



REPUBLIC OF TÜRKİYE
MINISTRY OF AGRICULTURE
AND FORESTRY

TOWARDS THE TRANSFORMATION OF FOOD SYSTEMS IN TÜRKİYE

National Dialogue Process for UN Food Systems Summit 2021

PROBLEMS, PROPOSED SOLUTIONS
AND ACTIONS TOWARDS
ACHIEVING 2030 SUSTAINABLE
DEVELOPMENT GOALS AND
ADVANCING / IMPROVING
SUSTAINABLE FOOD SYSTEMS





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Direktorate General for European Union and Foreign Relations
2021

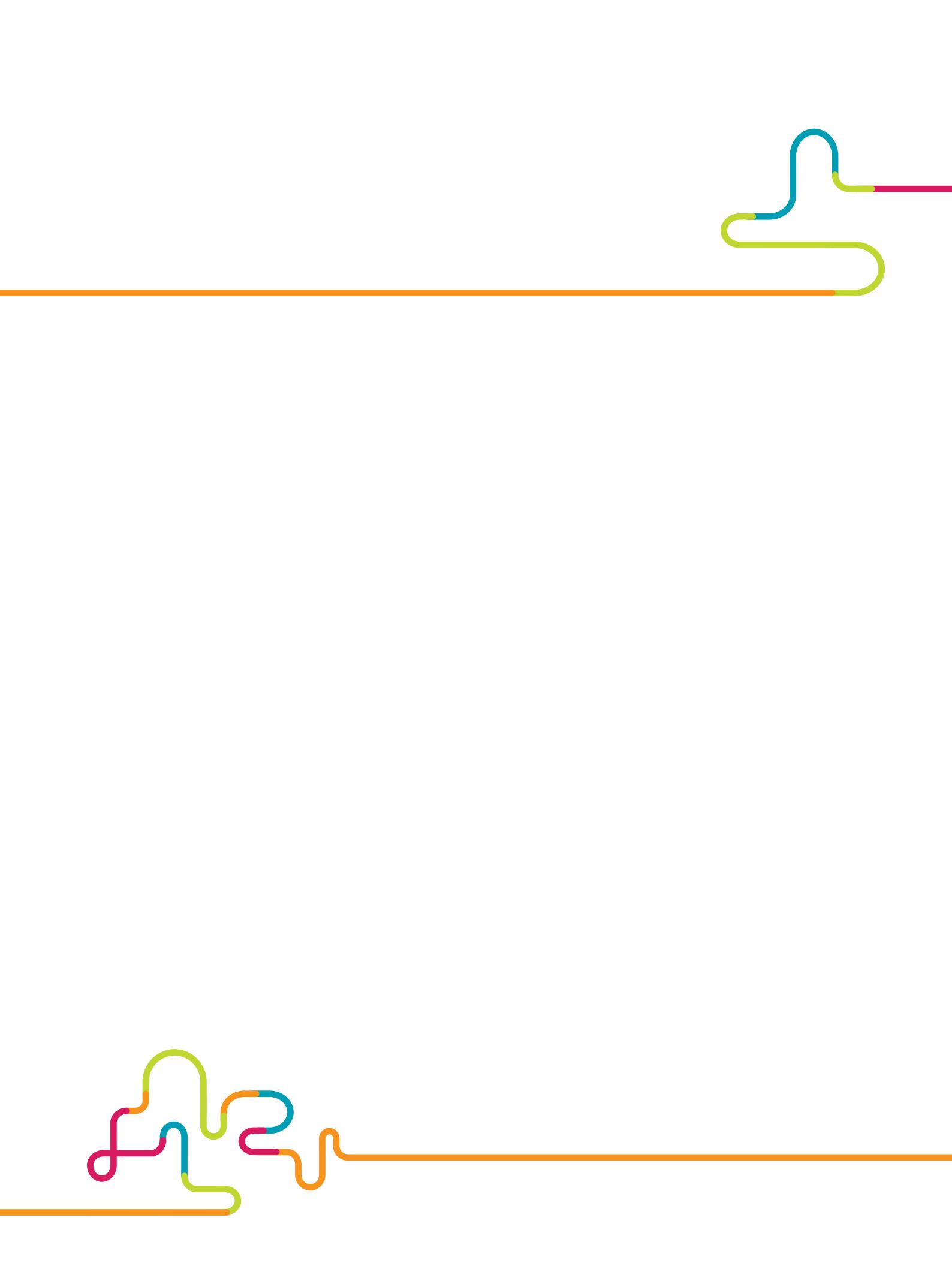


TABLE OF CONTENTS

LIST OF TABLES	ii
LIST OF FIGURES	iii
PART I. FINAL REPORT ON ONLINE SURVEY ON SUSTAINABLE FOOD SYSTEMS TOWARDS ACHIEVING SUSTAINABLE DEVELOPMENT GOALS BY 2030	1
1. INTRODUCTION	1
2. EFFORTS CARRIED OUT UNDER SUMMIT PREPARATIONS	3
2.1. Business Council for Sustainable Development (BCSD Türkiye) Questionnaire Analysis	3
2.1.1. Profile, Problems and Intervention Areas	3
2.1.2. Proposed Solutions	8
2.1.3. Areas of Action	10
2.2. Other Stakeholders-Questionnaire Analysis	11
2.2.1. Profile, Problems and Intervention Areas	11
2.2.2. Proposed Solutions and Actions	30
3. CONCLUSIONS	61
REFERENCES	67
ANNEX	64
PART II. FINAL REPORT ON NATIONAL WORKSHOP ON SUSTAINABLE FOOD SYSTEMS TOWARDS ACHIEVING SUSTAINABLE DEVELOPMENT GOALS BY 2030	70
1. INTRODUCTION	71
2. PURPOSE AND SCOPE OF WORKSHOP	71
3. PREPARATIONS FOR AND METHOD OF WORKSHOP	71
4. WORKSHOP PARTICIPANT PROFILES	73
5. DISCUSSIONS OF SESSION OUTCOMES	76
6. GENERAL EVALUATION AND CONCLUSIONS	98
PART III. FINAL REPORT ON REGIONAL WORKSHOP ON SUSTAINABLE FOOD SYSTEMS TOWARDS ACHIEVING SUSTAINABLE DEVELOPMENT BY 2030	102
1. INTRODUCTION	103
2. WORKSHOP OBJECTIVE AND SCOPE	104
3. WORKSHOP METHODOLOGY	104
4. WORKSHOP PARTICIPANTS	105
5. DISCUSSION SESSION AND OUTPUTS	106
CONCLUSION	115
ANNEX	116

LIST OF TABLES

PART I

Table 1. Profile of Respondents and Distribution of Identified Problems by Action Tracks	4
Table 2. Distribution by Sub-Areas of Intervention	6
Table 3. Summary of Problems Identified by BCSD Türkiye Members	7
Table 4. Summary of Proposed Solutions by BCSD Türkiye members	8
Table 5. Summary of Actions	10
Table 6. Distribution of Affiliation	11
Table 7. Quantitative Distribution of Problem and Type Relationship	13
Table 8. Distribution of Problems in terms of Location	14
Table 9. Distribution of Problems by Action Tracks	16
Table 10. Main Intervention Areas by Action Tracks Based on Problems Identified	17
Table 11. Spatial Distribution of Main Intervention Areas by Action Tracks	18
Table 12. Distribution by Action Tracks, Main Intervention Area and Intervention Areas	21
Table 13. Respondent Spatial Distribution of Main Intervention Areas	25
Table 14. Proportional and Spatial Distribution of Intervention Areas	26

PART II

Table 1. AT1 Session Proposed Solutions and Actions	76
Table 2. AT2 Session Proposed Solutions and Actions	79
Table 3. AT3 Session Proposed Solutions and Actions	84
Table 4. AT4 Session Proposed Solutions and Actions	89
Table 5. AT5 Session Proposed Solutions and Actions	92

PART III

Tablo 1. Targets for Action Track 1	107
Tablo 2. Targets for Action Track 2	108
Tablo 3. Targets for Action Track 3	109
Tablo 4. Targets for Action Track 4	110
Tablo 5. Targets for Action Track 5	111



LIST OF FIGURES

PART I

Figure 1. Provinces where Private Sector Representatives are Based	3
Figure 2. Areas of Activity of Companies	4
Figure 3. Spatial Distribution by Action Tracks	5
Figure 4. Spatial Distribution by Action Tracks	5
Figure 5. Areas of Action Proposed by BCSD Türkiye Members	11
Figure 6. Spatial Distribution of Provinces/Districts Where the Questionnaire Was Administered	15
Figure 7. Distribution of Regions Where the Questionnaire Was Administered By Province	15
Figure 8. Map of Türkiye: Distribution of Problems by Province/District by Action Track	16
Figure 9. Main Intervention Areas	17
Figure 10. Spatial (Regional) Distribution of Main Intervention Areas by Action Tracks	18
Figure 11. Spatial (Provincial) Distribution of Main Intervention Areas by Action Tracks	19
Figure 12. Spatial (District) Distribution of Main Intervention Areas by Action Tracks	20
Figure 13. Spatial (National) Distribution of Main Intervention Areas by Action Tracks	20

PART II

Figure 1 .Distribution of Registered Individuals by Gender and Age	73
Figure 2. Distribution of Registered Individuals by Group	74
Figure 3. Sectoral Distribution of Registered Individuals	75
Figure 4. Q-1 Distribution of Responses (Which action track do you believe is the most urgent for Türkiye?)	97
Figure 5. Q-2 Distribution of Responses (Which disadvantaged group is affected more negatively by climate change?)	97
Figure 6. Q-3 Which of the following under the action tracks is the most important cross-cutting area that requires cooperation?	98

PART II

Figure 1. Distribution of Workshop Registrants by Country	105
Figure 2. Key Challenges for BSEC and ECO Members	106
Figure 3. Potential Coalition Areas for BSEC and ECO Members	106
Figure 4. Distribution of Responses for Q-1 (Which action track in your national pathway is mostly covered?)	113
Figure 5. Distribution of Responses for Q-2 (Which action track to have the greatest impact over the next three years under regional cooperation?)	113
Figure 6. Distribution of Responses for Q-3 (What action areas are urgently needed for regional cooperation?)	114
Figure 7 Distribution of Responses for Q-4 (For which disadvantaged group a regional cooperation is needed urgently for increasing access to safe and nutritious food?)	114



PART I.

FINAL REPORT ON ONLINE SURVEY ON SUSTAINABLE FOOD SYSTEMS TOWARDS ACHIEVING SUSTAINABLE DEVELOPMENT GOALS BY 2030

1. INTRODUCTION

This study was prepared to provide a basis for the subsequent studies associated with the Food Systems Summit 2021 held on 23 September 2021 with a view to reinforcing the United Nations (UN) 2030 Agenda and Sustainable Development Goals. As highlighted in the Pre-Summit Meeting held under the leadership of UN Secretary-General António Guterres and Italian Prime Minister Mario Draghi in order to convene various actors across the world to achieve progress under 17 Sustainable Development Goals, the Summit aims to ensure access to safe and nutritious food, increase sustainable consumption and production, and ultimately build resilience to food security gaps. To that end, it was requested from each Member State that contributed to the process to provide a national pathway summarizing how to resolve their burning issues on improving/advancing sustainable food systems, their commitments involving concrete actions to resolve such issues, and the predicaments in the existing food system, through a participatory stakeholder approach.

Türkiye prepared the Sustainable Food Systems Country Report which was presented by the Minister of Agriculture and Forestry Dr. Bekir PAKDEMİRLİ at the 34th Ministerial Meeting of the Standing Committee for Economic and Commercial Cooperation of the Organization of Islamic Cooperation (COMCEC). As part of the Summit preparations, the report was updated with the official opinions and contributions of the Ministry of Agriculture and Forestry Departments, KIZILAY which served in the nature of a Non-Governmental Organization, and non-Ministerial public institutions. Focal points across Türkiye were also designated by the same organizations and institutions with whom the summit-related meetings and activities were shared. On the other hand, as part of 5 Action Tracks (ATs) established within the frame of UN Sustainable Development Goals in order to increase the awareness and influence of the business community on sustainable development, the Business Council for Sustainable Development (BCSD) that engaged with the leading Turkish companies on sustainability contributed to and participated in the national dialogue process under the Summit preparations. Additionally, concrete actions were established on the basis of individual action tracks

with the opinions and contributions of the members of the 3rd Agriculture Forestry Council and the organization of the Ministry.

Another significant activity held under Summit preparations was the workshop on national dialogue. The online meeting, held on 7 September 2021 under the name “National Dialogue Workshop on Sustainable Food Systems towards Achieving Sustainable Development Goals by 2030”, was attended by over 130 stakeholder groups including public institutions, universities, international organizations, NGOs, agri-businesses, and cooperatives. The workshop included private sessions under each AT where the opinions and proposed concrete actions offered by stakeholders were integrated with previous proposed actions and strategies and incorporated into the national pathway.

Furthermore, regional studies were continued for Summit preparations in the context of the Economic Cooperation Organization Regional Cooperation Centre (ECO-RCC) and the Black Sea Economic Cooperation (BSEC) Regional Cooperation Centre for Sustainable Food Systems (BSEC-CSFS), both of which were hosted by the Directorate General for European Union and Foreign Relations of the Ministry of Agriculture and Forestry (DG-EUFR) in Türkiye.

The national preparatory process for the UN Food Systems Summit 2021 involved participatory studies coordinated by Aylin ÇAĞLAYAN ÖZCAN, the Director General for European Union and Foreign Relations of the Ministry of Agriculture and Forestry, the designated National Dialogue Convenor on behalf of Türkiye, and in coordination with the Directorate General for European Union and Foreign Relations. The dialogue process, which was planned to involve three stages as member state dialogues, global dialogues and independent dialogues, was completed between November 2020 and September 2021 through a participatory stakeholder approach that engaged public and private sectors, academia, Non-Governmental Organizations (NGOs), chambers of profession as well as gender equality and disadvantaged groups.

Five Working Groups/Action Tracks were established by the UN in the preparatory process for the Summit:



ACTION TRACK	1		Ensure access to safe and nutritious food for all
ACTION TRACK	2		Shift to sustainable consumption pattern
ACTION TRACK	3		Boost nature positive production at sufficient scale
ACTION TRACK	4		Advance equitable livelihoods
ACTION TRACK	5		Build resilience to vulnerabilities, shocks & stresses

Significant contributions were made by Türkiye to AT2 and AT5 on a global scale. Furthermore, the national dialogue process was carried out for all 5 ATs, establishing concrete actions for each AT by examining the efforts by Türkiye towards the ATs.

In determining the problems and intervention areas, proposed solutions and actions for improving/ advancing sustainable food systems, the national pathway preparations took into account the Conclusions Statement of the 3rd Agriculture Forest Council, annexed to this report, the actions including concrete commitments, the preparatory works carried out under the Summit, and Council of Water meeting conclusions.

Methodology

This study is based on primary and secondary sources of data. As part of primary data, a survey was designed for 3 different target groups to establish the problems, proposed solutions and action groups. Additionally, a focus group meeting held as part of the summit preparations was strengthened through national and regional workshops.

In the process for the survey aimed at various target groups, a questionnaire containing open-ended questions on 5 main topics was prepared. The questionnaire posed the following open-ended questions to stakeholders, in addition to requesting other information:

- For which of the 5 ATs are you filling in this questionnaire?
- Please identify a single problem, in the form of a title, related to the action track you have chosen for the problem.

- Please define the single problem, indicated in the form of a title, related to the action track you have chosen.
- Please indicate your proposed solutions for the problem that you have identified.
- Based on your proposed solutions for the problem that you have identified, please define the proposed concrete actions for achieving such solutions by 2030.

The problems and intervention areas, proposed solutions and actions identified based on the online questionnaire covered different target groups, the first of which was the members of the Business Council for Sustainable Development (BCSD Türkiye). Other target groups included members of the 3rd Agriculture Forest Council including the private sector, NGOs, academia, chambers of profession and public institutions, in addition to the organization of the Ministry and other public institutions and organizations.

The online questionnaire, delivered to the stakeholders through e-mail and formal letters, was distributed by BCSD Türkiye to the members engaged in the agri-food sector. The study, which was conducted between

2 April 2021 and 14 April 2021,

received feedback (responses) from

6 BCSD Türkiye members.

Furthermore, between

26 February 2021 and 8 April 2021,

online questionnaires were

shared with over 1,000 members

of the

3rd Agriculture Forest Council,

provincial organization of the Ministry, and other relevant Ministries and public institutions through e-mail and official letters. The questionnaire, which required the respondents to propose three problems, three solutions and concrete action, was completed by

258 stakeholders.

Questionnaires were interpreted using qualitative analysis methods (after coding). The data, provided in the form of descriptive statistics, is presented through simple spatial analyses.

As part of the national workshop, a preparatory process was carried out first where a focus group meeting, attended by over 30 experts representing various general directorates of the Ministry of Agriculture and Forestry, was held to discuss the current actions acquired through online surveys. The focus group reviewed all of the actions, determining focal points for each action; the information compiled served as guidance for the matters to be addressed in national workshop sessions. The national dialogue workshop was held on 7 September 2021, where the first session was attended by over 130 participants and provided information on the Summit, Summit preparations, the importance of sustainable food systems to achieve the 2030 Sustainable Development Goals, and the efforts regarding the national pathway to increase the sustainability of food systems in Türkiye. In the second part of the workshop, the participants were divided into discussion rooms to identify detailed problem areas and formulate solution proposals for each AT. The final part of the workshop involved a general evaluation by summarizing the matters addressed in the discussion sessions. The feedback received on the basis of each AT was analysed together with the survey results and used as input in the proposed actions section of the national pathway.

The secondary data included in-depth literature review as well as the Sustainable Food Systems Country Report prepared by the Ministry of Agriculture and Forestry.

2. EFFORTS CARRIED OUT UNDER SUMMIT PREPARATIONS

2.1. Business Council for Sustainable Development (BCSD Türkiye) Questionnaire Analysis¹

2.1.1. Profile, Problems and Intervention Areas

As a result of the questionnaire filled out by 6 private sector representatives who were members of BCSD Türkiye and operated in the provinces of Bilecik, İstanbul, Adana, Eskişehir and Bursa, a total of 14 problems defined and over 25 proposed action and solutions were established.



Figure 1. Provinces where Private Sector Representatives are Located

The private sector representatives were from Joint-Stock Companies (Inc.), multinational companies and holding companies. The table shows the distribution of the questionnaire respondents by home base, status, and AT.

¹ This part demonstrates the online questionnaire responses provided by the stakeholders.



Table 1. Profile of Respondents and Distribution of Identified Problems by Action Tracks

Home Base (Province)	Status	AT	Count
Adana			3
	Holding		3
		AT2 AT3 AT5	1 1 1
Bilecik			3
	Inc.		3
		AT1 AT3 AT5	1 1 1
Bursa			3
	Inc.		3
		AT1 AT3 AT4	1 1 1
Eskişehir			3
	Inc.		2
		AT3 AT4	2 1
Istanbul			1
	Multinational Company Holding		1
		AT3 AT3	1 1
Total			14

The main areas of activity of the contributing private sector representatives are food and beverage, sales and marketing sectors (29%).

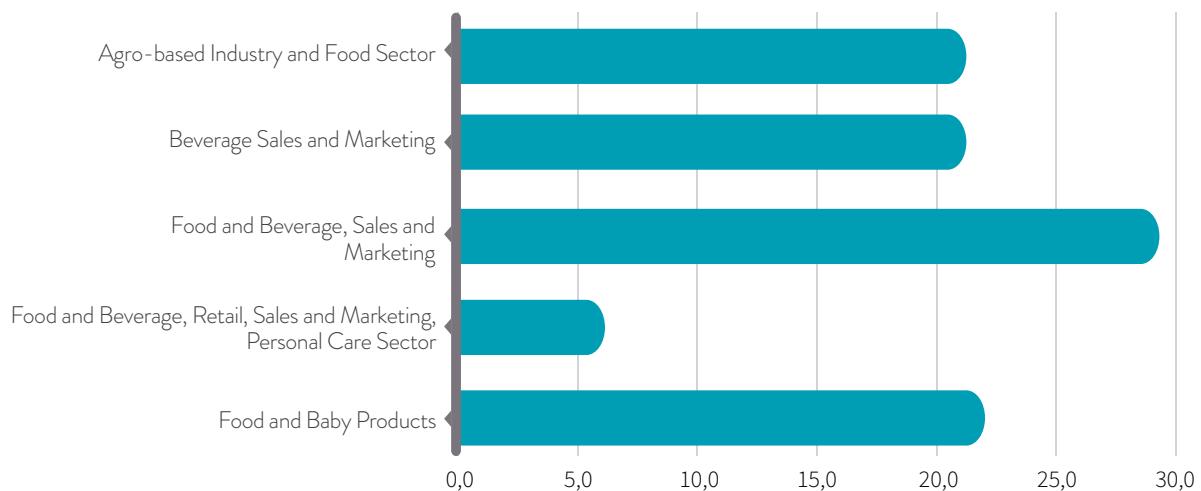


Figure 2. Areas of Activity of Companies

All proposed problems, solutions and actions were defined at the scale of Türkiye. The table includes the distribution of identified problems by main categories. 50% of the identified problems are under the main intervention area of protection and sustainable use of

the environment and natural sources under AT3. AT3 was proposed by all private sector representatives operating in the provinces of İstanbul, Bursa, Bilecik, Eskişehir and Adana.

