output 3.1.2: Promote cross-sector food/nutrition (FN) policy to: (1) establish national dietary guidelines and use social protection programmes for their promotion; (2) devise regulations/technology to protect the nutritional value of food along AVCs; (3) use education policy to promote nutritious/safe diets with a low environmental footprint; (4) raise awareness of HN-enhancing benefits of balanced diets and of adverse health effects of foods high in salt/fat/trans-fat/sugar; (5) improve micro-nutrient intake and health outcomes (e.g. salt iodization programmes to reduce the risk of diseases like goitre, iodine deficiency)</p>	<ul style="list-style-type: none"> • Cross-sector FN policy governance body • No. of new regulations to protect nutritional value of food • Curriculum promoting health benefits of nutritious/safe diets • National nutrition programmes/dietary guidelines • Micro-nutrient interventions 	<p>Integrated FN policies implemented</p>	<p>MoH, MoA, MoEd, Ministry of Social Protection and Labour (MoSPL)</p>
<p>Output 3.1.3: Integrate mechanisms/guidelines into regulatory frameworks for improved access to balanced diets: (1) adopt public procurement of safe/nutritious foods used in nutrition safety nets; (2) strengthen regulations for advertising/marketing, increasing transparency of nutrition info on labels; (3) guide consumers towards healthy diets via public health programmes, mass media, nutrition education</p>	<ul style="list-style-type: none"> • No. of new regulations promoting balanced diets • No. of new regulations enforcing nutrition info labels • No. of nutritional safety nets supported by public procurement • Community awareness raising on diet-health links 	<p>Balanced diets institutionally promoted</p>	<p>MoH, MoA, MoEd, MoSPL</p>

Table 11: Logical framework for Priority 3.2 under Component 3

Component 3: Healthy, safe and nutritious food consumption

Priority 3.2: To strengthen food and nutrition safety

Actions/Outputs: 3.2	Indicators for assessment	Expected outcome	Implementing Agencies
<p>Output 3.2.1: Devise regulations to: (1) support responsible investment for enhanced nutrition/food safety; (2) enforce food trade certification, food safety, quality, traceability rules; (3) monitor compliance of food safety standards (nutrition information labelling, food packing) with regulations</p>	<ul style="list-style-type: none"> • Regulatory changes for responsible investment in food safety • New/improved rules for food trade and Traceability of food-borne diseases • New/improved food safety standards 	Strengthened food safety regulatory framework	MoH, MoA, MoEd
<p>Output 3.2.2: Develop nutrition safety nets and improve vulnerable population's access to nutritious food</p>	<ul style="list-style-type: none"> • No. of newly organized nutrition safety nets • % of vulnerable population with access to these nets 	Improved access to nutritious/safe food	MoH, MoSPL

Table 12: Logical framework for Priority 4.1 under Component 4

Component 4: Stability of food availability, access and utilization

Priority 4.1: To strengthen resilience of agriculture/food production and markets against the risks of natural disasters and climate change

Actions/Outputs: 4.1	Indicators for assessment	Expected outcome	Implementing Agencies
Output 4.1.1: Establish a regional, integrated information and early warning system for monitoring/forecasting food emergencies (develop national climate plans, conduct assessment of expected CC impacts)	<ul style="list-style-type: none"> • Protocols for regional information exchange on food stocks, expected CC effects on food production • National plan/resources allocated for CC adaptation actions 	Regional food emergency information and early warning system developed	MoE, MoA, MoEE
Output 4.1.2: Develop risk profiles for region's: (1) NR, biodiversity/ecosystems (forests, water, land, sea); (2) key crop/livestock production (to support emergency preparedness, agriculture risk management, crop insurance, preparation of a disaster prevention/mitigation plan); (3) markets (i.e. scale/level of market disruptions due to measures for reducing the negative effects of COVID-19)	<ul style="list-style-type: none"> • No. of ECO member states with prepared risk profiles concerning (1-3) • No. of ECO member states with a memorandum of understanding for sharing their profiles 	Country risk profiles prepared and used in regional actions	MoE, MoA, MoEE
Output 4.1.3: Invest in preparedness against shocks/high-threats (national disasters, animal/plant/human disease outbreaks)	<ul style="list-style-type: none"> • Emergency response protocols prepared • Strategies developed/resources allocated to respond to shocks and threats • Action plan for community resilience aftermath 	National response plans prepared/improved	MoE, MoA, MoEE, MoH, MoSPL