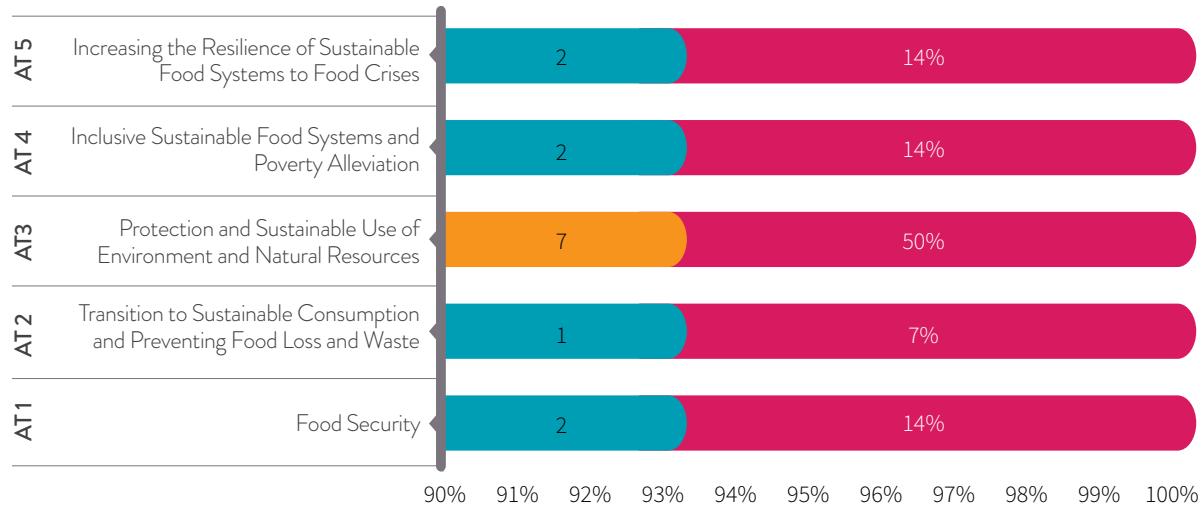


Figure 3. Spatial Distribution by ATs

* The results may not add up to 100% due to rounding.

The spatial distribution of problems by ATs as reported by private sector representatives is as follows.

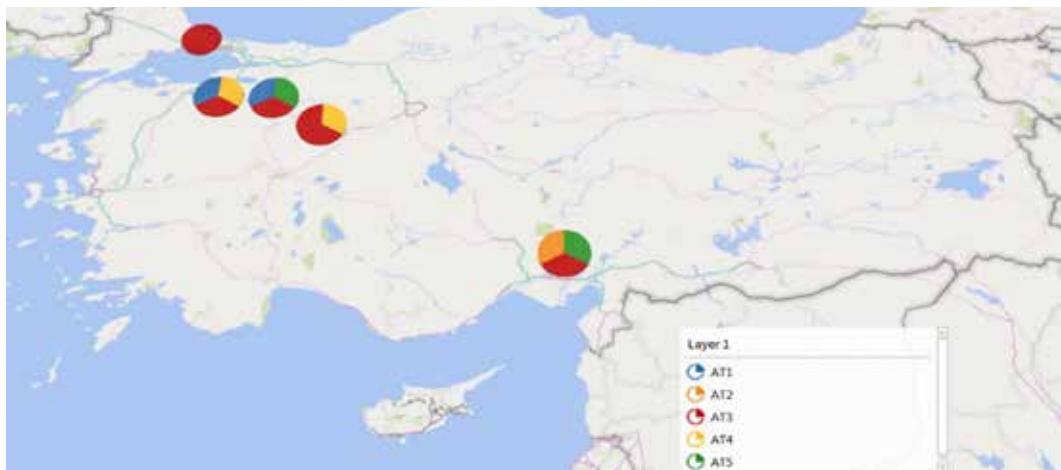


Figure 4. Spatial Distribution by ATs

When looking at sub-areas of intervention under intervention areas, the most prominent response rates correspond to problems related to climate change.



Table 2. Distribution by Sub-Areas of Intervention

Action Track	Code	Sub-Area of Intervention	Count	Ratio (%)
AT5			2	14.39%
	Area 5		2	14.3%
		<ul style="list-style-type: none"> • Measures Against Food Crises Induced by Conflicts, Natural Disasters, Climate Change, Outbreaks 	1	7.1%
		<ul style="list-style-type: none"> • Climate Change Induced Social, Economic and Environmental Issues 	1	7.1%
AT4			2	14.3%
	Area 4		2	14.3%
		<ul style="list-style-type: none"> • Rural-to-Urban Migration 	1	7.1%
		<ul style="list-style-type: none"> • Contract Farming 	1	7.1%
AT3			7	50.0%
	Area 3		7	50.0%
		<ul style="list-style-type: none"> • Sustainability and Optimum Efficiency in Food Production 	1	7.1%
		<ul style="list-style-type: none"> • Climate Change 	4	28.6%
		<ul style="list-style-type: none"> • Principles of Sustainable Agriculture 	1	7.1%
		<ul style="list-style-type: none"> • Scarcity and Efficient Use of Water Resources 	1	7.1%
AT2			1	7.1%
	Area 2		1	7.1%
		<ul style="list-style-type: none"> • Food Loss and Waste 	1	7.1%
AT1			2	14.3%
	Area 1		2	14.3%
		<ul style="list-style-type: none"> • Food Supply and Access to Safe and Nutritious Food 	1	7.1%
		<ul style="list-style-type: none"> • Access to Healthy and Safe Food 	1	7.1%

The problems mentioned under intervention areas are briefly defined under ATs in the following table.

Table 3. Summary of Problems Identified by BCSD Türkiye Members

ATs	Brief Definition	Count
AT5		2
	Ensuring fair access to food	1
	Social, economic and environmental problems resulting from rural-to-urban migration	1
AT4		2
	Production efficiency problems resulting in rural-to-urban migration	1
	Need for the regulation and incentivization of contract farming	1
AT3		7
	Environmentally sensitive food production	1
	Need for developing systems that promote climate-resilient and sustainable food production	1
	Contributing to the achievement of SDGs	1
	Emergency transformation of food systems in terms of agricultural soil erosion, increasing packaging waste, water scarcity and climate change	1
	Climate change associated with agricultural activity	1
	Inefficient use of water resources and high industrial water consumption	1
	Increased carbon emission due to inefficient use of energy sources	1
AT2		1
	Fighting food loss and waste	1
AT1		2
	Food security and safety	1
	Need for raising the awareness of the community on healthy and balanced diet	1
Total		14



2.1.2. Proposed Solutions

The proposed solutions for the problems identified by BCSD Türkiye members are summarized in the table below.

Table 4. Summary of Proposed Solutions by BCSD Türkiye members

Row Labels	Count
AT1	2
Access to safe and healthy food, strengthening regulations and controls on food products that do not meet food safety criteria, transition to sustainable food labelling (studies on infrastructure and awareness)	1
Reducing and preventing food waste, adjusting food prices according to purchasing power	1
AT2	1
Raising awareness on food loss and waste	1
AT3	7
Increasing joint working platforms for the private sector, unions, cooperatives and state agencies, expanding the scope of legal regulations and improving incentives for good agricultural practices (GAP)	1
Sustainable agriculture and reduction of global greenhouse gas emissions, access to safe water, obtaining raw materials from sustainable sources, supporting local farmers Commitment to achieve net-zero emissions by 2040 and reduce absolute emission by 40% by 2030 (Multinational Company), zero waste in production, renewable energy, obtaining energy and fertilizer from food waste	1
Continuing to contribute to and implement necessary actions towards achieving UN SDGs	1
Boosting agricultural production techniques and technologies that make efficient use of natural resources and provide high productivity in agricultural production; increasing the potential to obtain biogas and energy from organic waste, and particularly from animal production, in a cost- and technology-effective manner; scaling up regulations on the collection of organic waste by registered waste facilities; promoting the use of organic and organo-mineral fertilizers in agricultural production to benefit from the carbon sequestration potential of agricultural soil and ensuring circularity in food systems	1
Environment friendly production and preserving critical ecosystems to conserve biodiversity, protect land and water, reduce food loss and waste, limit human induced contributions to climate change, produce solutions along the food value chain with a view to reducing emissions and increasing carbon sequestration	1



Row Labels	Count
Controlling water consumption in agricultural production and increasing production efficiency, controlling and reducing water consumption in industrial facilities and considering alternative resources	1
Working on reducing industrial energy loss and leakage; encouraging the reduction of carbon footprints throughout the entire value chain by making sector-based comparisons; introducing legislation that requires the use of highly energy efficient units and equipment; implementing additional incentive mechanisms for the use of renewable energy resources	1
AT4	2
Further prompting the youth and female population towards agricultural production; identifying and extending training programmes that allow farmers to learn and apply more efficient and new production methods through private-public sector cooperation	1
Associating the Farmer Registration System (FRS) with contract farming; transition to a sustainable and traceable system (e.g., contract farming lands should be indicated in the FRS, farmers should be able to enter the advances provided (e.g., such input as fertilizers, pesticide, etc.) into the FRS, and it should be put into record by the end of the production season that the crops on the indicated land have been obtained through contract farming); supporting and raising the awareness of all stakeholders, including farmers and industrialists, in the process monitored by the FRS	1
AT5	2
Formulating the infrastructure of the principles of sustainable agriculture; promoting the economic development of farmers in sustainable agricultural lands to reduce/prevent rural-to-urban migration	1
Increasing aids to alleviate the problem of hunger under the leadership of humanitarian organizations and the UN	1
Grand Total	14



2.1.3. Areas of Action

The proposed actions by the members of BCSD Türkiye under each AT are summarized in the table, and the areas of action below.

Table 5. Summary of Actions

Action Track	Action Title	Consequency	Total
AT3	Low emissions and use of fertilizer technology; increasing the recycle ratio in the plastic used in packaging by accelerating the transition to renewable energy throughout the logistics chain, and implementing policies in parallel with such targets with the support of the private sector	1	7
	Together with the food industry, encouraging sustainable agricultural techniques, promoting renewable energy production, extending training and incentive mechanisms to increase the use of organic and organo-mineral fertilizers that are produced as biogas facility waste	1	
	Introducing legislation on sustainable agriculture	1	
	Ensuring that future generations make use of equally scarce resources by using sustainable production technologies.	1	
	Preparing for a pathway on climate change associated with agricultural activity	1	
	Energy efficiency, reducing carbon emission	1	
	Reducing water consumption and increasing water use efficiency in industrial plants	1	
AT5	Introducing legislation on sustainable agriculture	1	2
	Ensuring that future generations make use of equally scarce resources by using sustainable production technologies.	1	
AT2	Reducing domestic waste	1	1
AT4	Implementing training programmes on sustainable production.	1	2
	Establishing contract farming and a planned, traceable production chain.	1	
AT1	Using and disseminating principles of sustainable agriculture, implementing regulations on contract production in order to establish cooperation within the food system, and establishing the infrastructure and systems necessary for the use of sustainability labels	1	2
	Improving agricultural supply chain and reducing the number of mediators in access to food.	1	
Total		14	

The areas of action mostly include interventions in sustainable agriculture and production, followed by climate change and energy efficiency/renewable energy intervention areas. In the context of the problems identified by the members of BCSD Türkiye,

the intervention area concerning climate change calls for improving sustainable agriculture/sustainable production, dominating the arguments for improving sustainable food systems.

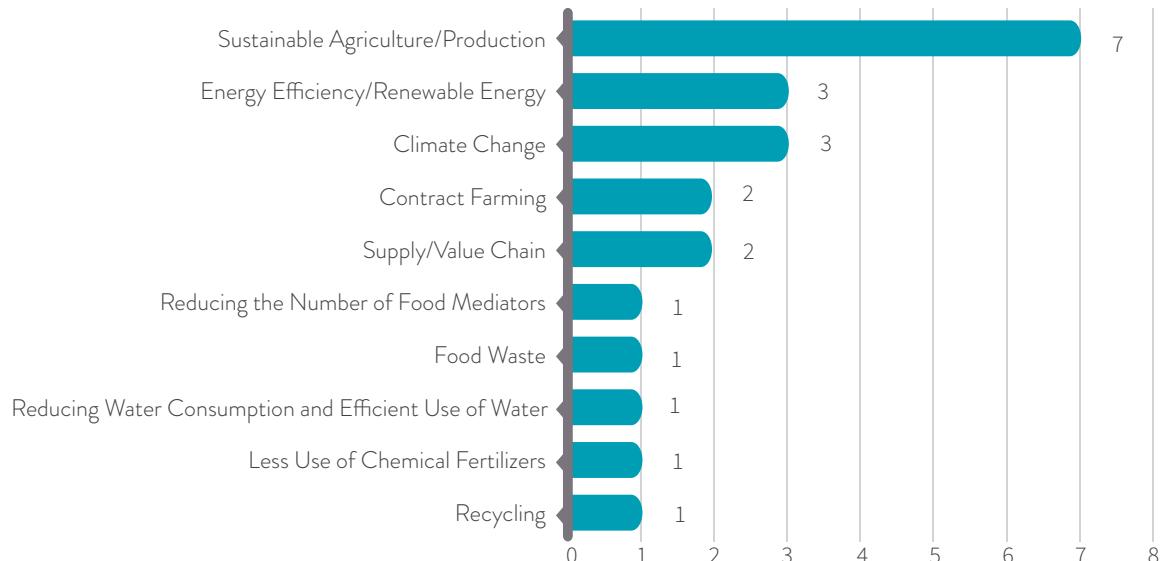


Figure 5. Areas of Action Proposed by BCSD Türkiye Members

2.2. Other Stakeholders- Questionnaire Analysis²

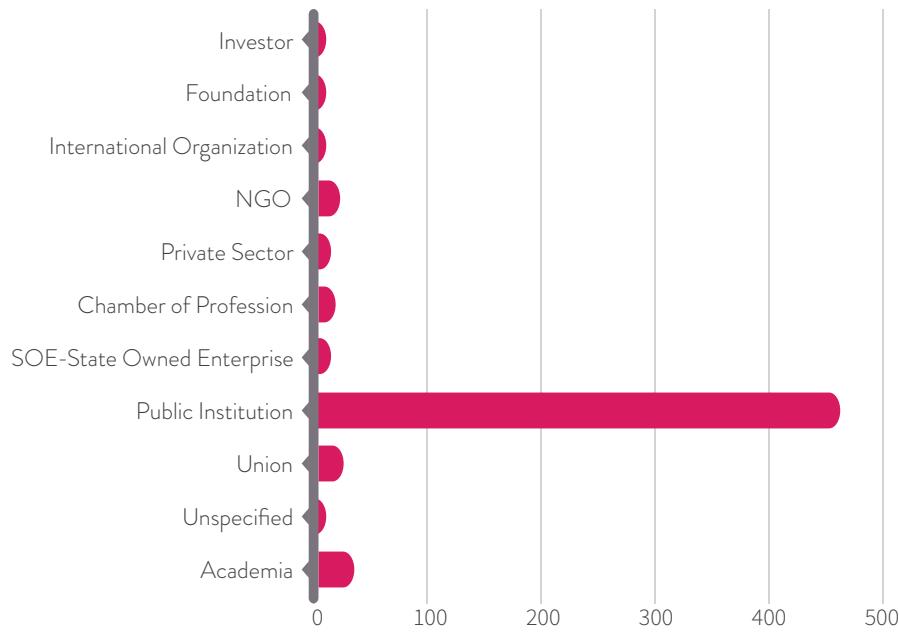
2.2.1. Profile, Problems and Intervention Areas

As part of the Summit preparations, the online questionnaire was administered between 26 February and 8 April 2021 to elicit a maximum of three problems, proposed solutions and proposed actions, and responses were received from 258 stakeholders. The responses provided in the questionnaire were processed and a total of 520 problems as well as over 1,000 proposed solutions and actions were received. The following table depicts the affiliations of the respondents on the basis of individual questions. 88% of the respondents were from public institutions, 4% from universities, and the remaining from the private sector and other NGOs.

Table 6. Distribution of Affiliation

Affiliation	Count	%
Public Institution	455	88%
Academia	21	4%
Union	11	2%
NGO	9	2%
Chamber of Profession	7	1%
SOE-State Owned Enterprise	6	1%
Private Sector	5	1%
International Organization	2	0%
Investor	2	0%
Foundation	1	0%
Unspecified	1	0%
Total	520	100%

² This part demonstrates the online questionnaire responses provided by the stakeholders.



* The results may not add up to 100% due to rounding.

Table 7 shows the distribution of respondents by type. Provincial Directorates of Agriculture and Forestry, Regional Directorates and Laboratories have the largest representation among public institutions, which is the group with the highest rate of response.

Table 7. Quantitative Distribution of Problem and Type Relationship

Affiliation	Type	Consequence	Total
Academia	University	21	21
Unspecified	Unspecified	1	1
Union	Sub-Union of Seed Growers	6	11
	Union of Sugar Beet Growers Cooperatives	1	
	Central Union of Agricultural Credit Cooperatives	3	
	Cattle Breeders' Association of Türkiye	1	
Public Institution	Border Checkpoint	9	455
	Regional Directorate	51	
	Laboratory Directorate	44	
	DIRECTORATE OF RESEARCH AND TRAINING CENTRE	3	
	Research Institute	52	
	Provincial Directorate of Agriculture and Forestry	145	
	General Directorate Level Units	43	
	Central Organization (Unspecified)	2	
	Independent Presidency Level Unit	1	
	Variety Registration and Seed Certification Centre	1	
	Handicrafts Training Centre	10	
	DIRECTORATE OF VETERINARY CONTROL INSTITUTE	2	
	DIRECTORATE OF QUARANTINE	1	
	DIRECTORATE OF TEST CENTRE	1	
	NATIONAL PARK DIRECTORATE	20	
	MINISTRY OTHER THAN THE MINISTRY OF AGRICULTURE AND FORESTRY	8	
	Provincial Directorate of Agriculture and Forestry	16	
	INTERNATIONAL AGRICULTURAL RESEARCH	1	
	Research Institute	8	
	Department of Sugar	1	
	VETERINARY BORDER CHECKPOINT	9	
	GENERAL DIRECTORATE OF FOOD AND CONTROL	2	
	CENTRAL DIRECTORATE OF AGRICULTURAL PROPAGATION AND IN-SERVICE TRAINING	3	
	PRESIDENCY LEVEL UNIT	1	
	CENTRE FOR CAUCASIAN HONEY BEE BREEDING, TRAINING AND GENE PRESERVATION	3	
	SEEDLING AND SAPLING TEST CENTRE DIRECTORATE	1	
	DEVELOPMENT AGENCY	4	
	ATATURK FOREST FARM (AOÇ) DAIRY PLANT	2	
	AOÇ	2	
	BOTANICAL GARDEN DIRECTORATE	2	
	PRESIDENCY OF THE REPUBLIC OF TÜRKİYE	1	
	EXPORTERS ASSOCIATIONS	1	
	DIRECTORATE OF AGRICULTURAL QUARANTINE	3	
	SSELF-REGULATORY INSTITUTION	1	
	COOPERATION AND COORDINATION INSTITUTION	1	

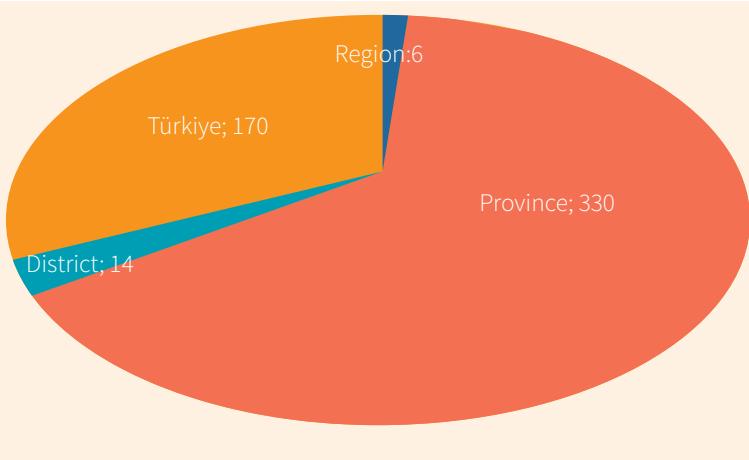


Affiliation	Type	Consequence	Total
SOE-State Owned Enterprise	General Directorate Level Units	6	6
Chamber of Profession	Commodity Exchange Market	3	7
	Union of Chambers of Tradesmen and Craftsmen	3	
	Chamber of Commerce	1	
Private Sector	Organic Farming, Food	2	5
	Nature, Science and Biotechnology	1	
	Food, Textile, Industry	2	
NGO	NGO	1	9
	Turkish Red Crescent	2	
	Foundation	1	
	Association	5	
International Organization	International Foundation	2	2
Foundation	Environment Foundation	1	1
Investor	Entrepreneur	2	2
Total		520	

Of a total of 520 problems reported; where 63% of these were identified on a provincial level, 33% on a national level, 1% on a regional level and 3% on a district level across Türkiye.

Table 8. Distribution of Problems in terms of Location

Level	Count	%
Regional	6	1.15%
Provincial	330	63.46%
District	14	2.69%
National	170	32.69%
Total	520	100.00%



*The results may not add up to 100%, due to rounding.

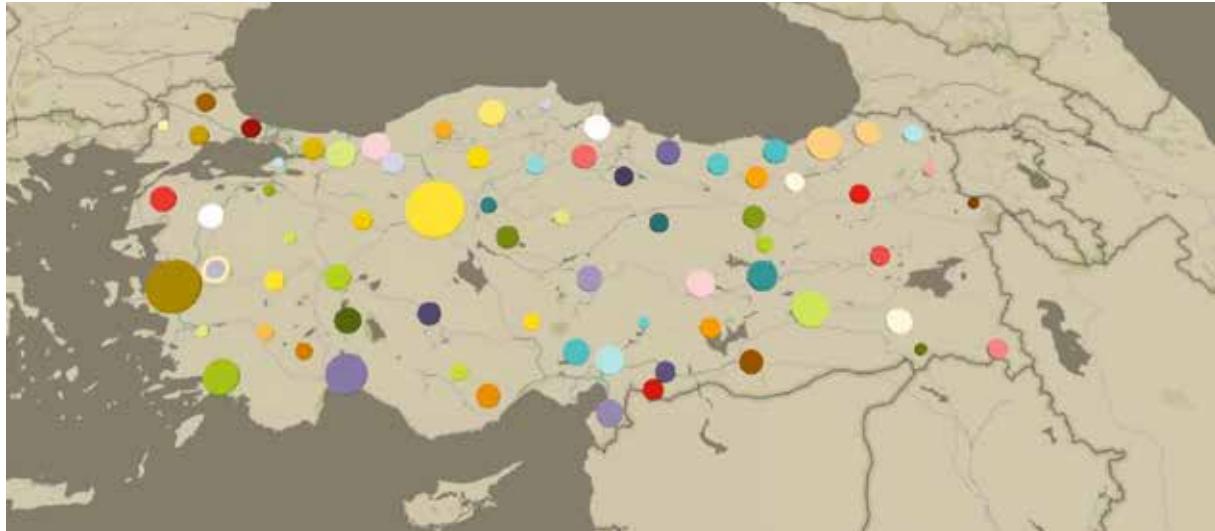


Figure 6. Spatial Distribution of Provinces/Districts Where the Questionnaire Was Administered

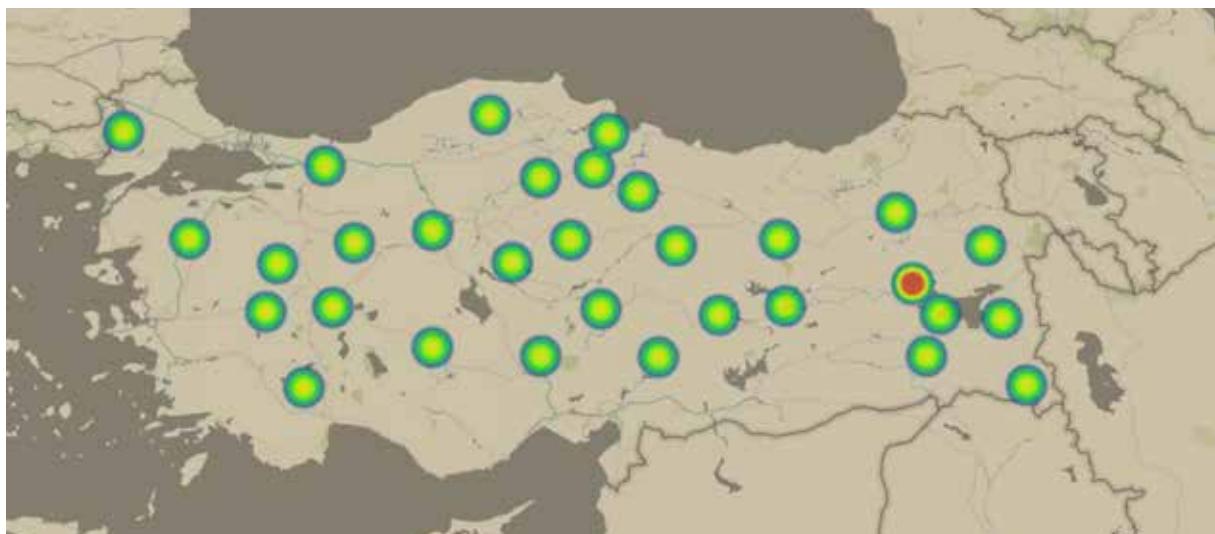


Figure 7. Distribution of Regions Where the Questionnaire Was Administered By Province

According to the distribution of the problems which were communicated by the stakeholders via the questionnaire under the 5 ATs (see Table 9), the most reported problems are under AT3 (34.04%) (Boost Nature Positive Production at Sufficient Scale) and AT1 (Ensure Access to Safe and Nutritious Food for All) (29.81%) while the fewest problems are identified under AT5. Although the problems under AT5 were identified at the national scale, the proposed solutions and actions also indicate the need for intervention at

the global scale. The ATs are detailed below:

1. Ensure Access to Safe and Nutritious Food for All
Action Track 1 will support the progressive realization of the right to food by aiming to deliver zero hunger and improve levels of nutrition by enabling all people at all times to have access to sufficient quantities of affordable and safe food products that together comprise a healthy diet that is nutritionally balanced and provides adequate daily nutritional intake.



2. Shift to Sustainable Consumption Patterns

Action Track 2 will work to catalyse a shift in consumer behaviour that will create and build demand for sustainably produced agri - and ocean food products and promote circular use of food resources, helping to reduce waste and improve nutrition, especially among the most vulnerable.

3. Boost Nature Positive Production at sufficient scale

Action Track 3 will work to develop end to end solutions along the food value chain which act to reduce emissions and increase carbon capture, thereby limiting anthropogenic contributions to climate change; promote the regeneration restoration and protection of critical ecosystems to conserve biodiversity, protect land and water, reduce food loss and energy usage.

4. Advance Equitable Livelihoods Action Track 4

will ensure that food systems developments expand inclusion, create opportunities for decent work to eliminate poverty, raising incomes across the food value chain, reducing risks for the world's poorest and improving value distribution.

5. Build Resilience to Vulnerabilities, Shocks and Stress

Action Track 5 will act to ensure continued functionality of sustainable food systems both in geographies subject to conflict, climatic and natural resource disasters, but also globally to mitigate the impacts of health -Related pandemics on food systems at all levels of development

Table 9. Distribution of Problems by ATs

Action Track	Count	%
AT1	155	29.81%
AT4	85	16.35%
AT3	177	34.04%
AT2	89	17.12%
AT5	14	2.69%
Total	520	100.00%

The spatial distribution of the problems reported by the stakeholders by ATs, as shown in the figure, are concentrated in Ankara and Izmir, with AT1 being concentrated in Izmir and AT3 in Ankara.

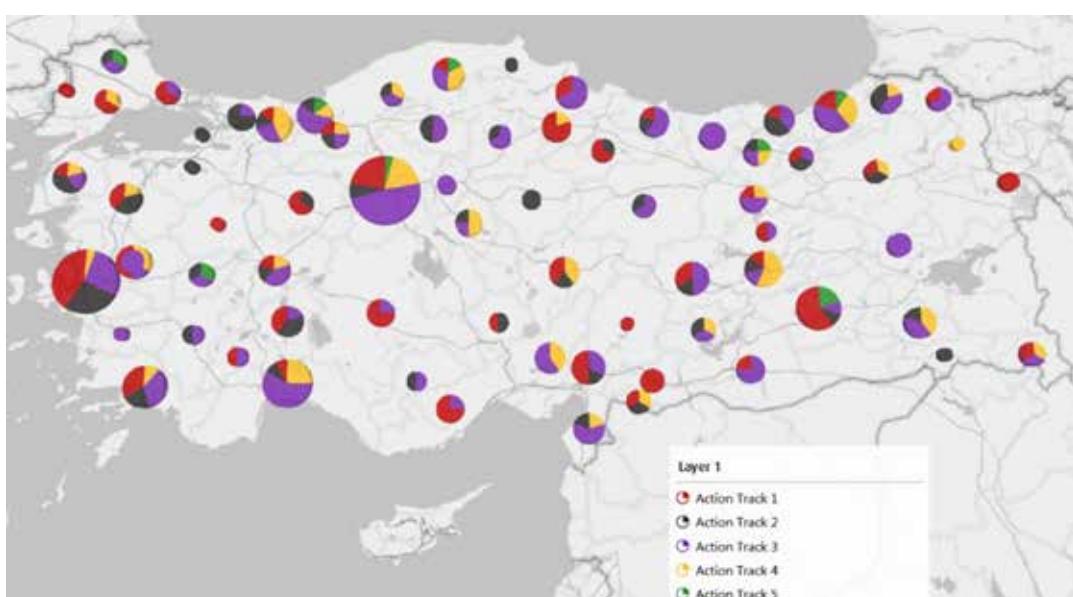


Figure 8. Map of Türkiye: Distribution of Problems by Province/District by Action Track

Main intervention areas were determined according to ATs based on the problems identified. Accordingly, the most important main intervention areas are “Environment, Protection and Sustainable Use of Natural Resources”, “Transition to Sustainable Consumption and

Preventing Food Loss and Waste”, “Food Security”, “Public Health and Food Safety”, and “Inclusive Sustainable Food Systems and Poverty Alleviation”, respectively. The detailed distribution of main intervention areas by Action Tracks is shown in the table and the figure.

Table 10. Main Intervention Areas by Action Tracks Based on Problems Identified

Action Track	Main Intervention Area	Count	Total Count	%	Total %
AT1	Food Security	74	146	14.23%	28.08%
	Public Health and Food Safety	62		11.92%	
	Healthy and Balanced Diet	10		1.92%	
AT2	Transition to Sustainable Consumption and Preventing Food Loss and Waste	81	92	15.58%	17.69%
	Generating and Increasing Demand for Food Products of Agricultural and Marine Origin	6		1.15%	
	Catalysing A Change in Consumer Behaviours	5		0.96%	
AT3	Environment, Protection and Sustainable Use of Natural Resources	174	186	33.46%	35.77%
	Ensuring Sustainability in Food Value Chain	7		1.35%	
	Boosting Nature Positive Production	6		1.15%	
AT4	Inclusive Sustainable Food Systems and Poverty Alleviation	60	82	11.54%	15.77%
	Regional Development in terms of Inclusive Sustainable Food Systems	22		4.23%	
AT5	Increasing the Resilience of Sustainable Food Systems to Food Crises	14	14	2.69%	2.69%
Total		520		100.00%	

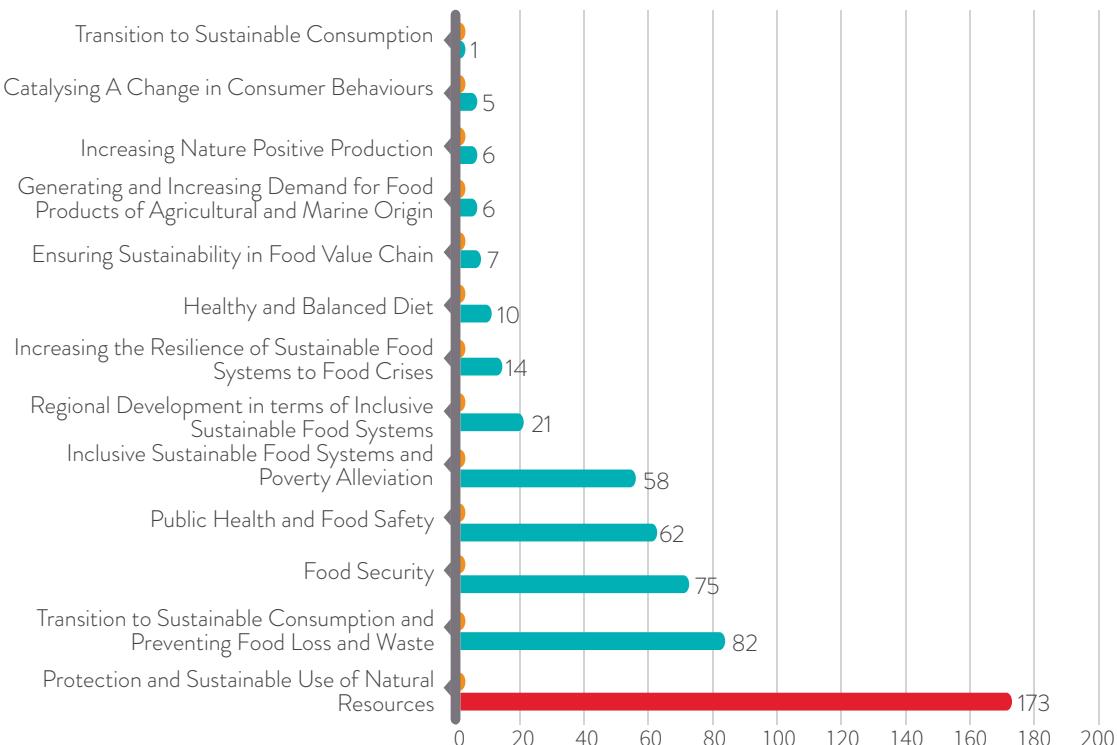


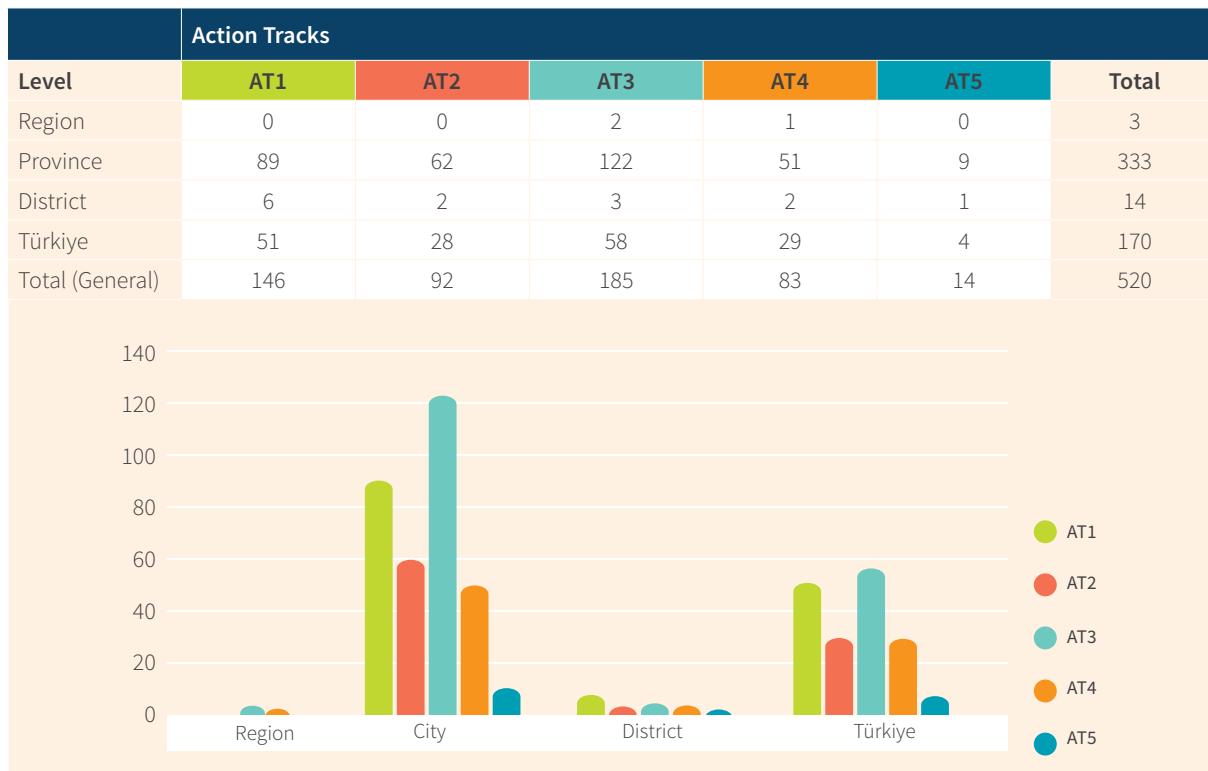
Figure 9. Main Intervention Areas



The spatial distribution of main areas of intervention are shown in the tables and graphs, according to which in general (in total), main intervention areas

are prominent at the levels of AT3, AT1, AT2 and AT4, respectively. The distribution at other levels is also demonstrated in the table and the graph.

Table 11. Spatial Distribution of Main Intervention Areas by Action Tracks



The spatial distribution of main intervention areas by action tracks are shown in the graphs. The intervention areas concerning AT3 and AT4 as well as the subjects of Boosting Nature Positive Production at Sufficient

Scale, Ensuring Sustainability in Food Value Chain, and Inclusive Sustainable Food Systems and Poverty Alleviation are identified at the regional level.



Figure 10. Spatial (Regional) Distribution of Main Intervention Areas by Action Tracks

Main intervention areas concerning AT3, AT1, AT2 and AT4, respectively, were identified in the distribution of Main Intervention Areas by action tracks and province. Accordingly, the prominent intervention areas at the provincial level are Environment and Protection and Sustainable Use of Natural Resources, Transition to Sustainable Consumption and Preventing Food Loss and Waste, Public Health and Food Safety, Inclusive

Sustainable Food Systems and Poverty Alleviation, Food Security, and Regional Development in terms of Inclusive Sustainable Food Systems. In particular, considering regional development gaps that trigger rural-to-urban migration and poverty hand in hand as well as formulating measures to reduce such gaps is important in terms of advancing/improving sustainable food systems.

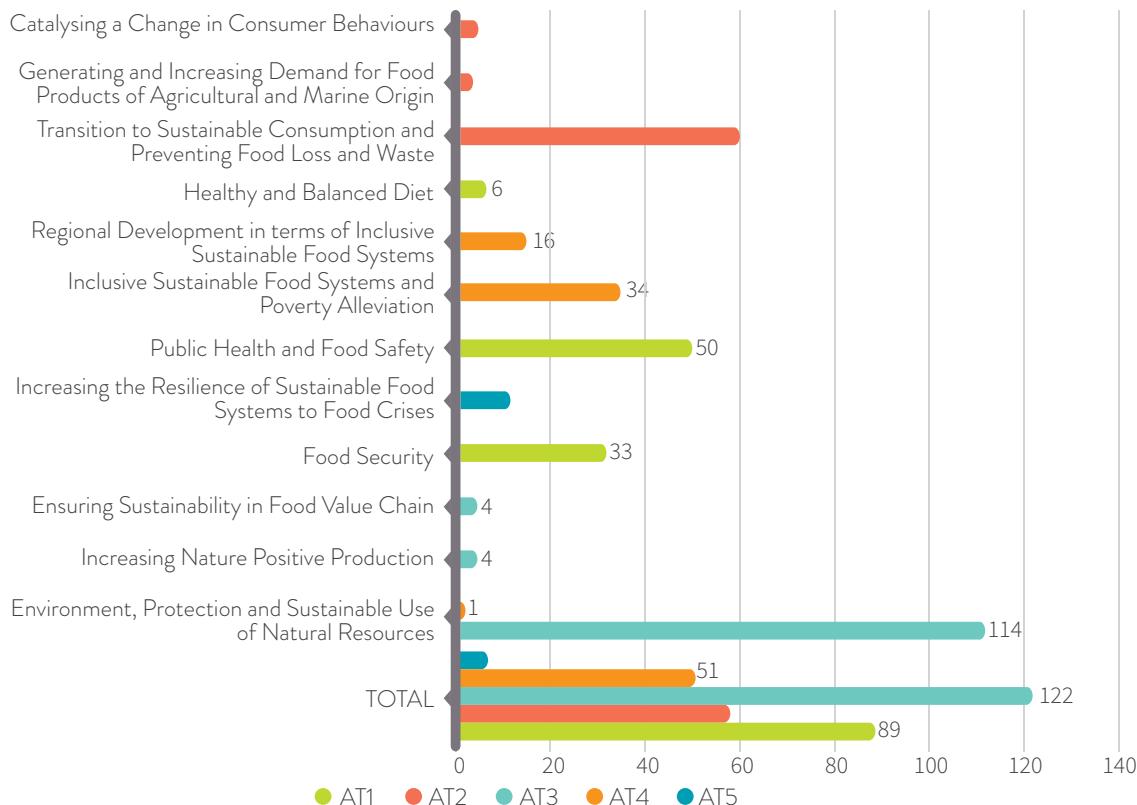


Figure 11. Spatial (Provincial) Distribution of Main Intervention Areas by Action Tracks

Where the distribution of main areas of intervention was examined by action tracks and districts, main areas of intervention were identified relating to AT1, AT3, AT2 and AT4 respectively, with Environment,

Protection and Sustainable Use of Natural Resources, Food Security, Public Health and Food Safety being the most prominent topics

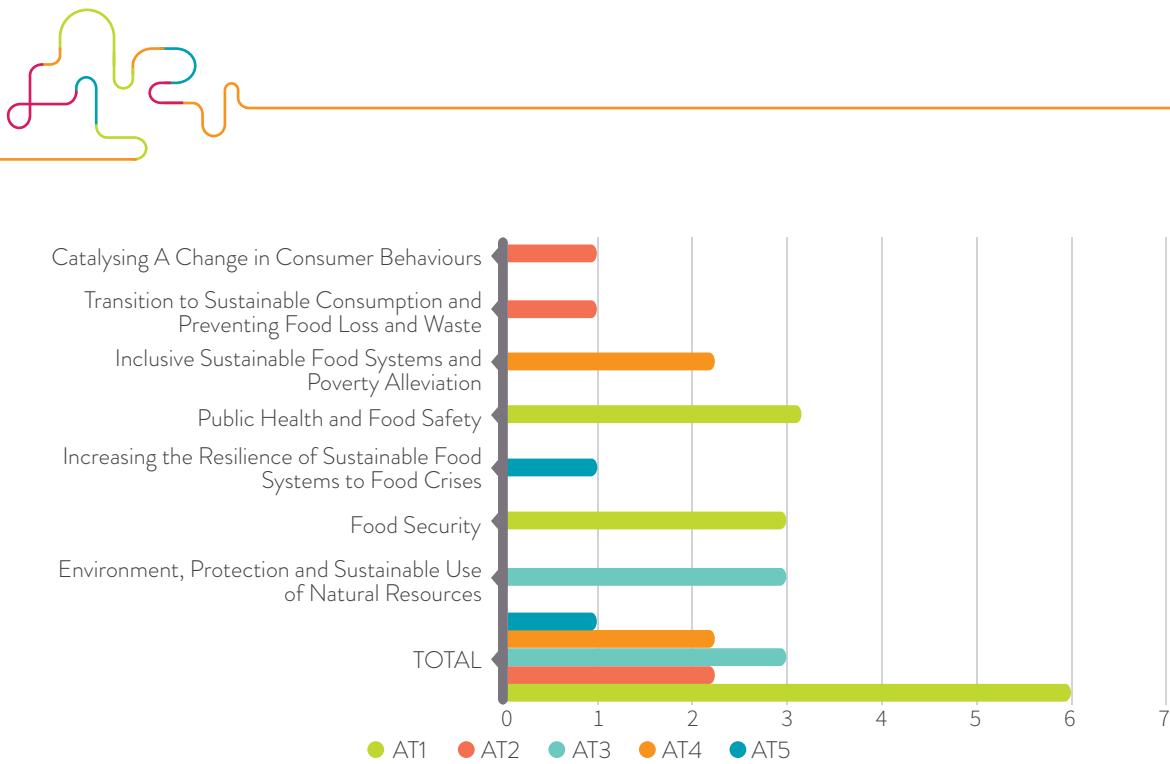


Figure 12. Spatial (District) Distribution of Main Intervention Areas by Action Tracks

The main areas of intervention identified concern AT3, AT1, AT4 and AT2, respectively, in the national distribution of Main Intervention Areas by action tracks, with Environment, Protection and Sustainable Use of Natural Resources, Food Security, Transition to

Sustainable Consumption and Preventing Food Loss and Waste, and Regional Development in terms of Sustainable Food Systems being the most prominent topics.