Table 13: Logical framework for Priority 4.2 under Component 4

Component 4: Stability of food availability, access and utilization

Priority 4.2: To develop a portfolio of regional strategies/action plans for restoring production capacities/market connectivity

Actions/Outputs: 4.2	Indicators for assessment	Expected outcome	Implementing Agencies
Output 4.2.1: Establish an integrated regional food security and nutrition info network for monitoring/planning/forecasting regional food production/trade	<ul style="list-style-type: none"> • Regional food security and nutrition information governance body • No. of national food security and nutrition information platforms/networks • No. of food security and nutrition agencies involved in the networks • No. of mechanisms/protocols to monitor/forecast regional food production/trade 	Regional food security and nutrition info network and governance body established	MoA, MoH, MoEE, MoE, MoSPL
Output 4.2.2: Provide regular information and analysis of regional vulnerabilities to support evidence-based decision-making	<ul style="list-style-type: none"> • No. of regional food security and nutrition information products regularly produced • Mechanisms/protocols for regional distribution of the products to support evidence-based actions 	Improved understanding of regional vulnerabilities and actions to respond	MoA, MoH, MoEE, MoE, MoSPL

Table 14: Logical framework for Priority 4.3 under Component 4

Component 4: Stability of food availability, access and utilization

Priority 4.3: To enhance regional capacity to deal with nutrition and food safety emergency conditions

Actions/Outputs: 4.3	Indicators for assessment	Expected outcome	Implementing Agencies
Output 4.3.1: Devise a regional emergency action plan to respond to food-related crises	<ul style="list-style-type: none"> Regional emergencies identified Regional resource allocation made 	Regional emergency action plan prepared	MoA, MoH, MoE, MoE, MoSPL
Output 4.3.2: Support regional research for disease- and drought-resilient seed varieties	<ul style="list-style-type: none"> Financial/technical support to improve research capacity Financial/technical support to establish labs 	Research capacity enhanced for emergency response	MoA, MoH, MoE, MoEE, MoSPL
Output 4.3.3: Establish regional diagnostic labs to develop food safety solutions (for residual antibiotics, food-borne pathogenic bacteria, food radiation, etc.)	<ul style="list-style-type: none"> No. of nationally developed food safety solutions No. of protocols to apply the solutions to regional emergencies 	Plans/programmes prepared for regional investment in prioritized diagnostic labs	MoA, MoH, MoE, MoEE, MoSPL
Output 4.3.4: Enhance regional resilience to shocks via regional trade facilitation, regulate labour movement, international aid, national safety nets/social protection instruments (i.e. micro insurance for smallholders, drought risk insurance, resource transfers)	<ul style="list-style-type: none"> No. of regional trade protocols/agreements Regional labour movement protocols/agreements No. of international aid programmes for food safety 	Enhanced regional resilience to shocks	MoA, MoH, MoE, MoEE, MoSPL