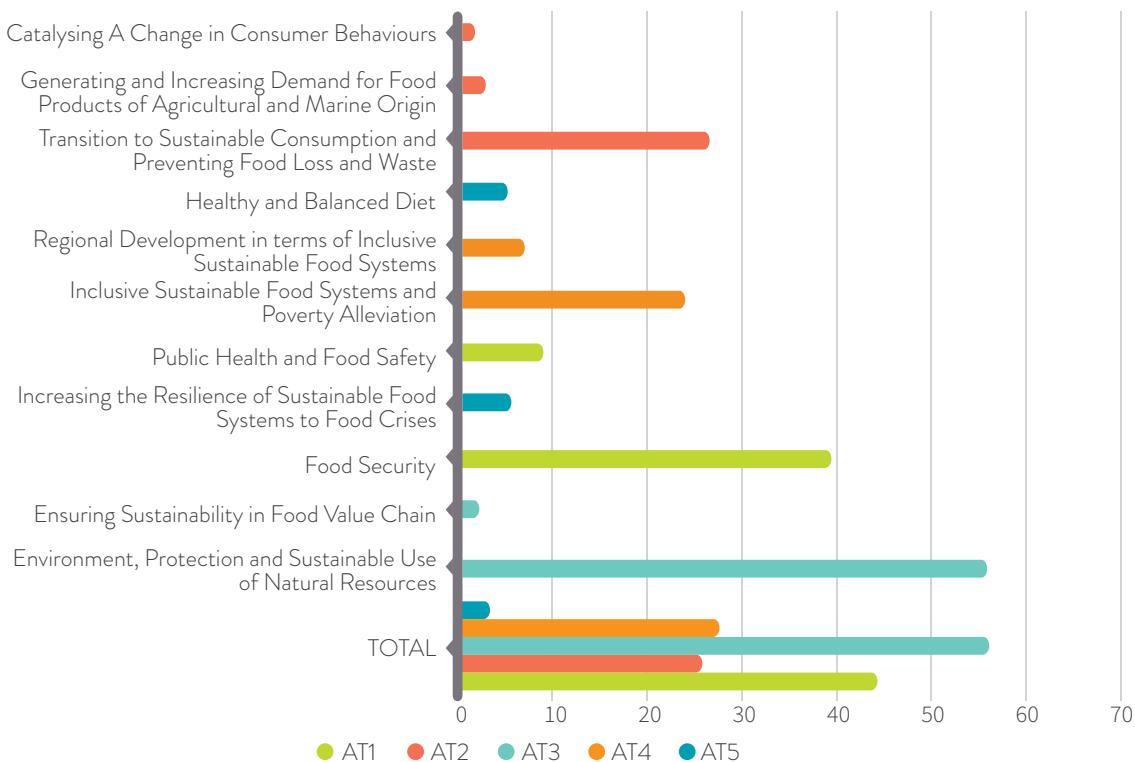


Figure 13. Spatial (National) Distribution of Main Intervention Areas by Action Tracks



The intervention areas under the main intervention areas based on the problems reported by stakeholders are shown in the table. Accordingly, one-third of the intervention areas identified concentrate on the main intervention area “Environment and Protection and Sustainable Use of Natural Resources”. In this direction, the sub-areas of intervention under 5 main intervention areas are, respectively:

AT3: Environment and Protection and Sustainable Use of Natural Resources (33.46%)

- Climate Change
- Scarcity and Efficient Use of Water Resources
- Sustainable Use of Natural Resources

AT2: Transition to Sustainable Consumption and Preventing Food Loss and Waste (15.58%)

- Food Loss and Waste
- Food Waste³
- Food Loss

AT1: Food Security (14.23%)

- Ensuring Food Security and Access to Safe, Healthy and Nutritious Food
- Healthy, Balanced, Sufficient Nutrition
- Management, Disposal, Recovery and Reuse of Waste relating to Nutrition and Nutrient Content

AT1: Public Health and Food Safety (11.92%)

- Production of Safe, Healthy and Nutritious Food
- Inspections and Controls Related to Ensuring Public Health and Food Safety
- Food Safety Issues - Other

AT4: Inclusive Sustainable Food Systems and Poverty Alleviation (11.54%)

- Rural-to-Urban Migration
- Advancing Equitable Livelihoods
- Improving Income Distribution for the Poor
- The sub-areas of intervention associated therewith are given in the table below.

The sub-areas of intervention associated therewith are given in the table below.

Table 12. Distribution by Action Tracks, Main Intervention Area and Intervention Areas

	Count	%
Action Track 1 (AT1)	146	28.08%
Food Security	74	14.23%
Waste Management, Recovery and Reuse of Waste and Disposal relating to Nutrition and Nutrient Content relating to Nutrition and Nutrient Content	2	0.38%
Nutrition	1	0.19%
Foreign Dependence and High Input Costs in terms of Food Security, Environment and Sustainability	1	0.19%
Ensuring Food Security and Access to Safe, Healthy and Nutritious Food	59	11.35%
Healthy, Balanced, Sufficient Nutrition	8	1.54%
Ensuring Sustainable Production / Sustainable Agriculture	1	0.19%
Seed Production	1	0.19%
Legal Infrastructure	1	0.19%

³ Indicated as a sub-area. Food loss and food waste are also indicated as a single problem and not gathered under food loss and waste in order to prevent loss in meaning.



	Count	%
Public Health and Food Safety	62	11.92%
Food Safety Issues-Other	16	3.08%
Production of Safe, Healthy and Nutritious Food	18	3.46%
Inspections and Controls Related to Ensuring Public Health and Food Safety	22	4.23%
Counterfeit, Adulterated, Fraudulent Food	6	1.15%
Healthy and Balanced Diet	10	1.92%
Natural and Organic Product Supply	1	0.19%
Ensuring Food Security and Access to Safe, Healthy and Nutritious Food	1	0.19%
Food Literacy	1	0.19%
Obesity	1	0.19%
Healthy, Balanced, Sufficient Nutrition	6	1.15%
Action Track 2 (AT2)	92	17.69%
Transition to Sustainable Consumption and Preventing Food Loss and Waste	81	15.58%
Food Waste	7	1.35%
Food Loss	6	1.15%
Food Loss and Waste	68	13.08%
Generating and Increasing Demand for Food Products of Agricultural and Marine Origin	5	0.96%
Alternative Sources of Protein	1	0.19%
Consumption of Aquaculture Products	3	0.58%
Sustainability and Protection of Local Range of Food	1	0.19%
Catalysing A Change in Consumer Behaviours	6	1.15%
Consumption Habits	6	1.15%
Action Track 3 (AT3)	186	35.77%
Environment, Protection and Sustainable Use of Natural Resources	174	33.46%
Land Conservation and Planning	10	1.92%
Management, Recovery and Reuse of Waste and Disposal	7	1.35%
Preservation of Biodiversity	6	1.15%
Environmental Pollution (Except for Those Induced by Pesticide and Fertilizer Application)	4	0.77%
Environmental Protection	3	0.58%



	Count	%
Sustainable Use of Natural Resources	19	3.65%
Natural and Organic Product Supply	1	0.19%
Boosting Nature Positive Production	4	0.77%
Ecosystem	4	0.77%
Protection of Natural Resources Linked to Improving Income Distribution	1	0.19%
Foreign Dependence and High Input Costs in terms of Food Security, Environment and Sustainability	2	0.38%
Climate Change	39	7.50%
Alleviating the Impact of Climate Change and Adaptation Efforts	6	1.15%
Problem of Sustainability in Agricultural Production Caused by Climate Change	6	1.15%
Climate Friendly Agriculture Systems	3	0.58%
Human Induced Ecosystem and Landscape Disruptions	9	1.73%
Scarcity and Efficient Use of Water Resources	27	5.19%
Pollution of Water Resources	4	0.77%
Protection of Aquatic Ecosystems	1	0.19%
Ensuring Sustainable Production / Sustainable Agriculture	13	2.50%
Environmental Pollution Induced by Pesticide and Fertilizer Application	2	0.38%
Seed Use	2	0.38%
Renewable Energy Sources	1	0.19%
Boosting Nature Positive Production	5	0.96%
Sustainable Use of Natural Resources	1	0.19%
Ensuring Sustainable Production / Sustainable Agriculture	2	0.38%
Environmental Pollution Induced by Pesticide and Fertilizer Application	1	0.19%
Production Planning	1	0.19%
Ensuring Sustainability in Food Value Chain	7	1.35%
Foreign Dependence and High Input Costs in terms of Food Security, Environment and Sustainability	2	0.38%
Food Loss	1	0.19%
Ensuring Sustainable Production / Sustainable Agriculture	2	0.38%
Improving Producer Income Levels and Livelihoods	2	0.38%



	Count	%
Action Track 4 (AT4)	82	15.77%
Inclusive Sustainable Food Systems and Poverty Alleviation	60	11.54%
Advancing Equitable Livelihoods	6	1.15%
Improving Income Distribution for the Poor	7	1.35%
Use of Information Communication Systems Through Available Data and Analysis	1	0.19%
Decent Work Opportunities	1	0.19%
Improving Rural Welfare Levels and Living Conditions	3	0.58%
Rural-to-Urban Migration	39	7.50%
Improving Producer Income Levels and Livelihoods	3	0.58%
Regional Development in terms of Inclusive Sustainable Food Systems	22	4.23%
Diversification of Equitable Livelihoods, Sustainability and Protection of Local Range of Food	7	1.35%
Mitigation/Elimination of Regional Development Gaps	2	0.38%
Fair and Efficient Distribution of Food	1	0.19%
Decent Work Opportunities	1	0.19%
Inclusive Growth and Sustainable Development	1	0.19%
Improving Rural Welfare Levels and Living Conditions	1	0.19%
Rural-to-Urban Migration	4	0.77%
Improving Producer Income Levels and Livelihoods	3	0.58%
Increasing Number of Producers, Farmers' Market Access	2	0.38%
Action Track 5 (AT5)	14	2.69%
Increasing the Resilience of Sustainable Food Systems to Food Crises	14	2.69%
Measures Against Food Crises Induced by Conflicts, Natural Disasters, Climate Change, Outbreaks	12	2.31%
Ensuring Food Security Related to Food Crises and Access to Safe, Healthy and Nutritious Food	1	0.19%
Problem of Sustainability in Agricultural Production Caused by Climate Change	1	0.19%
Grand Total	520	100.00%

Provincial/district, regional and national distributions of intervention areas are presented in the table below. Accordingly, the regional distribution of the first 5 main intervention areas mentioned above is given below.



Table 13. Respondent Spatial Distribution of Main Intervention Areas

First 5 Main Intervention Areas	Province	Region	District	Türkiye
Environment, Protection and Sustainable Use of Natural Resources		<ul style="list-style-type: none"> Regional Level (Van, Muş, Bitlis, Hakkari, Siirt) Southeast Anatolia Region Regional Level (Manisa, İzmir, Aydın, Muğla) Aegean Region 	<ul style="list-style-type: none"> Çıldır Ankara Elmaçık 	Türkiye
Transition to Sustainable Consumption and Preventing Food Loss and Waste		-	Haymana	Türkiye
Public Health and Food Safety		-	Haymana Şirvan Yenimahalle	Türkiye
Inclusive Sustainable Food Systems and Poverty Alleviation		Van, Muş, Bitlis, Hakkari, Siirt	Kahramankazan Şirvan	Türkiye
Food Security		Aegean Region	Elmaçık Haymana Yenimahalle	Türkiye



When examining the spatial distribution of intervention areas,

Regional Level

- Ensuring Sustainable Production / Sustainable Agriculture

Provincial Level

- Food Loss and Waste
- Ensuring Food Security and Access to Safe, Healthy and Nutritious Food, and Production of Safe, Healthy and Nutritious Food
- Rural-to-Urban Migration
- Climate Change
- Inspections and Controls Related to Ensuring Public Health and Food Safety

District Level

- Ensuring Food Security and Access to Safe, Healthy and Nutritious Food
- Rural-to-Urban Migration

National Level

- Ensuring Food Security and Access to Safe, Healthy and Nutritious Food, and Production of Safe, Healthy and Nutritious Food
- Food Loss and Waste
- Climate Change
- Rural-to-Urban Migration
- Scarcity and Efficient Use of Water Resources
- Ensuring Sustainable Production / Sustainable Agriculture
- Advancing Equitable Livelihoods
- Sustainable Use of Natural Resources
- Healthy, Balanced and Sufficient Nutrition

are the most prominent subjects. The quantitative and proportional distribution of other intervention areas by location is presented in the table.

Table 14. Proportional and Spatial Distribution of Intervention Areas

Intervention Area	Count	%
Region	6	1.15%
Management, Disposal, Recovery and Reuse of Waste	1	0.19%
Sustainable Use of Natural Resources	1	0.19%
Climate Change	1	0.19%
Rural-to-Urban Migration	1	0.19%
Ensuring Sustainable Production / Sustainable Agriculture	2	0.38%
Province	330	63.46%
Advancing Equitable Livelihoods	5	0.96%
Alternative Sources of Protein	1	0.19%
Land Conservation and Planning	6	1.15%
Management, Disposal, Recovery and Reuse of Waste	7	1.35%
Nutrition	1	0.19%
Preservation of Biodiversity	6	1.15%



Intervention Area	Count	%
Mitigation/Elimination of Regional Development Gaps	2	0.38%
Measures Against Food Crises Induced by Conflicts, Natural Disasters, Climate Change, Outbreaks	8	1.54%
Environmental Pollution	4	0.77%
Environmental Protection	2	0.38%
Sustainable Use of Natural Resources	11	2.12%
Natural and Organic Product Supply	2	0.38%
Boosting Nature Positive Production	3	0.58%
Ecosystem	3	0.58%
Improving Income Distribution for the Poor	4	0.77%
Food Safety Issues-Other	15	2.88%
Foreign Dependence and High Input Costs in terms of Food Security, Environment and Sustainability	5	0.96%
Ensuring Food Security and Access to Safe, Healthy and Nutritious Food, and Production of Safe, Healthy and Nutritious Food	38	7.31%
Food Waste	4	0.77%
Food Loss	1	0.19%
Food Loss and Waste	50	9.62%
Food Literacy	1	0.19%
Fair and Efficient Distribution of Food	1	0.19%
Inspections and Controls Related to Ensuring Public Health and Food Safety	21	4.04%
Climate Change	27	5.19%
Alleviating the Impact of Climate Change and Adaptation Efforts	2	0.38%
Problem of Sustainability in Agricultural Production Caused by Climate Change	5	0.96%
Climate Friendly Agriculture Systems	2	0.38%
Human Induced Ecosystem and Landscape Disruptions	7	1.35%
Decent Work Opportunities	1	0.19%
Improving Rural Welfare Levels and Living Conditions	3	0.58%
Rural-to-Urban Migration	29	5.58%
Healthy, Balanced and Sufficient Nutrition	7	1.35%
Pollution of Water Resources	2	0.38%
Scarcity and Efficient Use of Water Resources	16	3.08%
Consumption of Aquaculture Products	1	0.19%
Protection of Aquatic Ecosystems	1	0.19%



Intervention Area	Count	%
Ensuring Sustainable Production / Sustainable Agriculture	6	1.15%
Counterfeit, Adulterated, Fraudulent Food	3	0.58%
Environmental Pollution Induced by Pesticide and Fertilizer Application	3	0.58%
Seed Use	1	0.19%
Consumption Habits	4	0.77%
Improving Producer Income Levels and Livelihoods	6	1.15%
Increasing Number of Producers	1	0.19%
Production Planning	1	0.19%
Sustainability and Protection of Local Range of Food	1	0.19%
District	14	2.69%
Measures Against Food Crises Induced by Conflicts, Natural Disasters, Climate Change, Outbreaks	1	0.19%
Sustainable Use of Natural Resources	1	0.19%
Food Safety Issues-Other	1	0.19%
Ensuring Food Security and Access to Safe, Healthy and Nutritious Food, and Production of Safe, Healthy and Nutritious Food	5	0.96%
Food Loss and Waste	1	0.19%
Rural-to-Urban Migration	2	0.38%
Scarcity and Efficient Use of Water Resources	1	0.19%
Ensuring Sustainable Production / Sustainable Agriculture	1	0.19%
Consumption Habits	1	0.19%
Türkiye	170	32.69%
Advancing Equitable Livelihoods	8	1.54%
Land Conservation and Planning	4	0.77%
Management, Recovery and Reuse of Waste and Disposal	1	0.19%
Measures Against Food Crises Induced by Conflicts, Natural Disasters, Climate Change, Outbreaks	3	0.58%
Environmental Protection	1	0.19%
Sustainable Use of Natural Resources	7	1.35%
Boosting Nature Positive Production	1	0.19%
Ecosystem	1	0.19%
Improving Income Distribution for the Poor	4	0.77%
Ensuring Food Security and Access to Safe, Healthy and Nutritious Food, and Production of Safe, Healthy and Nutritious Food	36	6.92%
Food Waste	3	0.58%



Intervention Area	Count	%
Food Loss	6	1.15%
Food Loss and Waste	17	3.27%
Use of Information Communication Systems Through Available Data and Analysis	1	0.19%
Inspections and Controls Related to Ensuring Public Health and Food Safety	1	0.19%
Climate Change	11	2.12%
Alleviating the Impact of Climate Change and Adaptation Efforts	4	0.77%
Problem of Sustainability in Agricultural Production Caused by Climate Change	2	0.38%
Climate Friendly Agriculture Systems	1	0.19%
Human Induced Ecosystem and Landscape Disruptions	2	0.38%
Decent Work Opportunities	1	0.19%
Inclusive Growth and Sustainable Development	1	0.19%
Improving Rural Welfare Levels and Living Conditions	1	0.19%
Rural-to-Urban Migration	11	2.12%
Obesity	1	0.19%
Healthy, Balanced and Sufficient Nutrition	7	1.35%
Pollution of Water Resources	2	0.38%
Scarcity and Efficient Use of Water Resources	10	1.92%
Consumption of Aquaculture Products	2	0.38%
Ensuring Sustainable Production / Sustainable Agriculture	9	1.73%
Counterfeit, Adulterated, Fraudulent Food	3	0.58%
Seed Use	1	0.19%
Seed Production	1	0.19%
Consumption Habits	1	0.19%
Improving Producer Income Levels and Livelihoods	2	0.38%
Increasing Number of Producers	1	0.19%
Legal Infrastructure	1	0.19%
Renewable Energy Sources	1	0.19%
TOTAL	520	100.00%



2.2.2. Proposed Solutions and Actions

The proposed solutions and actions summarized under Action Tracks for first 5 main intervention areas determined previously are presented below;

AT3: Environment and Protection and Sustainable WUse of Natural Resources (33.46%)

1. Climate Change⁴:



The negative impacts of climate change at a global and national scale, triggered in recent years by rapid urbanization and industrial pressure caused by rural-to-urban migration, rapid population increase, and overuse of natural resources as a result of the expansion of agricultural lands and tourism activities, are also observed in agricultural production. Additionally, emissions produced in industrial zones cause air pollution and various environmental issues. Conventional agricultural practices aggravate the problem of climate change. The unfavourable impacts of temperature stress are observed in animals, particularly in the form of reduced fertility and milk production during the summer months. With regard to beekeeping and biodiversity, the lifecycle of honeybees may be disrupted as a result of changing blooming periods of flowering plants and the consequent changes in nectar collecting periods for honeybees due to climate change. Furthermore, changes in seasonal cycles, production patterns and soil and water resources in plant production affect the quantities of water used for drinking and agricultural purposes, requiring new production planning and determining alternative products, particularly in provinces such as Mersin. Climate change is also closely associated with the scarcity of water resources, which is triggered by drought and the COVID-19 pandemic, and the efficient use of water. Taking into consideration the available water per capita in Türkiye, there is a risk that the quantity, yield and quality of agricultural production will decrease due to climate change and drought; and with agricultural water

consumption reaching up to 74%, agricultural production can potentially be suppressed, triggering natural disasters that may affect agricultural production (Sustainable Food Systems Country Report, 2021 and online questionnaire results). On the other hand, the drawdown of lakes create the risks of:

- Benthic, planktonic and fish diversity being affected as a result of accelerating changes in water quality as the depth decreases,
- Increase in the effects of nitrogen and phosphorus accumulations that come from agricultural lands surrounding the lake, possibly resulting in eutrophication,
- Decrease in the catch quantity, particularly in crayfish fishing, as a result of weed growth, and
- Shrinking fish spawning grounds. Water also guarantees the protection of biodiversity.