Table 15: Mapping of SDGs to which RPFs components will contribute

SDGs	Component 1: Sustainable agriculture food systems	Component 2: Inclusive market connections	Component 3: HSN food consumption	Component 4: Stability
SDG 1: End poverty in all its forms everywhere	X	X	X	X
SDG 2: End hunger, achieve food security and improved nutrition, and promote sustainable agriculture	X	X	X	X
SDG 3: Ensure healthy lives and promote well-being for all at all ages	X		X	
SDG 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	X	X		
SDG 5: Achieve gender equality and empower all women and girls		X	X	
SDG 6: Ensure availability and sustainable management of water and sanitation for all	X			
SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all	X			
SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all		X	X	
SDG 9: Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation				X
SDG 10: Reduce inequality within and among countries		X		
SDG 11: Make cities and human settlements inclusive, safe, resilient, and sustainable		X		X
SDG 12: Ensure sustainable consumption and production patterns	X		X	
SDG 13: Take urgent action to combat climate change and its impacts by regulating emissions and promoting developments in renewable energy	X			X
SDG 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development				X
SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	X			X
SDG 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all level		X		
SDG 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development		X		

Table 16: Indicators for the assessment of agriculture and food systems sustainability

Environmental/Ecosystem sustainability	Economic sustainability
<ul style="list-style-type: none"> • GHG emissions from agriculture practices • Carbon footprint • Water pH • Agriculture water withdrawal (% of renewable water) • Number of dead water sources • Water footprint • Agriculture land (% under sustainable agriculture practices) • Rate of external input use (nutrient, pesticide) • Soil quality index • Rate of regaining mineral nutrients in the soil environment (carbon, nitrogen, phosphorus, etc.) • Rate of nitrogen fixation in soil • Soil erosion rate • Area of degraded lands (% of forest and wood land) • Biodiversity: animal and plant health index • Wildlife (plants, animals) – benefits index of biodiversity deforestation and hunting • Crop diversity – calorie diversity (Shannon index) • Fish stocks (%) within safe biological limits • NRM: agriculture/forestry energy use as (% total) • Non-renewable energy use • Access to clean energy 	<ul style="list-style-type: none"> • Agricultural VA • Employment in agriculture (% of total employment) • Gini index for land distribution <p>Social sustainability</p> <hr/> <ul style="list-style-type: none"> • Female labour force participation rate (%) • Inclusion: predominant fair trade organizations/producers <p>Policies</p> <hr/> <ul style="list-style-type: none"> • Environmental policy: regulations on pesticide and chemical use, climate change, ecosystem conversion, environmental research • Agricultural policy: subsidies and agriculture research, incentives/regulations on soil conservation and nutrient management practices • Information/extension services for agro-ecological farming availability/access/use of AIKS (agriculture information/knowledge system) and EIKS (environmental/ecological information/knowledge system)

Table 17: Indicators for the assessment of inclusive market connectivity

Inclusive markets via

- Building productive capacity of the poor
- Improve production/food security in communities
- Reducing child labour via education opportunities for children
- Reducing economic discrimination against women
- Encouraging the growth of micro-enterprises, SMEs
- Promoting partnerships among government, civil society, business
- VA distribution (gender/youth/Indigenous population)
- Cumulative no. of agriculture-related inclusive PPPs
- Cumulative value of investment in inclusive PPPs

Value chain reliability

- Inclusive employment along agrifood value chains
- Equal access to information/resources/technology by women/men

Market infrastructure

- % of paved roads
- Density of rail lines (per 100 sq. km land) Transportation and storage facilities
- No. of mobile phone subscriptions per 100 people

Social coherence

- Absence of conflicts and political instability
- Inclusive policies (GINI coefficient)
- Existence of food safety programmes (pension, food assistance)
- % of population without access to functioning market
- Access to financing for farmers
- Women's access to agriculture land and credit
- Public expenditure on education
- Gender equality
- Constitutional right to food and social security

Policies and market regulations

- Price regulations: price stability
- Infrastructure subsidies
- Access to micro-finance
- Agricultural import tariffs
- Public expenditure on agriculture R&D

Table 18: Indicators for the assessment of food security and nutrition

Availability

- Food available for consumption, per capita
- Agricultural production index
- Agricultural VA, per worker
- Yield for key commodities
- Government agriculture expenditure as % of agriculture VA
- Variability of food supply
- Existence of food stocks
- Cereal/food import dependency ratio