The production of dried figs, of which Türkiye is the leading producer and which is a significant exportable product, is also threatened. Dried fig is produced in certain regions of Aydın and Izmir provinces that cover Great and Little Meander rivers in Türkiye. The rises in relative humidity during the drying season as a result of climate change foster the formation of mycotoxin, which in turn, risks food security. On the other hand, erosion reduces productivity in mountainous regions. In addition to the use of machinery of redundant powers, broad use of outdated engines and increased fossil fuel mechanization in agricultural activities; the breakdowns in fundamental ecosystem cycles (i.e., water cycle, carbon cycle, food chain, etc.) in order to build resilience to fluctuations in production cause knock-on effects in all ecosystems. For example, rainfall-induced run-offs and erosion are increased and infiltration is reduced due to diminishing forestlands. Reasons such as failure to use agricultural lands according to land capability categories, farming in marginal areas, bad soil tillage practices, lack of measures against soil and water protection in fields reduce the fertility and productivity of soil. Therefore, agriculture is one of the sectors that will be affected the most by climate change. In conclusion, decreasing water resources, increasing temperatures, extreme meteorological events, disrupted ecosystems, increasing erosion, decreasing biodiversity, and soil degradations will unavoidably have negative impacts

⁴ Alleviating the impacts of climate change and adaptation efforts; the problem of sustainability in agricultural production caused by climate change, and climate friendly agriculture systems are also evaluated in this scope.

on agricultural production; this is also risky in terms of food security.

The fact that agricultural production quantities limited by changing climatic conditions are the key constraints will trigger the problems of water quantities, deteriorating water quality, degrading soil quality (triggering the salinity problem in soil), increased temperature, high evaporation, and adaptation of current plant species to saline soil and arid conditions. Climate change induced by increasing greenhouse gas emissions may result in the disruption of regularity of precipitation needed for hazelnut farming for which Türkiye leads the global production. With regard to tea, which is another strategic product, Türkiye's capacity for tea production is diminishing due to increasing temperatures and decreasing precipitation, and tea quality is also in decline due to [the degrading quality of] raw materials. Climate change produces multiplier effects on agricultural ecosystems. Excessive or irregular precipitation affects biotic and abiotic stress factors in different directions. Global warming may also cause problems in aquaculture. Since Türkiye is among the countries that will be affected by global warming in terms of aquaculture, it is important to develop fish farming systems adaptable to climate change and overhaul all processes involved in production mechanisms, from fry rearing to cage culturing.

The most significant factor caused by climate change is decreased precipitation, which is also known as drought; using cultural methods against drought, developing agronomic application packages, being conscious of water consumption according to plant species as well as the drought mechanisms of plants within the same species are important elements in terms of tolerance and resilience. The paramount determinant of drought is the quantity and distribution of precipitation during periods when the cultivated plants need water. Temperature and other elements of climate are also important and determining climatic factors in drought resilience, taking into consideration plant growth periods during drought. Land aggregation efforts in order for good production planning against climate change are extremely important in terms of efficient production.

Including species/varieties that are highly adaptable to changing environmental conditions such as climate and soil structure in agricultural production

is extremely important in terms of efficiency. In order to maintain soil fertility during climate change, crop rotation methods should be applied and crop rotation systems that increase soil organic matter and improve soil structure should be used.

Climate change has varying effects on biotic stress factors in cultivated plants. It may change the time and severity of infection in plant diseases and pests as well as the population and lifecycle of plant pests. During climate change, the use of irrigation methods that will increase the efficiency of irrigation and water use should be encouraged and groundwater and surface water resources should be used efficiently; efforts should be made to increase the fill rates of rivers, streams and ponds during non-agricultural production seasons as well; and different agronomic application methods (sowing time, sowing frequency, fertilizer application, combating weeds, different methods of soil tillage, etc.) should be used.

Proposed Solutions and Actions

-  Doing research and modelling on the short, medium and long-term impacts of climate change on food supply based on the elements that trigger climate change; evaluate ecosystems (marine, air-earth and water) holistically, making regional climate change projections dynamically and through statistical modelling, and studying climate change mitigation and adaptation efforts at a regional scale; determining the impacts of livestock industry, in particular, on climate change; determining territorial algorithms by making measurements on all territorial animal species at FAO standards;⁵ to that end, formulating sectoral scenarios on the rates at which the livestock industry has been/will be affected by climate change on a sectoral basis
- In order to mitigate climate change impacts, reviewing existing action plans according to research and modelling efforts
- Strengthening the civil society and improving national and global cooperation in combating climate change

5 Currently, greenhouse gas emission calculations are made by TURKSTAT by multiplying the number of animals by the coefficients determined by EU countries.



- Monitoring local, regional and national flora in relation to honey production, which has a significant share in world production, and continuing to develop local ecotypes of honeybees vis-à-vis changing climate data
- Taking the existing environmental conditions of genetic species into consideration in R&D works
- Determining different alternative products, optimum product patterns and farming systems in line with climate conditions; developing alternative food production models in line with changing climate conditions, as well as works on marketing, storage infrastructure and dissemination,
- Supporting the development of biodegradable products to replace non-biodegradable waste (encouraging the production of food packaging from biodegradable materials),
- Efficient use of water resources and sustainable use of natural resources⁶,
- Reducing human-induced greenhouse gas emissions, balanced use of consumer goods that trigger climate change,
- Balancing the use of synthetic and chemical plant and animal hormones, fertilizers, pesticides (using appropriate products at appropriate doses and appropriate times) and other inputs,
- Strengthening the General Directorate for Nature Conservation and National Parks in terms of human resources and tools; reviewing the relevant legislation on the identification, registration, management planning of protected areas and the protection of places with a designated special status; reviewing institutional powers and structures,
- Mitigation, prevention and management of human-induced damages on the ecosystem and biodiversity,
- Developing species that are highly efficient, compatible with climate conditions and resilient to biotic and abiotic stress against the reduction of agricultural areas concordantly with global climate change and increased human population,
- Limiting and reducing greenhouse gas emissions and addressing the issue specific to Türkiye; establishing climate change-related and environmental (including human) pressures by effectively bringing all relevant institutions (Ministry of Agriculture and Forestry, Ministry of Environment and Urbanization, Ministry of Transport and Infrastructure, Ministry of Industry and Technology, TUBITAK, academia) together; promoting research and development projects, reviewing action plans in active coordination with ministries
- Continuing and enhancing global cooperation and efforts towards climate change,
- Making and implementing short- and long-term plans for the efforts to reduce carbon emission in food establishments; carrying out efforts for the training and awareness-raising of farmers in agriculture, which is one of the most prominent factors,
- Preventing air pollution caused by agricultural activities,
- Selecting plant species that are suitable for climate change and removing those that consume too much water and that are non-suitable for the region in terms of the production pattern,
- Carrying out awareness-raising efforts on the protection and sustainable use of natural resources,
- Formulating appropriate storage conditions in which dry figs and related products can be stored,
- Considering mass terracing in such a way that dry fig production sites are located on sloping lands and cover the majority of the region; protecting fig trees to ensure sustainable production of dry figs,
- Extending the use of cold storage suitable for mass storage by taking capacity analysis into consideration,
- Enhancing cooperation and coordination among start-ups, R&D centres, research institutes and universities with a view to disseminating climate-resilient product range,
- Extending the use of quality seed in relation to climate-resilient varieties,

⁶ The actions that are related to these subjects, which are closely associated with climate change, are discussed in the following part.

- Carrying out debriefing works on appropriate tractor and equipment selection according to the nature of the agricultural activity; extending the use of tractors with Stage 4, Stage 5 engines; extending the use of domestic electric tractors,
- Promoting traditional methods, such as observing the role of nomadic pastoralism in combating climate change, in appropriate areas,
- Increasing and extending organic farming, good agricultural practices and the sustainability index of products bearing geographical indications,
- Strengthening R&D-based practices to combat climate change and drought,
 - » Development of resilient varieties,
 - » Protection of biodiversity and integration with rehabilitation (registration of disadvantaged, informal producers, who are away from the centre and produce native seeds and non-modified natural seeds, through a different smart system and provision of separate aids)
 - » Development of plants with high water use efficiency,
 - » Rehabilitation of animal breeds that are highly adaptable to climate change,
 - » Improvement of soil health,
 - » Extension of protective soil tillage,
 - » Extension of satellite technologies and smart agriculture,
- Extending the technological greenhouse system
- Promoting the T-TOST (Technology-Agriculture, Forestry, Aquaculture, Tourism) optimization model
- Improving the breakdowns in ecosystem cycles;
 - » With regard to water cycle breakdowns, afforestation works should be carried out in upper basins to increase infiltration speed. Additionally, groundwater recharge points should be established, slowing down the flow rate of rainfall in upper basins. Rainwater harvesting methods should be promoted in lower basins.
 - » In order to contribute to the carbon cycle, the use of no-till machines should be promoted, thereby boosting organic matter sequestration in the soil. In fields, the aim should be to boost soil organic matter and health by using no-till methods in particular. This method increases soil fertility and water sequestration capacity, and fuel consumption is minimized due to a lack of soil tillage. It will result in the efficient use of available water in agricultural production; reduced crop harvest losses with increased soil fertility; reduced production costs through less use of fuel, fertilizer and pesticide; and most importantly, ensuring the climate adaptation of agricultural production at field level.
 - » Agroforestry activities should be promoted to contribute to the carbon cycle as well as water sequestration in the soil.
 - » With regard to the food chain; natural environments such as meadows, forests, wetlands should be protected to preserve biodiversity. Efforts should be made for the improvement of meadows, which also serve as reserve areas for biological control.
- Inventory of basin-based water stakeholders; measuring water and soil quality at selected locations in at least two seasons; taking geographic inventory of soil and other natural building elements, which are the largest water stakeholders; dynamic agricultural land use planning
- Carrying out efforts to transition to electrical versions of fossil fuel motor vehicles and motor-driven agricultural machinery in hazelnut production zones
- Taking further effective measures to prevent forestlands from becoming agricultural lands and settlement areas
- Promoting the use of biochar and biochar-based fertilizers produced from agricultural waste; promoting the production of biochar and activated carbon, which serve as greenhouse gas sinks, from hazelnut waste; extending the soil application of biochar, in particular
- Redesigning, in the shortest possible time, the team fields grown from seeds to be replaced by



selected tea types that are resilient to drought or need less water; reproducing such selected appropriate tea types by grafting; redesigning tea fields to allow mechanised farming; training and supporting tea growers; progressively re-building the existing tea fields by using grafts of appropriate types

- Developing climate change adaptation policies
- Determining the resilience of agri-businesses to climate change (FAO-SHARP method)
- Developing climate-sensitive agricultural production techniques
- Applying crop rotation methods to maintain soil fertility (increasing soil organic matter and improving soil structure)
- Actively implementing the legislation on soil conservation and land use
- Leveraging the existing qualified human resource and technological infrastructure with regard to agricultural land management
- Continuing research on fighting erosion and land degradation in agricultural lands
- Continuing efforts related to land aggregation and on-farm development services
- Re-evaluating the aids towards the promotion of environmentally-sensitive agricultural production
- Improving native seed growing practices and increasing the use of drought-resilient species
- Reviewing the legislation on soil pollution and environmental protection within the framework of the EU harmonization process
- Reducing agricultural sector emissions through improvements and strategies related to enteric fermentation, fertilizer and soil management, etc.
- Increasing the carbon sequestration capacity of soil and reducing chemical fertilizer consumption, particularly in agricultural soils; extending the application of alternative fertilizers such as composted, green, farmyard manure in order to reduce the use of synthetic fertilizers
- Implementing the necessary actions to transition

from smart farming to smart urbanization and from digital transformation to circular and blue economy

- The National Marine Research Strategy Paper has been approved. The works on the draft text of the National Marine Research Programme mentioned in the Strategy Paper should be finalized; action plans should be formulated on the exploration and sustainable use of our marine resources; supporting research and development projects in various fields such as producing fertilizer raw material from struvite, procuring valuable raw materials from waters, and water recycling; SMEs should be made competitive
- Protecting the areas exposed to wind erosion
- Promoting limited irrigation or waterless production
- Inserting subjects related to climate change in the curriculum
- Supporting the declaration of the UN International Year of Meadows and Conventional Livestock Breeding
- Preparing training programmes and reviewing the legal infrastructure
- Applying the national “Ecosystem-based Adaptation Strategy for Anatolian Steppe Ecosystems” on a multi-sectoral basis
- Maintaining joint efforts and initiatives to mitigate the pollution of the world’s existing carbon sinks
- Governmental incentives for global large oil and automotive companies to carry out R&D on and invest in clean energy sources and engines, machinery and equipment that can use such sources
- Improving railway and sea transport
- Promoting implementation of the cross-compliance regulations of the European Union
- Reviewing agri-environmental indicators and monitoring systems in Türkiye
- One of the methods to reduce methane gas emissions in enteric fermentation is the efficient



use of livestock feed. In addition, reducing the emissions arising from enteric fermentation through special feed additives and long-term management changes; and ensuring emission reduction through enhanced nutritional practices such as adding certain oils or oilseeds, probiotics and proteins into the feed.

- Paying attention to methane emission sequestration, biogas production and composting in manure management.
- Ensuring that food products are primarily used for human consumption, that these products are used in feed production if they are waste, if appropriate, and that those that cannot be used in feed production are managed in environmentally licensed waste processing facilities.
- Carrying out soil analyses and continuing soil analysis support, increasing soil carbon sequestration capacity through composting, and reducing emissions through increasing no-till agricultural practices.
- Establishing how and the extent to which Türkiye is affected by climate change in reality (original studies by our scientists, beyond IPCC reports)
- Continuing the support for building production plants in regions with heavy geothermal energy.
- In order to promote and use domestic production; supporting the production and processing of domestic products; creating the necessary conditions to enable domestic production enterprises to maintain their R&D works in collaboration with universities, non-governmental organizations, research institutes in a way that responds to sectoral needs; and jointly carrying out dissemination activities necessary to gain competitive advantage in the market.
- Making analysis-based production and product processing obligatory for enterprises and producers, and enhancing inspection through continuous and frequent controls.
- Extending the use of integrated pest management methods.

2. Scarcity and Efficient Use of Water Resources⁷



Türkiye, which has a 112 billion m³ in total and 1,500 m³ per capita available water potential, is under water stress. Water consumption in the agricultural sector comprises one-third of total water consumption in

Europe, while this rate is 74% in Türkiye. Considering the agricultural irrigation infrastructure in Türkiye; the usage rate of sprinkling irrigation is 13% and drip irrigation is 7% while surface irrigation is around 80%. Water is among the most restrictive factors in agricultural production. As is the case throughout the world, the most significant root causes of water scarcity in the region generally include the facts that the quantity of water is physically insufficient to irrigate all agricultural lands; water resources are located far away from all agricultural lands, and water losses occur during transport generally due to such reasons as evaporation. Drainage and protecting soil and water resources is extremely important in irrigated lands. Excessive use of irrigation water in areas without natural drainage or a drainage system poses a threat to agricultural soils by increasing groundwater levels and causing salination. Water resources cannot be used efficiently in areas that are irrigated by flooding, check flooding and row irrigation methods due to the low efficiency of water application; flooding irrigation systems, in particular, cause significant water losses. As Türkiye is located in a semi-arid climate zone, ensuring the sustainability of the conservation and usage equilibrium is extremely important. In the food industry, water is continuously used as an auxiliary product in food processing as well as in additional food processing methods, elementary processes (soaking, washing, rinsing, scalding, heating, pasteurization, freezing, cooling, steam generation) and cleaning and sanitation, leading to water loss. Misapplications in agricultural production and farming reduce and pollute water resources. Chemical fertilizers and pesticides used in agricultural production pollute water resources by mixing into surface and groundwaters, posing hazards to human health, particularly in those intended for drinking water supply. Türkiye has limited water resources that are at risk due to the precipitation regime, pollution, and overconsumption.

⁷ Water pollution is also discussed under this heading.



Research should be conducted nationwide on agricultural techniques that require low water consumption; extension of such techniques will contribute to minimizing water use in agricultural lands. The varieties and species that will be produced in the long view should comprise those that require less water, and through which we can achieve high yields with less water consumption. This is why carrying out rehabilitative works for varieties with such characteristics is important in all agricultural products.

Due to the remoteness of certain agricultural lands from water resources, water is transported to the agricultural land through various irrigation systems; in the meantime, water losses occur due to evaporation, and leakage caused by the wear and tear of the irrigation system. Thus, transporting water to the agricultural land through closed systems built of materials that do not cause losses during transport will be a significant factor in preventing water losses. This should be complemented by integrating drip irrigation systems with automation systems that can measure the soil and atmospheric moisture as well as plant water content and consumption during irrigation, which will maximize contributions to reducing the consumption rate.

The increasing demand for water resources and the fact that such resources are not at the desired quantity and quality by time and location require the most efficient use, i.e. management, of available water resources by considering economic, environmental and social benefits.