Food waste and loss

- Food loss as % of total food produced
- Consumer food waste
- Global food loss index

Access

- Food consumption expenditure (% of total income) Poverty index
- No. of mobile phone subscriptions per 100 people
- Social security expenditure on health (% of government health expenditure)
- % of paved roads
- Estimated travel time to the nearest market

Utilization

- Access to improved drinking water (% of population)
- Access to improved sanitation (% of population) Community hygiene programmes
- Access to electricity (%)
- Food safety score/food safety agency
- Burden of food-borne diseases (no. of cases)
- Global burden of food-borne diseases

Stability

- Food price volatility index
- Food supply variability, per capita
- Duration of national food stocks
- Food storage capacity
- Income equality/gender equity
- Political stability/absence of violence (index)
- Existence of plant/animal health warning system
- Capacity to generate/use data/information (index)
- Existence of evidence-information-based policy interventions

Nutrition and health

- Diet diversification
- National dietary guidelines
- Food production diversity
- Prevalence of undernourishment
- Prevalence of stunting/wasting (children <5)
- Prevalence of obesity (% of the population over 18)
- Prevalence of anaemia among women/reproductive age
- Dietary availability of vitamin A, animal and vegetable iron
- Micro-nutrient intervention
- Hidden hunger (serum retinol deficiency)

Policy

- Food and health policy
- National nutrition programme
- Government expenditure on health (% GDP)
- Government expenditure on education/nutrition/social protection (% GDP)
- Food system regulations

Table 19: Cost estimates for RPFS coordination and capacity building

	Amount					
	2021	2022	2023	2024	2025	Total
Information and knowledge management						
- Developing Overview of Food Security			15 000		15 000	30 000
- ECO-RCCFS website update	1 000	1 000	1 000	1 000	1 000	10 000
RPFS awareness raising and review workshops	30 000	30 000	20 000	10 000	10 000	100 000
Capacity-building trainings						200 000
ECO-RCCFS office and staff cost						100 000
Subtotal						500 000

Table 20: Cost estimates for RPFS implementation

	Amount
Component 1: Sustainable agriculture and food systems	2 200 000
Component 2: Inclusive market connectivity	1 200 000
Component 3: Healthy, safe and nutritious food consumption	1 200 000
Component 4: Stability of food availability, access and utilization	1 300 000
Subtotal	5 900 000

Table 21: Total cost estimates for RPFS

	Amount
RPFS coordination	500 000
RPFS implementation	5 900 000
Total	6 400 000

**Table 22: Detailed cost estimates for Component 1
(Sustainable agriculture and food systems)**

	Amount
1.1 Increase sustainable agricultural and food production	600 000
1.2 Reduce food loss and waste throughout food supply chains	500 000
1.3 Enhance sustainable management of natural resources	400 000
1.4 Control transboundary animal diseases	400 000
1.5 Enhance agri info system, rural advisory, extension services	300 000
Subtotal	2 200 000

**Table 23: Detailed cost estimates for Component 2
(Inclusive market connectivity)**

	Amount
2.1 Enhance market connectivity for improved rural livelihoods and poverty reduction	800 000
2.2 Strengthen the connectivity of markets within the ECO region and with the international trade system	400 000
Subtotal	1 200 000

**Table 24: Detailed cost estimates for Component 3
(Healthy, safe and nutritious food consumption)**

	Amount
3.1 Promote nutrition and balanced diets	700 000
3.2 Strengthen food safety for nutrition	500 000
Subtotal	1 200 000

Table 25: Detailed cost estimates for Component 4 (Stability of food availability, access and utilization)

	Amount
4.1 Strengthen resilience of agrifood production and markets against the risks of natural disasters and climate change	500 000
4.2 Develop a portfolio of regional strategies and action plans for restoring production capacities and market connectivity	300 000
4.3 Enhance regional capacity to deal with nutrition and food safety emergency conditions	500 000
Subtotal	1 300 000







**REPUBLIC OF TÜRKİYE
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