Proposed Solutions and Actions

- Rehabilitating existing irrigation systems
- Different pricing over a certain quantity of water use
- Preventing loss and waste of water
- Extending, supporting the use of, and continuing studies to ensure that cultivators adopt pressurized and modern irrigation techniques such as drip and sprinkling irrigation instead of conventional irrigation systems such as flooding that cause water overconsumption
- Subsoil water irrigation instead of flooding irrigation
- Carrying out training and dissemination activities on the conscious use of water resources, extending awareness raising efforts on water usage to cover all community groups, efficient use of communication channels, including designing printed, visual and audio material and social media, in order to reduce waste and loss of water
- Using bioenergy resources in irrigation
- One of the most significant elements of the pollution of water resources is the feed used in aquaculture. The impact of the nitrogen and phosphorus loads produced as a result of feeding should be reduced. Improving feeding technology, extending the use of extruder feed, using filters in effluents, extending the use of drum filters
- Accelerating afforestation efforts
- Doing irrigation planning by taking land and environmental conditions required by the product and meteorological data, using smart irrigation techniques
- Raising awareness on the fact that water is not a nutrient, but a conveyor in agricultural irrigation
- Carrying out R&D works on obtaining water from sea water
- Accelerating the works to transform open irrigation channels into closed systems, thus minimizing water loss which may extend up to 75% in drylands
- Combining and carrying out the legislation from a single centre, since it has been determined that disconnected and different institutions take an initiative regarding the protection of water resources and an efficient fight cannot be ensured in practice
- Placing further importance on works to protect wetlands, ensuring the necessary and adequate allocation of resources, ensuring that the protection of wetlands is controlled by the relevant Central Units in addition to the relevant Civil Administrators
- Reviewing deep wells drilled for agricultural irrigation purposes, closing down those that are inappropriate
- Producing appropriate products on appropriate



lands through the right production techniques

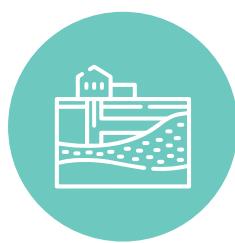
- Reverse engineering in resource usage
- Efficient basin-based planning
- Reviewing and strengthening the legal legislation to prevent the pollution of water resources
- Ensuring the use of renewable energy resources, and particularly solar energy systems, to reduce electricity costs in agricultural irrigation
- Increasing inspections of production sites such as factories, workshops, slaughterhouses, etc. located near wetlands, and particularly rivers and lakes, as well as inspecting the quantities of chemical, biological and organic fertilizer applied to the soil by fruit and vegetable producers; introducing an obligation for factories to treat their waste discharge; ensuring that heavy metal processing factories refrain from discharging their waste into wetlands
- Establishing a centre to monitor nationwide drought full-time, give the necessary warnings in due time, announce the necessary measures to the authorities and the public in a timely manner, and conduct scientific research on drought; enhancing the capacity of existing research institutes
- Identifying and extending rational application methods for drip irrigation systems particularly in agricultural products such as sugar beets, etc. that involve high water consumption
- Determining the optimum plant patterns based on water resources and designing support programmes by considering water constraints
- Extending modern management systems that are based on irrigation scheduling
- Continuing to develop the system for monitoring and evaluating the pollution in water resources caused by agricultural production
- Developing strategies to reduce climate change impacts and giving weight to works related to weather-based plant patterns and water budget
- Developing projects to reduce organic waste and dissemination of use of organic waste in crop production
- Developing and extending new systems aimed at the economic use of water resources, supporting R&D efforts
- Extending biological and cultural methods to control plant diseases and pests
- Supporting farmers who use as much manure as the plant needs; adopting sustainable agriculture techniques to reduce the impact on water resources
- Extending water storage projects
- Ensuring instant data flow through exit water sensors
- Ensuring a fair allocation of water for priority sectors that use water; in this context, taking the impacts of climate change as well as drought on water constraints into consideration is extremely important. In this respect, managing water in the most efficient manner possible by paying attention to the conservation-usage equilibrium, using water efficiently, and improving existing water resources to serve as a driving force for sustainable development based on economic, social and environmental principles
- Balancing water inflow and outflow to and from lakes by supervising lake water levels and quantities; releasing water by taking water level into consideration, refraining from releasing water during periods of low water level, changing the irrigation method. It is predicted changing the method of irrigation without adding any water can save approximately 60-70% of water if the sprinkling method is used, and 75-85% if the dripping irrigation method is used (depending on product pattern). Regularly trimming the reeds around lakes which have particularly become thicker in recent years. According to research, aquatic plants captivate approximately 40% of the C (Carbon), 20% of the total phosphor and 5 to 40% of the total nitrogen in the environment; therefore the occasional trimming of such plants is important in terms of taking off organic load from the lake. In this context, reviewing, and where appropriate, revising Special Provisions; raising the awareness of lake basin inhabitants to protect the lakes; taking measures against the streams that carry alluvia into the lake during rain spells are important steps Accordingly, collecting



alluvion and sand from lakes in certain periods should be allowed in order to reduce the impacts of the streams and points that bring in alluvia during heavy rainfall; in this context, reviewing, and where appropriate, revising Special Provisions; starting to use modern agricultural and irrigation techniques in lake basins. Additionally, agricultural products that require less water should be identified and their production should be encouraged.

- Training agricultural producers and fishers on relevant topics related to their field
- Addressing preventive projects as a matter of priority and in accordance with scientific facts; preventing sewage and domestic waste from settlements near lakes from mixing into the lake and to do so, establishing advanced treatment units and activating the existing treatment systems that are appropriate for the disposal of waste that mix into the lake

3. Sustainable Use of Natural Resources



Erosion is caused by land degradation, increasing population, urban expansion and till-heavy agriculture and causes in turn increased salinization, acidification, chemical pollution and soil degradation.

The way to a healthy life for all creatures is through living in a healthy environment and having access to clean water, air and healthy soil. The vital elements of clean water and healthy food can be met without soil.

Misuse of soil and water resources causes the physical, chemical and biological structure of the soil, thus reducing sustainable soil fertility and production. These effects generally manifest in the forms of salinization, soil compaction, destruction of the soil structure as a result of the decomposition of organic matter which, in turn, leads to poor water transmission and erosion. As a result of such almost irreversible events, the agricultural capabilities of the soil decrease, which creates socio-economic problems. Additionally, human activities result in erosion and loss of soil fertility, which brings along the need to protect the ecosystem and biodiversity. On the other hand, along with the negative impacts of climate change on natural reserves associated with aquaculture and unfavourable influence of changes in

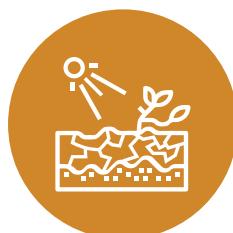
water on animal farming systems, excessive and illegal hunting activities exacerbate this problem, contributing to the negative impacts on the sustainable use of natural resources.

Excessive use of fossil fuels such as coal, oil, natural gas, etc., which are also natural resources, will inevitably increase global warming. Misuse of fertile lands, dividing lands into small compartments for various reasons in addition to product losses and input increases caused by such factors excessive irrigation and unconscious use of chemical fertilizers and pesticides also lead to environmental issues that affect natural resources adversely. Therefore, an ecosystem-based, holistic regime that takes the specific structure of the soil into consideration should be promoted; capacity-building efforts should be carried out on soil-friendly practices; soil degradation should be prevented and degraded soil should be rehabilitated. The soil assets and land resource potential of Türkiye should be determined, and land categorizations should be reviewed in line with the country's plant production potential and geographic conditions. Exploitation of natural stocks for raw materials that are used in aquaculture should be prevented.

Especially in fish that show carnivore growth, some of the feed comprises fishmeal and fish oil products obtained from fish caught in the nature. Fish farming provides a means of production that can serve as an alternative to fishing while also exploiting natural resources and the ecosystem. While fish farming is encouraged to reduce the pressure of fish hunting on natural populations with an economic value, other species that have low economic value are subject to such a pressure. Nutritional requirements during the growing and fattening of fish in fish farming works can be re-reviewed. Essential nutrient requirements of fish change between stages of growth; fish in their larval or juvenile periods or that are portion-sized or larger in size and weight may require different nutrients. While fish initially achieve effective growth with a meat-based diet, they may become predisposed to a herbivorous or omnivorous diet in the upcoming periods. Accordingly, aquatic sources of protein in the fish feed formula can be replaced by new raw materials that are obtained through mostly terrestrial herbal products. For portion-sized fish in particular, research can be conducted to replace feed formula with sustainable terrestrial resources.



Conserving forest assets in a sustainable manner is also significant in terms of preventing erosion. The degradation of pasture areas also have negative impacts on animal production.



Proposed Solutions and Actions

- Selecting products that are appropriate for the climatic and soil structure of the region
- Encouraging growing products with low water consumption to prevent increasing soil salinity
- Determining the type of soil degradation that is common in the region and taking measures accordingly
- Protecting natural forest assets by carrying out afforestation works in an organized manner to increase forests
- Extending the transition to terrace cultivation on sloped sections
- Identifying the capacity of natural resources and planning on the sustainable use of resources in line with needs
- Commissioning powerful mechanisms to contribute to maintaining the ecosystem and biodiversity
- In cooperation with relevant institutions, conducting monitoring works on the impacts of climate change on water resources in terms of aquaculture; carrying out risk assessment and impact analysis studies; developing alternative farming and species-specific models
- Evaluating the appropriate aquaculture products to be produced in local water resources; providing the locals with guidance
- Building aquaculture production sites on easily accessible areas in order to ensure that, in addition to conventional agricultural activities, aquaculture production according to capacity and environmental analysis benefits the locals
- Extending arrangement practices in pasture areas
- Converting waste into energy at large enterprises and factories
- Reducing the use of chemical pesticides and fertilizers in agriculture and increasing organic farming
- Increasing the use of renewable energy sources in the production process
- Building and supporting fauna production stations
- Relocating elsewhere the species that are in danger of extinction due to energy, mining, water, etc. investments (e.g., moving and reproducing endemic species over which a dam will be built) and extending training activities in this regard
- Improving variety in drought-resilient and marginal areas
- Reducing erosion, enhancing soil organic matter content, preventing and alleviating soil compaction, improving soil water management, reducing and preventing the salinization, pollution and acidification of soil and protecting and enhancing soil biodiversity
- Formulating land use plans that determine and systematically evaluate the soil and water potential of lands in line with the principle of sustainability in order to make different land use decisions; continuing soil survey mapping works
- Ensuring effective coordination among the institutions that are responsible for land and water resources; reviewing the legislation related to land and water to serve all institutions
- Updating the main national soil map, preventing irrelevant use through land use and production planning based on such data, and mitigating the overconsumption and preventing the irrelevant use of water, balancing land degradation, mitigating climate change impacts and ensuring adaptation, technology development and harmonization
- In aquaculture, fish consume the most feed when they are approaching portion-size. Especially for nearly portion-sized fish, experimenting with different terrestrial sources of protein as sources of raw material
- Bacterial communities that are settled along the



digestive tracts of fish are known to have positive effects and contributions. With regard to this issue, supporting the fish digestive system with selected bacteria and conducting experiments and R&D efforts on the benefits of terrestrial proteins on carnivorous species

- Continuing planned urbanization practices
- Making wastewaters reusable
- Removing endocrine-disrupting chemicals from wastewater, protecting agricultural lands

AT2: Transition to Sustainable Consumption and Preventing Food Loss and Waste (15.58%)

1. Food Loss and Waste⁸



According to the FAO Report on the State of Food Security and Nutrition in the World (SOFI 2020), almost 690 million people in the world (8.9 per cent of the world population) were undernourished in 2019,

before the COVID-19 pandemic. Estimates for 2019 reveal that an additional 60 million people have become affected by hunger since 2014. If this trend continues, the number of undernourished people will exceed 840 million by 2030, risking the achievement of Sustainable Development Goal 2 Zero Hunger as determined by the UN through the 2030 Agenda, even without the negative effects that COVID-19 will likely have on hunger.

It is estimated that the COVID-19 pandemic has added an additional 83 to the 132 million people to the ranks of the undernourished in 2020. Beyond hunger, a growing number of people have had to reduce the quantity and quality of the food they consume. Two billion people, or 25.9 per cent of the global population, experienced hunger or did not have regular access to nutritious and sufficient food in 2019. This situation could deteriorate if it is not acted immediately and boldly.

These trends in food insecurity contribute to increasing the risk of child malnutrition, as food insecurity affects diet quality, including the quality of children's and women's diets, and people's health in different ways. In 2019, 144 million children under 5 years of age were estimated to be stunted, 47 million wasted and 38.3 million overweight, while at least 340 million children suffered from micronutrient deficiencies. Furthermore, adult obesity is on the rise in all regions.

According to the 2020 Hunger Map⁹, Türkiye ranks below 2.5% in terms of the prevalence of malnutrition in the total population between 2017-2019.

While the world combats hunger and malnutrition, it also grapples with obesity which causes various health problems. To top it all off, FAO indicates that 1.3 billion tons of food, which corresponds to nearly one-third of the food produced for human consumption purposes, is lost or wasted each year, leading to social, economic and environmental issues and most importantly, climate change problems. According to World Bank (2020), unsold agricultural products are lost or wasted in the production, transport, retail, sales and consumption stages of national food chains, which was also the case even before COVID-19. The area required to produce the quantity of food that has been lost or wasted is almost the size of China.

According to TURKSTAT data (2020), 19.1 million tons of food is lost or wasted per year and 4.9 million loafs of bread go to waste on a daily basis in Türkiye. The largest quantity of loss occurs in fresh production and nearly half of the products are lost. According to the United Nations Food and Agricultural Organization data, malnutrition in children is decreasing while adult obesity and anaemia are on the rise among females in Türkiye. Reducing the loss and waste of food can contribute to food security.

As defined by the World Bank, reducing food waste by 20% would provide enough food to feed 25 million people. Therefore, reducing food losses and waste will contribute positively to food security and nutrition, sustainable food systems, the economy and the environment (e.g., climate change, preventing the loss of water that is required to produce food). Food loss and waste also have social influence over work productivity and wages.

⁸ The topics of food loss and food waste have also been addressed under this heading.

⁹ <https://www.wfp.org/publications/hunger-map-2020>



In recent years, the Ministry of Agriculture and Forestry has put on the agenda the issues of ensuring food security and combating food loss and waste, which contributes to ensuring food security. It has carried out various efforts and projects on a national and international scale.

On the other hand, Goal 12.3 of the Sustainable Development Goals, which is also applicable for Türkiye, sets the following objective: "By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses". Priority Development Areas of the Eleventh Development Plan, which covers 2019-2023, stipulates the following measures under the policies and measures heading of the Agriculture section:

- "411. The rules and capacities for market regulation will be improved in order to ensure food safety, efficient inventory management, reducing losses in the supply chain and preventing waste"
- "411.3 Consumer awareness will be increased to prevent food losses and waste".

Furthermore, the Conclusions Statement of the 3rd Agriculture and Forestry Council, announced to the public by President Recep Tayyip ERDOĞAN includes the following action:

- "Action No:3 - Establishing the Infrastructure to Prevent Food Loss and Waste".

SAVE YOUR FOOD YOUR ACTIONS MATTER

The most recent effort carried out on combating food losses and waste by the Ministry of Agriculture and Forestry in order to accomplish our international priorities and national policies, measures and actions is the "**SAVE YOUR FOOD - YOUR ACTIONS MATTER CAMPAIGN¹⁰**" launched after being announced to the public in May 2020, with a view to combatting food losses and waste across Türkiye. The "**National Strategy Paper and Action Plan on the Prevention, Reduction and Monitoring of Food Loss and Waste**" was also publicly declared along with the campaign. The main goals of the campaign are:

- REDUCING/PREVENTING FOOD LOSSES AND WASTE at the national and international scale
- Raising AWARENESS on reducing and preventing food losses and waste
- Making Turkish BEST PRACTICES A ROLE MODEL IN THE INTERNATIONAL ARENA
- Supporting the "ZERO WASTE PROJECT" carried out by the Ministry of Environment and Urbanization under the auspices of Emine ERDOĞAN
- Promoting the "BREAD WASTE PREVENTION CAMPAIGN" launched in 2013 by President Recep Tayyip ERDOĞAN and carried out by the Turkish Grain Board

The solutions and actions proposed by the relevant stakeholders are given below.

Proposed Solutions and Actions

"Türkiye's National Strategy Paper and Action Plan on the Prevention, Reduction and Monitoring of Food Loss and Waste"¹¹ shall be implemented in order to reduce food losses and waste at the national scale and cooperation building, monitoring and evaluation efforts shall be formulated, and reviewed throughout the implementation period where required, in line with the opinions brought forward by the relevant stakeholders as follows:

- Raising the awareness of the target audience on food loss and waste; providing the target audience with awareness raising activities and technical training on the causes of waste; supporting the awareness raising efforts through printed, visual (public service announcements) and audio materials as well as social media
- Putting up posters and bills at retail outlets about fruit and vegetable storage conditions; producing informative materials regarding the correct storage of produce at home
- Reducing and/or diversifying the basis weight of products; producing bread in smaller sizes in order to prevent wasting bread; raising consumers' awareness; reutilizing stale bread as an edible product

¹⁰ All information and documents on the campaign are available at <https://www.gidanikoru.com/>.

¹¹ <https://gidanikoru.com/sayfa/9>



- Planning bread production according to demand and taking the bread choice tendencies of the local community into consideration in the planning process; making it desirable for producers to use the technological techniques to extend the shelf life of bread in line with human health; encouraging planning against wasting bread at mass consumption spots; publishing recipe books on reutilizing leftover or stale bread and supporting it through visual and print media; with the contributions of provincial public institutions and non-governmental organizations, building booths where such recipes are demonstrated in practice; using visual media such as bills and brochures on storing and reutilizing bread, and increasing training activities on the subject
- Using modern techniques in packaging bread and introducing such techniques to producers and consumers; producing informative material to encourage producers and consumers to use modern packaging products such as sterile technologies, airtight seals, resealable packaging and smart packaging; promoting packaging systems
- Researching the causes of loss and waste related to cereal production (supply chain analysis)
- Reviewing and strengthening the regular assessment and monitoring of food loss and waste
- Identifying subsidizing instruments to improve the technical infrastructure of food production facilities; supporting the establishment of facilities for processing agricultural products and food in areas with heavy agricultural production through appropriate instruments and in accordance with capacity analysis
- Avoiding immediately throwing away leftover food, but reutilizing leftover dishes and food for human and animal consumption
- Encouraging consumers to plan their shopping and buy only as much as they need, through print, visual, audio and social media
- Extending licensed storage practices; increasing the number of local silos and cold storages within the frame of needs and capacity assessments, and strengthening the transport infrastructure to such storage units
- Evaluating the periodical inspections and controls on cold storage units, and food preservation equipment such as refrigerators found at enterprises that produce food or mediate its sales and marketing
- Licensing the engineering and design of food transport vehicles; introducing regulations on proper transport criteria; procuring the appropriate equipment for the products to be transported to food transport vehicles and recording such equipment on the vehicle registration document; having the subject of improving the logistics and storage infrastructure considered by relevant stakeholders
- Considering the subject of transporting fresh fruits and vegetables with refrigerated vehicles and packaging in single rows
- Considering railway transport in the long-term transportation of food products (railway transport in the North-South direction - more products can be carried in a shorter time by consuming less fossil fuel)
- Conducting food safety inspections of producing individuals or organizations more strictly; continuing the national inspection programmes
- Conducting legislative works on the date of production and shelf life of products
- Continuing awareness raising activities for consumers to prevent food waste
- Considering having municipalities establish waste food units for foods that are wasted or no longer suitable for human consumption; ensuring that such foods are distributed to stray and other animals; expanding the scope of existing practices
- Establishing on-site and direct selling spaces by promoting agricultural production models that produce high yield per unit area in production sites close to the city, thereby reducing losses during initial shipment
- Reducing food waste; extending food security and nutrition lessons throughout the curriculum, starting from primary education, thereby creating awareness for future generations
- Considering efforts to adopt production models



that require the least resources (water and other inputs) and use nutritious food raw materials; considering planting sainfoin, which is of a similar feed quality but consumes less water, instead of clover

- Holding training programmes for farmers in order to reduce losses during harvesting
- In cooperation with the Department of Religious Affairs and the Ministry of Agriculture and Forestry, addressing the material and moral aspects of wasting food; enhancing cooperation on awareness raising activities for consumers
- Making legislation on rewarding those who donate leftover food to those in need or to animal shelters; building a system for delivering surplus products that serve mass consumption in dormitories, hotels, etc. to needy segments and improving existing systems aimed at doing so
- Extending food banking practices and making the necessary legislation in this regard
- Carrying out efforts to scale up the price-cutting practices for products near their expiration date or ripening produce across the country and preparing action plans (banners, sectoral briefing, awareness raising activities, etc.) on selling products with nearing expiration and ‘best before’ dates at a discount or at promotional fares in retail outlets
- Increasing the awareness of homemakers on reducing food loss and waste in cooking and storing food (raising consumers’ awareness through workshops; training and workshop sessions on proper storage conditions, storing and reutilization of leftovers, the importance of planned grocery shopping, etc.)
- Carrying out efforts in an integrated manner with national zero waste project activities
- Rewarding the individuals, businesses or municipalities that produce less waste, using garbage containers that weigh the waste that has been put in
- Extending waste collection, utilization and processing facilities through municipalities
- Promoting the production of highly nutritious food
- Carrying out efforts to transform food consumption habits
- Making efforts to utilize non-consumed products in other sectors through recycling
- Supporting R&D works to develop preservation methods to prevent foods from spoiling, that are suitable for human health
- Considering alternative production systems for surplus foods¹²
- Determining the levels of food loss and food waste on a product basis for regionally and nationally significant products
- Developing product and consumption patterns that are sustainable in all aspects; carrying out works towards transforming consumption habits in combating food loss and waste, and developing cultural values
- Encouraging production planning in mass consumption spots; enhancing the statistical records on the food that is produced, consumed and left over at such spots and considering regulatory alternatives; reviewing open buffet practices in hotels and restaurants and having decision-makers consider this issue (in legislative terms)
- Making legislation on the revision of no-cost listing of ingredients in restaurant and café menus; discussing the extent of sanctions against wastefulness in mass consumption spots by receiving opinions from all relevant stakeholders; considering the practice of ‘bring your own cup’ in cafes
- Increasing awareness on food literacy and the difference between ‘Best Before’ and ‘Expiration Date’ through various means, or carrying out efforts to deliver food products with approaching best before dates, and that are suitable for human consumption, to needy segments through a web-based donation platform in cooperation with local authorities
- Together with the stakeholders, formulating detailed action plans on waste reduction for the

12 This subject is expanded upon below, under 3. Management, Disposal, Recovery and Reuse of Waste.



food industry and retailers. Considering legislative amendments to enable donating nearly expired products to needy people at designated food outlets, without retailers returning the products to producers

- Supporting R&D works with a view to producing foodstuffs that are resilient to harmful organisms and retarding the spoilage of products
- Enhancing the civil society aspect in combating food loss and waste
- Receiving, and to the extent possible, supporting project ideas on zero waste in food
- Preparing informative printed and visual materials and holding contests on food spoilage and zero waste in food
- Establishing facilities to apply patented biotechnological coating products and designing such facilities to be near cold storages
- Carrying out training activities to promote good harvest and post-harvest practices, providing information on their advantages and supporting relevant projects in this regard
- Increasing the number of activities, of which there are examples of good practices in Türkiye, that will increase public and sectoral awareness on reducing domestic and sectoral waste, and enhancing stakeholder cooperation and supporting relevant projects in this regard
- Developing appropriate post-harvest and post-processing storage methods
- Initiating efforts to prevent the waste of healthy and nutritious food and ensure its fair distribution
- Training corporate entities that are involved in the chain that purchases, sells, stores and processes products
- Implementing projects to prevent losses in the food industry
- Supporting waste utilization projects, establishing a system cycle through animal nutrition and recycling waste foods in industrial areas
- Improving supply chain management; improving

packaging that increases product shelf life; improving food storage

- Supporting smart systems related to food loss and waste, developing mobile applications
- Encouraging handing the products which are not preferred by consumers for fresh consumption over to processing facilities
- Considering such practices as recycling food waste to be used as organic fertilizer, and food waste produced at large enterprises to be used as biodiesel, bioenergy, etc.; in terms of food recycling, separating food waste without competing with the recovery and redistribution of reliable and nutritious food directly intended for human consumption; carrying out efforts to ensure cooperation between the private sector and universities with regard to processing organic waste by using appropriate technologies and converting them into organic fertilizer
- Supporting local cooperativism; enhancing food security and resilience by supporting local producers
- Reviewing the legislation on non-disposal of food in retail outlets
- Continuing to promote the “Save Your Food - Your Actions Matter” Campaign
- Obtaining all-natural, soil fertility-enhancing fertilizer/compost by organic wastes such as wastes obtained from bio-degradable waste, wholesale and market wastes, post-harvest agricultural waste, etc. through various processes through a new system to be designed, and adding different additives
- Training businesses, farmers and the public to influence them to adopt a waste management hierarchy that encompass recycling of wastes, reducing and prevention of wastes
- Considering having local authorities build collection sites for sectors, such as aquaculture and fishery, that produce excessive waste, and build facilities for the reutilization of such waste
- Holding a national campaign to create waste and recycling awareness for prevention of wastes

- Enhancing the monitoring and evaluation of the current strategy and action plan
- Encouraging increasing diversity and extensiveness for optimum-size dishes
- Increasing the scenes that demonstrate healthy and balanced eating and highlight healthy dishes from the Turkish Cuisine in family dinner settings in TV series
- Evaluating the application of lean production in all stages from farm to table and production to consumption
- Establishing an infrastructure for certified training assisted by distance training



- Raising food economy awareness
- Considering legislative amendments
 - » Considering amendments to the Regulation on Business Licenses to reduce idle capacity in the bakery sector (e.g. those natural or legal persons who wish to open bakeries should obtain a permission from the relevant chamber of profession, then apply to the municipality for business license),
 - » Revising the relevant sections in the Law No. 5996 and related regulations. Conducting effective inspections to find out whether everybody working in production, distribution and sales processes of bakeries has been trained on food hygiene; in addition, the Ministry of Agriculture and Forestry should, in cooperation with universities and chambers of profession, provide practical training to dough-makers and cooking staff,
 - » Making amendments in the “Regulation Amending the Regulation on Principles and Rules Applicable in Retail Trade” to prevent return of bread from all sales points by the Ministry of Trade which leads to bread waste,
- Distributing good practice guidelines to food retail businesses including action-oriented measures for the prevention, reduction and separate collection of food waste

- Formulating good agricultural practices; remedying and building international cooperation with regard to technology, information and infrastructure gaps in reducing food losses caused by low technology in primary and secondary production

AT1: Food Security (14.23%)

1. Ensuring Food Security and Access to Safe, Healthy and Nutritious Food



Today, the world is facing a series of global issues that cause food insecurity. According to the 2020 SOFI Report by FAO, prior to the COVID-19 pandemic, almost 690 million people were undernourished; in 2019, close to 750 million - or nearly one in ten people in the world - were exposed to severe levels of food insecurity. Furthermore, over 2 billion people in the world did not have regular access to safe, nutritious and sufficient food. If this trend continues, the number of undernourished people will exceed 840 million by 2030, risking SDG 2. According to UN data, the world population, which was at 7.8 billion in 2019, is expected to reach 10 billion by 2050 and the quantity of agricultural land per capita is expected to drop from 2.0 to 1.6 hectares. Accordingly, food production needs to be increased by 50% until the year 2050. While Türkiye is one of the best countries in the world in terms of food security, ensuring sustainable food security for future generations and access to safe, healthy and nutritious food is extremely important.

Various factors such as fluctuations in food prices, increasing population and demand for food, changing consumption habits, global conflicts and economic fluctuations, increasing prices of agricultural inputs, climate change and its impacts on agricultural production, limited natural resources, agricultural production affected by land degradation and efficiency of natural resources, water scarcity, rapid urbanization and abandonment of rural areas, the need for improving logistics infrastructure, and the recently increasing impacts of COVID-19 on food supply affect food security at national and global scales. Accordingly, the solution of current problems and the achievement of the United Nations (UN) 2030 Agenda for Sustainable Development Goals requires addressing food systems with a holistic and coordinated approach, and by paying



attention to sustainability. Sustainable food systems guarantee economic, social and environmental welfare for future generations in addition to serving as a useful instrument for ensuring food security and nutrition for all.

Access to food, as explained by FAO, is one of the four important components of ensuring food security. While food is a basic need, it is not accessible under all circumstances. In order to access food, one must first have the power to purchase food. Inability to ensure fair and effective access to food in all geographies, which is triggered by COVID-19, especially affects vulnerable groups at the global and national levels. Poverty is one of the most significant causes of food insecurity that prevents access to healthy, nutritious and safe food at reasonable prices; the advancements achieved in the efforts to eliminate poverty play a vital role in improving access to food. On the other hand, although the agricultural products produced in Türkiye are guided by support mechanisms, every farmer plants and harvests his/her own determined product without any planning, which causes certain products in the market to be overproduced and certain crops to fall short of market requirements. This ultimately results in surplus products going to waste or rotting in the field, wiping out labour and capital before they are introduced to the economy.

On the other hand, the issues described below regarding the World Trade Organization (WTO) are also associated with ensuring food security, as follows:

Special Safeguard Mechanism: In WTO agriculture negotiations, allocation of a viable and effective Special Safeguard Mechanism (SSM) based on previous WTO Ministerial Conference decisions (2004 WTO General Council Decision, 2005 Hong Kong Ministerial Conference and 2015 Nairobi Ministerial Conference Decisions) to Developing Countries (DC) without being associated with market penetration negotiations plays a critical role in ensuring food security for DCs. SSM is an instrument of vital importance in ensuring predictability and stability, safeguarding the agricultural sectors of DCs against increasing import and price instability as well as ensuring their food security.

Allocation of the SSM to developing countries in the WTO agriculture negotiations will also serve to achieve the UN Sustainable Development Goals of eradicating poverty and zero hunger.

Public Stockholding Programmes for Food Security Purposes (PSH): Public stockholding programmes for food security purposes (PSH) is significant in terms of food and livelihood security and rural development of developing countries. It is also a crucial policy instrument against the unfavourable impacts of increasing import and price instabilities in global agricultural markets.

Concrete steps should be taken in WTO agriculture negotiations to provide a permanent solution to the issue of PSHs and obtain a meaningful, effective and functional result based on past Ministerial Conference decisions (2013 WTO Bali Ministerial Conference Decision, 2014 WTO General Council Decision, 2015 Nairobi Ministerial Conference Decisions). Additionally, any permanent solution on PSH should be aimed towards all developing countries and include new programmes that developing countries can implement today and in the future without excluding the countries that are currently without a PSH programme.

Proposed Solutions and Actions

-  Improving food supply and value chain, ensuring sustainable food supply and delivery to consumers at reasonable prices
 - Preventing the increase in food prices and ensuring continued access to healthy and nutritious food through handling the added value of food separately and using added value to bring food prices down to a reasonable level
 - Adopting the practice of introducing alternative staple foodstuffs where monotonous diet prevails in order to ensure healthy and balanced diet
 - Reviewing models to support producers
 - Reviewing social aids in the access of vulnerable groups to healthy, nutritious and safe food; developing food banking practices; determining individuals qualified for emergency food aid by taking an approach that considers children and women
 - Promoting sustainable agriculture and agricultural production



- Ensuring food security and preventing food loss and waste
- Taking water constraints into consideration in production stages
- Building infrastructure for sustainable production and improving living conditions in rural areas
- Agricultural production planning
- Extending the production and use of native seeds and improving seeds
- Bringing producers, producer unions and consumers together; implementing practices to reduce the price margin between production and selling prices
- Completing agricultural land use plans by identifying the soil structure and climatic factors in production areas, appropriateness for the ecological requirements of the products that are planned for cultivation, the agro-industrial structure of the region, market opportunities, farming culture, quantities and qualities of available resources, labour force presence and efficiency, general characteristics of businesses, income generated and technical coefficients (production functions) per unit, product market variables (price, shipping, etc.)
- Supporting contract production for agricultural production planning
- Measuring the domestic demand for agricultural products at certain periods within the year, determining consumption habits by region and province as well as monitoring how they change by years and using the influencing factors as a policy instrument in terms of production planning
- Increasing food literacy and awareness of healthy nutrition
- Carrying out legislative works and developing standards for functional foodstuffs, and doing planning on products to be developed; promoting the design of foodstuffs containing essential components for sufficient and balanced nutrition, doing a cost analysis for the newly developed products and designing them at costs that are accessible for all segments of the society (The Oil Seed Research Institute has begun studies to design and develop this type of foodstuff), extending the newly developed products (extension activities can be planned on the nutritional value and safety of the foodstuffs. The foods can be distributed in rural areas, schools, etc. Public service announcements can be made and promotional activities carried out).
- Determining strategic products and predominantly consumed staple foodstuffs; doing long-term production and stock management planning and regulating the market for such items
- Improving the aids to reduce production costs
- Extending accessibility to records from production to consumption to ensure traceability
- Enhancing coordination and cooperation among relevant Ministries with regard to transforming sustainable food systems (Ministry of Agriculture and Forestry, Ministry of Trade, Ministry of Health, etc.)
- Reviewing tax practices on staple food and strategic agricultural and animal products
- Closer inspection
- Ensuring that developed countries provide assistance to underdeveloped and poor countries; developing aid mechanisms for people in need of emergency assistance and contributing to international collaborations
- Promoting agricultural investment opportunities
- Organizing school campaigns through national press and social media in order to raise awareness and sensitivity towards behaviours regarding enhanced energy saving and efficiency, and the use of zero-carbon energy resources
- Adding a class on food security and nutrition to the curriculum
- Branding market surplus products through canning and drying; bringing cooperatives into action and systematically inspecting them instead of allowing them to go idle
- Using uncultivated arable lands for production purposes (land banking)
- Extending early warning systems, increasing the



quantity of product obtained from a unit area

- Establishing price policies to ensure access to food
- Enriching other nutritional elements that have been determined to be a general deficiency in the society based on appropriate criteria
- Enhancing e-commerce applications (DİTAP-Digital Agriculture Market)
- Establishing school cafeterias and continuing nutrition and food programmes at schools (which aim to reduce children's consumption of salt, carbohydrates, sugar, oil, etc. at school)
- Formulating a schedule and strategic action plan on access to nutritious food in Industrial Zones, Organized Industrial Zones (OIZs), Small Scale Industrial Estates, etc.
- Enhancing agricultural data and statistics infrastructure
- Extending urban agricultural practices
- Carrying out R&D activities on alternative production methods such as making use of fatty acids by producing microalgae from seaweed, obtaining animal protein from resources of animal origin with low economic value
- Encouraging aquaculture animal production and consumption through media tools, informing the public on their nutritional value and ensuring access to such products at reasonable prices
- Continuing to support young farmers through various projects and programmes (Expert Hands Project, Young Farmers Project, IPARD Programme, etc.)
- Establishing a special working group on rural-to-urban migration with stakeholders including the academia
- Ensuring inclusive development and egalitarian economic growth by developing policies and projects for supporting and empowering women, young people and other disadvantaged groups in education, entrepreneurship and business management
- Prioritizing R&D and technological investments in agriculture and supporting environment-friendly investments with a view to protecting natural resources, increasing production and ensuring sustainability in production
- Selecting provinces for storing soy beans
- Ensuring that food business increase the production of products that contain more fibre and process organic products
- Ensuring continued provision of economic and technical assistance by FAO, OIE and DGSANTE to their member states in combating zoonotic diseases
- Finding a permanent solution for PSH by 2030; progressing WTO agricultural negotiations for the allocation of a viable and effective SSM to developing countries; considering non-commercial targets such as food security and rural development during the negotiations; taking Ministerial Conference decisions that will enable meaningful and effective results in PSH and SSM with a view to building sustainable and resilient agricultural sectors
- Poultry other than chicken increasingly contributes to meeting the animal protein needs. Türkiye has recently been making headlines in the poultry sector for the growth of Türkiye and goose breeding in addition to its success in chicken breeding. In addition, the consumer trend towards buying poultry meat in addition to chicken increased the consumption of duck and goose meat. Therefore, diversifying the alternative protein sources
- Enhancing logistics infrastructure and
- Extending the use of renewable energy resources to reduce input costs

2. Healthy, Balanced, Sufficient Nutrition



It is not always possible for societies in the world to obtain sufficient daily nutrients to sustain their lives. In Türkiye, it is extremely important that vulnerable groups, in particular, access nutritious food and a balanced diet. Various studies that explore



the relationship between nutrition and health assert that an insufficient and unbalanced diet increases the risk of certain chronic diseases. According to various research conducted in Türkiye, the main health problems related to malnutrition include protein-energy malnutrition, anaemia and rachitis in children; and skinniness and obesity, anaemia, iodine deficiency disorders and vitamin deficiencies in school-aged children and adolescents. Preventing diseases through the food one consumes is so much easier and cheaper than treatment. In Türkiye and other developing countries, almost half of the daily energy need is met with wheat due to economic causes. The main staple in Türkiye is bread and grains, which is why enriching wheat in terms of nutritional quality is extremely crucial.

Agricultural policies should also cover health. The impacts of food-borne harmful chemicals deteriorate human health, reducing quality of life and causing deaths while also imposing a burden on the general healthcare system. Organic food that does not contain any harmful chemicals and that is cultivated through sustainable methods should be offered to final consumers at approachable prices. In this regard, the current situation should be established through extensive lifecycle analyses to formulate an action plan/pathway. Additionally, determining nutritional contents that do not contain excessive salt, sugar and fat and increasing food literacy in this regard is extremely important to achieve healthier generations.

Proposed Solutions and Actions

- Implementing activities to reinforce the criteria laid down in legislation based on scientific data to favour consumers
- Diversifying and protecting nature positive production and nutrition culture and producing conventional foodstuffs
- Extending the production of legumes as an alternative source of protein and ensuring their further consumption at reasonable prices
- Promoting the production of bread products enriched with iron and vitamins
- Ensuring the access of vulnerable groups to healthy and balanced nutrition at reasonable prices
- Transition to vertical agriculture practices in
- indoor environments protected against climate change where more product is yielded by using 95% less water
- Developing drought-resilient fruit, vegetable and grain seeds and conducting pilot productions with farmers in all regions
- Building rainwater harvesting infrastructures in villages
- Bringing dams underground to protect against evaporation
- Increasing the awareness and consciousness of consumers on healthy and balanced nutrition
- Ensuring, encouraging and supporting that aquaculture products have the physical infrastructure to ensure proper storage conditions; providing aids for the protection of aquaculture product cold chains
- Taking measures to ensure consumers' access to aquaculture products, which are among the main product groups that play a key role in healthy and balanced nutrition, and certain fruits and vegetables at any period of the year
- Conducting closer food inspections in terms of nutrients and industrial additives
- Carrying out efforts under national wheat improvement programmes to achieve varieties with high essential amino acid and mineral content in order to eliminate nutritional gaps of our people
- Extending biofortification research to enhance the bioefficacy of bread, and extending such research to cultivators
- Increasing the consumption of whole wheat and sourdough bread
- Supporting models that enable healthy production
- Extending full-capacity cold storage within the framework of capacity analyses
- Introducing regulations to reduce producers' input costs to increase access to healthy and balanced nutrition
- Ensuring maximum yield from the available plantation areas by planting drought resilient fruit



trees, such as almond trees, in parks and yards in front of buildings

- Promoting sustainable agricultural techniques
- Introducing regulations on developing national and global cooperation and improving purchasing power
- Rejuvenating the almost-forgotten food culture and food varieties in Türkiye
- Training producers on healthy food production and strengthening the legal legislation in this regard

3. Management, Recovery, Reuse of Waste and Disposal relating to Nutrition and Nutrient Content



The waste produced by factories operating in the food industry may contain rich nutritional elements. Waste from the production processes of grapes, which is a significant agricultural production item in Türkiye,

contains components that are highly rich in minerals, polyphenol and antioxidants. Reutilizing the waste resulting from the production processes carried out at factories in the food sector, including the fruit and vegetable processing industry, and reusing them in food products will enable the addition of essential minerals for human nutrition and the production of additives with high antioxidant content, thus providing an opportunity for the production of new foodstuffs that may help improve human nutrition. As the recycling of waste will partially reduce environmental damage, it will also ensure sustainability in agriculture and the circular use of food resources. Taking into consideration the fact that people are now turning to healthier food, foodstuffs with natural additives that are rich in components produced from food industry waste, such as antioxidant polyphenols, will be in demand. Awareness raising activities for various ages and social groups within the society on the efficient use of scarce resources, minimizing food waste and retaining such resources within a circular, lossless production process as well as taking all kinds of necessary measures in harvesting, storage, preservation and marketing processes are crucial. It should be ensured that sectoral stakeholders are

trained on non-damage to foodstuffs and their transportation in proper conditions, and that the transport vehicles, equipment and tools used in transport are further advanced and modernized so as not to damage the foodstuffs.

Proposed Solutions and Actions

- Awareness raising and food hygiene training
- Developing safe waste collection systems
- Changing consumers' eating habits to increase the consumption of conventional foods and upholding a healthy food culture
- Achieving reusable and recyclable products by processing waste in line with food production standards
- Reintroducing the products generated from waste to food production through R&D and innovation efforts
- Working on a food waste management plan and reviewing the relevant activities set out in the National Strategy Paper and Action Plan on the Prevention, Reduction and Monitoring of Food Loss and Waste
- Establishing a science committee on clean fresh water and formulating an action plan on water; preventing water loss

AT1: Public Health and Food Safety (11.92%)

Public health and food safety are interconnected and intertwined subjects that are associated with other intervention areas, as well. Relevant solutions and actions are presented below.

1. Production of Safe, Healthy and Nutritious Food

Access to healthy, safe and nutritious food for all is as important as access to food at reasonable prices. The production of safe, healthy and nutritious food is extremely important in overcoming public health and food safety concerns. The solutions and actions proposed by stakeholders on the subject are given below.

Proposed Solutions and Actions

- Strengthening agricultural statistics and inventory efforts; enhancing modelling, data mining and data processing technology infrastructures for big data analyses; increasing human resources capacity; enhancing database integration
- Reducing production costs
- Strengthening legislation in order for food engineers to engage further in the process; carrying out infrastructure and capacity development works to enhance R&D infrastructure and reduce risks in the production of safe, healthy and nutritious food
- Adopting the circular economy approach
- Increasing the frequency of inspections
- Training all actors involved in the food supply chain
- Enhancing and continuing to extend food safety and quality management systems (HACCP, ISO 9000 and ISO 22000, BRC, Global GAP, GMP, GLP, etc.)
- Developing the traceability infrastructure
- Identifying and extending alternative products with high nutritional value
- Ensuring that the official hygiene training provided to the personnel at food holdings are repeated on a regular basis, and not provided only once
- Reviewing the possibilities of awarding tax exemptions for unions and cooperatives in the procurement of cooling tanks and refrigerated vehicles
- Reviewing the vocational qualification criteria for food production sector employees, and introducing amendments accordingly
- Since ensuring food security is associated with multiple sectors; strengthening cooperation with central, provincial and local governments, academia, agricultural sector, trade sector, public health institutions, consumer associations and NGOs; supporting the private sector
- Adopting and promoting the “**Single Health**”

approach in ensuring food security

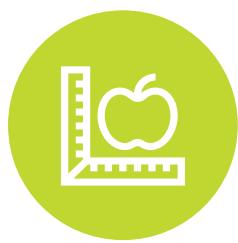
- Strengthening integration among agricultural and social policies to support and empower women, young people and other disadvantaged groups in education, entrepreneurship and business management; ensuring inclusive development and egalitarian economic growth
- Determining vocational qualification criteria related to food activities to ensure sectoral qualification in food production; determining the number of holdings in proportion to consumers at the local level; boosting raw material quality by increasing product safety in regional primary products in farms and on fields
- Boosting sustainability in production/sustainable agricultural production
- Prioritizing agricultural R&D and technological investments for the protection of natural resources, boosting production and ensuring sustainable production; supporting nature positive investments
- Enhancing international cooperation on the subject
- Further efficient use of communication tools on the significance of food safety; active use of printed, visual and social media
- Increasing residue monitoring activities and conducting closer inspections
- Preparing product-based Good Production and Hygiene Practice Guidelines/Manuals for farmers engaged in the production of agricultural and animal products at primary production points and providing them with training on the subject
- Continuing non-stop, nationwide sector-specific training on Good Hygiene Practice guidelines prepared for all food businesses that produce, sell and supply food for mass consumption; ensuring the participation of all personnel working at such businesses in the training programmes
- Training students on food hygiene/food safety at educational institutions; similarly, negotiating the possibilities of cooperation among the Ministry of Agriculture and Forestry and the Presidency of Religious Affairs to inform the public on food



hygiene and safety for congregations at mosques

- Investing in new modelling and digitalization in the production of safe, healthy and nutritious food
- Implementing model projects such as modern slaughterhouses, modern wholesale markets for aquaculture products, etc.
- Promoting and extending production that involves minimal use of chemicals through an approach that favours environmental and human health; supporting good agricultural practices and organic farming in a way that leaves a reasonable margin between production costs and consumer prices
- Strengthening the measures against reducing counterfeiting and adulteration
- Conducting R&D works on products without additives and preservatives and promoting the production of such products
- Boosting the level of compliance with food safety information systems and product standards
- Reviewing administrative sanctions and increasing deterrence against improper, illegal production
- Promoting the production of highly nutritional foodstuffs for vulnerable groups (e.g., children, pregnant women, etc.) and enhancing their placement on the market and availability at reasonable prices

2. Inspections and Controls Related to Ensuring Public Health and Food Safety



Safe food refers to food that is produced in line with the rules set out in the food legislation; that does not have negative impacts on health when consumed; which necessary rules and measures are complied with

during its production, processing, packaging, storage and distribution; and that is cleaned from all kinds of deteriorating and contaminating factors and made ready for consumption. Law No. 5996 on Veterinary Services, Plant Health, Food and Fodder introduces criteria for safe food. Inspections and controls are inalienable elements in ensuring food safety, which is a significant part of Sustainable Food Systems, and

providing consumers with safe food from farm to table. Relevant solutions and actions identified by the stakeholders are given below.

Proposed Solutions and Actions

- Increasing the number and quality of food inspection officers; increasing the number and strengthening the infrastructure of laboratories; increasing financing opportunities
- Training laboratory personnel on analysis, devices, tools and equipment and boosting their efficiency
- Considering the issue of Food Inspection Laboratories organizing public training activities
- Increasing the scope/diversity of laboratory analysis
- Encouraging the public to ensure that the products they consume are inspected for food safety; exploring the opportunities to reduce analysis prices to encourage the public
- Including the organization training activities for food businesses within a certain system in the schedule
- Carrying out R&D works to ensure the use of natural agents instead of chemicals extending shelf life and colouring matter in finished goods
- Extending the use of integrated pest management methods
- Increasing cooperation with stakeholder institutions and organizing inspections to enable integrated control and analysis under a single roof
- Establishing special marketplaces and businesses for selling domestic products and introducing a legal regulation to limit the sale of such products outside of such areas; including these products in Ministerial sampling plans for safety inspection
- Granting inspection authority to the private sector and discussing an honorary food inspector status
- Formulating programmes, and improving existing ones, on the provision of scientific and technical assistance in food safety-related matters
- Strengthening international cooperation on inspection and analyses

- Conducting inspections to check that the chemicals contained in the crops that are brought directly from the field are not harmful to human health
- Issuing Plant Health Certification to accompany plants, plant products and other items through electronic/verifiable systems
- Reviewing food safety control systems and increasing the frequency of inspections; conducting interdisciplinary and holistic control
- Carrying out efforts to increase the number of accredited laboratories

3. Food Safety Issues-Other

This section addresses solutions and actions related to the lack of qualified human resources in the sector; consumer's lack of awareness; pesticide and chemical residue above the permissible limit for food, caused by uninformed misuse of pesticide and fertilizer; food production by food businesses not in line with the legislation; microbiological poisoning caused by household type food products produced with inappropriate methods; marketing of physically, chemically and microbiologically noncompliant foodstuffs; health problems related to traceability, nutrition and food; food safety problems caused by the registration of non-standardized foodstuffs with defined specification.

Proposed Solutions and Actions

- Carrying out activities to raise awareness and train producers and consumers on food safety
- Including nutrition and food safety training in the curricula, starting from primary education
- Increasing the number of qualified personnel employed in the sector
- Ensuring the training of food businesses on the legislation and their field of operation; informing the relevant officers, through clear and explanatory methods, of the legislative requirements and the minimum technical-hygienic conditions and norms that must be met by businesses
- Raising consumers' awareness, ensuring food literacy; ensuring traceability in food production, starting from primary production

- Increasing public awareness, preparing publications and public service announcements for those who produce household type products
- Setting modest standards for local products; boosting production by improving the hygiene standards and production technologies for the local cheese produced in our country and making legislation in this regard (currently, there is legislation on commercial cheese only); classifying local products, updating food laboratory infrastructures and registering the products by conducting specification analyses
- Preserving our cultural wealth of food and dishes; cooperating with universities in obtaining starter culture from local cheese types to ensure their continuity, as well as setting a production standard to ensure the same quality of products; keeping the training of food inspectors on this subject up-to-date; providing local cheese producers with state aid to enable production under industrial plant conditions
- Establishing an independent and impartial food authority apart from the existing organization
- Formulating guidelines to ensure compliance with rules in production and service provision by business officers
- Integrating new technological advancements, i.e. smart systems and artificial intelligence, in national food production platforms to minimize human error in food production; extending the use of genetic techniques and other practices such as irradiation, ultrasound, electric field, etc.
- Including caustic and sodium bicarbonate search analysis in the Inspection Programme; including Milk Collection Centres in the scope of Ministerial Raw Milk Sampling Programme; training raw milk producers (on Mastitis, barn hygiene, milking hygiene, equipment hygiene, storage of milk, adverse impacts of chemicals on human health, etc.); extending the use of rapid test kits for such chemicals and mandating their application for primary producers (primary producers who sell milk, raw milk collection centres, raw milk acceptance departments in dairy plants); developing projects on raw milk and related frauds; increasing awareness raising training



activities and increasing the awareness of the target audience

- The raw materials of which the product is made should not be contaminated with physical, chemical and biological agents: Unconscious use of pesticide in animal farms; avoiding feeding animals with fodder that has been contaminated with heavy metal, pesticide, and other residues; raising awareness of paying attention to milking hygiene; increasing measures to prevent zoonotic diseases such as anthrax, tuberculosis, brucellosis, etc. and developing national eradication programmes for animals in order to continue the efforts to eradicate such diseases
- Eliminating the factors that may cause contamination and deterioration until the stage at which the raw material is brought to the plant where it is going to be made into a product (ensuring adequate cooling, ensuring the cleanliness of transport packaging, etc.)
- Continuing the registration of food businesses by competent authorities; continuing periodic inspection on whether production is in line with hygiene rules
- Maintaining transport and storage conditions during the transport of nationally and internationally traded foodstuffs (proper stacking, maintaining the cold chain, sealing the transportation container under the supervision of the competent authority of the exporting country, etc.)
- Ensuring the traceability of imported products until they reach the end consumer; introducing the practice of QR code labelling, increasing inspections in general
- Establishing active and model demonstration sites; extending and operating state-aided production facilities that are designed in line with the proposed solutions
- Enhancing the applicability of new techniques available for food security in food production systems through joint efforts by universities and the industry
- Extending and ensuring the effective adoption of integrated pest management methods among producers in plant production

AT4: Inclusive Sustainable Food Systems and Poverty Alleviation (11.54%)



Information on the recommendations and activities that are planned/targeted by 2030 as part of combating poverty under the Strategy and Budget Office of the Presidency goal “No Poverty: End Poverty in All Its Forms Everywhere” are available at the address <http://www.surdurulebilirkalkinma.gov.tr/amaclari/yoksulluga-son/>. While such recommendations will be monitored separately, the actions proposed by stakeholders are presented under the relevant subject headings. Please keep in mind that the priority intervention areas indicated below that are sub-headings of this main intervention area as well as others are cross-cutting issues and interconnected areas of intervention. The matters related to cooperativization are recommended for all intervention areas.

1. Rural-to-Urban Migration

Rural-to-urban migration, particularly by the youth population, is caused by the low quality of life in rural areas; economic reasons such as lack of employment, education, healthcare, social infrastructure and income; the conviction of an easier life in the city and social causes (aspiring for urban life, inability to marry due to work, livelihood and future concerns) and the fact that agricultural lands are fragmented and small; it results in the departure of family farming from the supply chain; sustainability problem and low production in agricultural production; idled arable lands; price increases; and problems related to social, cultural and economic integration as well as environmental problems.

Proposed Solutions and Actions

- Acknowledging farming as a profession to prevent migration; establishing a master-apprentice system; strengthening the registration and insurance coverage of farmers; promoting safe agricultural production; ensuring that food vendors sell accredited foodstuffs
- Improving rural living conditions (healthcare, increased access to education, transport (improving highway infrastructures for transportation to and from provinces, districts and



- rural areas), improving internet and social media infrastructure, etc.)
- Reducing input costs for agricultural production and reviewing the rate of Value Added Tax (VAT); reviewing the support and incentive mechanisms for agricultural production
 - Raising public and producers' awareness of the advantages of rural areas; identifying incentive mechanisms for rural living
 - Raising awareness of the importance of sustainable production, starting from school age
 - Increasing and improving the level of income generated through production
 - Reducing production costs through cooperativization
 - Continuing land aggregation efforts
 - Improving agricultural mechanization; providing special aids on the on-site processing, packaging and marketing of products and tools, machinery and procedures
 - Introducing new techniques and methods that provide high efficiency and income to farmers, thus increasing extension services; providing farmers with guidance on working with new product varieties
 - Providing the young and female rural population engaged in agricultural production with informative and technical assistance; increasing their opportunities to access the market through cooperatives and similar organizations
 - Supporting the establishment of local marketplaces
 - Exploring the possibilities related to measures on expanding the social rights and enhancing the economic freedom of rural working women (insurance premium support, salary support, dowry support, etc.)
 - Making improvements regarding the problem of mobile training; providing on-site training (increasing such means as buildings, personnel, equipment, etc. as appropriate)
 - Strengthening and implementing the current mechanisms on preventing land fragmentation
 - Providing grant support to encourage family farming
 - Identifying special support mechanisms for young farmers; land support; training young farmers on smart farming
 - Safeguarding traditional production methods for local products to be passed down from generation to generation
 - In essence, cooperatives are mostly economic organizations that perform such operations as production, input supply, processing, marketing, etc. However, cooperatives should be brought to the forefront to minimize the losses that occur in the agricultural sector processes of bringing products from producers to consumers and to establish a stable price policy. Marketing is among the most significant problems encountered by agricultural businesses in Türkiye, most of which comprise small family businesses. Providing basic economy, management, marketing, sales, e-commerce, branding and logistics support; strengthening cooperatives through training activities and an effective inspection mechanism
 - Strengthening the structures of cooperatives and their umbrella organizations; encouraging cooperativization, particularly for young people
 - Organizing social activities for young people
 - Implementing such practices as rural farming, guarantee of purchase, etc. for rural products
 - Reviewing the legislative infrastructure to facilitate farming and livestock breeding
 - Making agricultural investments appropriate for natural conditions (identifying areas suitable for livestock breeding and plant production)
 - Increasing market access opportunities for smallholders; making efforts to integrate smallholders in smart agricultural systems; enhancing technical aids for increasing the added value generated by smallholders through extension; enhancing legal regulations on the ability of smallholders to get in direct contact with the urban population; exploring the possibilities of establishing small agro-industry



buildings specifically where smallholders are located; putting smallholders to work in new business sectors such as tourism, fishery, etc. apart from their regular production; implementing joint programmes with municipalities to provide women, in particular, with training on food security and marketing in predominantly rural areas; encouraging technology developers to develop applications for smallholders

- Drafting strategic investment plans for provincial and district-level development
- Preparing the necessary incentive packages and providing those who will return to their villages with training on agriculture, livestock breeding and various special skills; introducing such activities as carpet weaving, silkworm-breeding, fungiculture, etc. as part of establishing locally appropriate, alternative areas of work for periods without agricultural labour

2. Advancing Equitable Livelihoods

According to the UN, inequality and power imbalances - at household, community, national and global levels - are consistently constraining the ability of food systems to deliver poverty reduction and sustainable, equitable livelihoods¹³. In order to prevent rural-to-urban migration and ensuring sustainability in agricultural production as well as local development, Advancing Equitable Livelihoods through an approach that includes women and young people is essential for sustainable production. Accordingly, creating equal educational opportunities and enhancing gender equality in rural areas are significant factors in poverty alleviation and development of sustainable food systems. The problem of the inability to access adequate and nutritious food at reasonable prices due to poverty is associated with the subject of Advancing Equitable Livelihoods. The revenue generated by producers that produce food or its raw material is sometimes less than that generated by other non-producing intermediary traders in the commercial chain. Since income-diversifying activities and sectors are lacking in rural sections, those who cannot generate sufficient income give up on agricultural production and migrate from rural to urban which, along with growing social, environmental and economic problems, triggers cultural adaptation issues as well. The marketing of agricultural products is also among such problems; providing those who

cannot access sufficient and nutritious food at reasonable prices with access to such food requires Advancing Equitable Livelihoods. Food value chain is comprised of coordinated production, which is required for producing foodstuffs, and all actors who engage in value-creating activities. Such actors include production inputs, supply chain elements, restaurants, markets, the retail industry, end consumers, etc. In this context, increasing the incomes of producers/farmers, who are the most important actors in the value chain, is extremely significant in terms of producers' welfare and sustainable production. On the other hand, the ability of producers/farmers to become competitive and innovative, increasing efficiency in agricultural production, extending agricultural mechanization and a production system that is based on knowledge and data is only possible through the sustainability of the food value chain. Producers' welfare levels should be increased and extended across a wider base in order to use inputs and resources efficiently and ensure equitable profitability in all of the links of the value chain. The increasing sustainability of agricultural production requires increased income for producers, and in turn, increased efficiency, mechanization, and use of agricultural technologies. Increased producer incomes will make it possible to increase the incomes of all components involved in the food value chain. According to the inflation data for February 2021, GDP per capita is at 8,599 USD (60,537 TRY) whereas this rate is 2,836 USD - nearly one-third of the overall rate - among the agricultural population. Increasing producer welfare by the end of the production process, or in other words, increasing per capita income in the agricultural population, is significant in terms of economic and social sustainability. It is crucial to ensure the affordability of all agricultural input costs, notably for fertilizer, seed, fuel and fodder; country-based production planning; and equitable profitability among the actors in the value chain.

Proposed Solutions and Actions

- Promotion and marketing of local products; bringing local products into the forefront rather than mass-production food items
- Taking local products within the scope of geographical indications
- Improving and establishing mechanisms for the

13 https://www.un.org/sites/un2.un.org/files/4-action_track_4_scientific_group_draft_26-10-2020.pdf

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- marketing infrastructure of agricultural products; improving e-commerce and contract farming practices in product marketing
- Establishing cooperatives in areas with a high potential for cooperativism and carrying out incentive efforts for their improvement; organizing informative and promotional meetings on cooperativism by providing entrepreneurship, marketing, branding, social media use and e-commerce training in order for cooperatives to carry out their business operations more efficiently; engaging in training, research and dissemination activities on cooperativism
 - Improving the entrepreneurial abilities of women's cooperatives and supporting production- and employment-related projects to ensure that they are involved in the economy as a solid actor
 - Supporting farmers who produce and sell through cooperatives and the establishment of cooperatives
 - Reviewing the Law on Cooperatives; enhancing the administrative capacities of cooperatives
 - Ensuring that cooperatives actively step in in all stages of the production process through increasing the unionization and cooperativization of producers; ensuring that cooperatives are effective throughout the food value chain, starting from production; increasing production and product quality; reducing costs; ensuring more equitable increase in income through end consumers' access to healthier and cheaper food
 - Delivering locally produced products to consumers rather than mass-production food items
 - Ensuring qualified education that seeks gender equality; developing measures to eliminate gender inequalities
 - Developing project-based support mechanisms with special conditions and advantages for poor farmers to ensure their involvement in agricultural production, by taking their socio-economic status into consideration
 - Identifying and extending alternative products
 - Diversifying rural economic activities

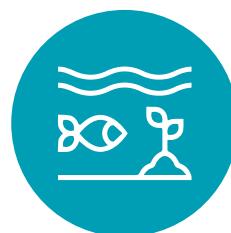
- Making optimum use of natural resources
- Result-oriented production training of the target audience and generating social responsibility projects
- Conducting stricter price monitoring control and reviewing the income taxation system accordingly
- Ensuring the affordability of input costs and taking measures to mitigate import dependency
- Improving the rural agricultural economy in a way that generates added value to bioeconomy and circular economy; carrying out activities related to bioeconomy and circular economy
- Capacity building and conducting scenario analyses for profit margin analyses for the relevant target audience
- Ensuring that the locals in the villages near protected areas are connected with the facilities in such protected areas and can procure products from such facilities
- Establishing local "ecovillages" for people to come and make use of products in their natural environment. Training the locals on this subject and cooperating with relevant institutions and NGOs on projects to support alternative livelihoods
- Planning all stages of agricultural production for a sustainable food value chain; increasing production and efficiency; enhancing the storage capacity of the marketing network
- Adopting innovative approaches in agriculture and extending the use of technology
- Increasing training quality and creating equal opportunities for women in rural areas
- Involving the poor in food production processes
- Designing grant programmes for the poor who live in rural areas to cultivate foodstuffs and assisting them in selecting products
- Increasing the number of intervening institutions (cooperatives, Turkish Grain Board, etc.) that regulate prices to minimize the number of intermediaries or prevent intermediaries from generating exorbitant revenues in business



- operations; strengthening the system for monitoring agricultural products and food prices
- Continuing to support income-diversifying activities in rural areas
 - Extending good practice examples
 - Production processes such as “organic farming” and “good agricultural practices” with premium prices make a good livelihood strategy for the poor rural population, contribute to the sustainability of natural production factors (soil, water, environment, etc.) and enable consumers to access healthier food. However, as premium prices (prices that are somewhat above normal) limit the accessibility of low-income consumers to such products, consumption aid opportunities should be explored in addition to measuring profit margins and building direct marketing channels for such products
 - Ensuring that each local product is delivered to nearby consumers by building a product supply chain for locally produced products
 - Reducing production cost by reducing the inefficient use of resources through having cooperative organizations play an active role in the production, transport, marketing and consumer delivery of products, starting from the very beginning of the production process; ensuring high quality and high standard and efficient products by supplying the input (seeds, fodder, fertilizer, pesticide, etc.) provided to partners through cooperatives at cheaper prices and higher quality; ensuring that cooperatives further contribute in various fields such as training of partners, joint marketing by producers, labour sharing, obtaining loan support, wholesale trading, information sharing, etc.; improving the commercial structure and supporting the efficient operation of cooperatives; reducing costs from the initial stage of production by having cooperatives self-produce raw materials and provide them to their partners, thus ensuring their cooperation in the food production process; increasing consolidation; with regard to the problem of delivering smallholder products to the market, focusing on the sales aspect of the products of cooperative partners; ensuring that cooperatives operate in the framework of the principles of sustainable and quality production and active market access; boosting production by supporting such cooperatives as agricultural sales cooperatives; ensuring the fast and direct delivery of quality food products to a broad market and consumers at lower costs (which will prevent excessive prices and harm to consumers).
 - Implementing measures to strengthen producers, and particularly smallholders, through a gender-sensitive approach that considers disadvantaged groups; identifying new financing models at production, processing, logistics and retail levels
- ### 3. Improving Income Distribution for the Poor
- According to the Turkish Statistical Institution (TURKSTAT) Income and Living Conditions Survey results for 2019, the share of the top 20% quintile by the equivalized household disposable income was 46.3% whilst the share of the bottom 20% quintile was 6.2%. In recent years, with the added impacts of COVID-19, a large portion of basic agricultural products saw significant price fluctuations at the global scale, which was also felt at the national level through increasing food prices. The increase in food prices had the greatest negative impact on the purchasing power of the poor, giving rise to a need to increase measures related to access to food. On the other hand, the global crisis caused by the COVID-19 pandemic gave rise to the issue of unemployment in numerous countries, leading to the establishment of various measures to mitigate its impacts. Efforts to improve income distribution for the poor, which is also influenced by rural-to-urban migration, will be continued. In brief terms, poverty refers to inability to access minimum living standards. Based on this definition, poverty is associated with basic necessities such as nutrition, access to clean water, clothing, shelter, health and education. It is crucial to alleviate, or better yet, eradicate poverty by supporting those without access to minimum living standards, ensuring equitable distribution of income and providing people with a decent minimum quality of living.
- ### Proposed Solutions and Actions
- Improving livelihoods for the poor in a sustainable manner
 - Generating decent opportunities to eradicate poverty
 - Extending cooperativization; reducing agricultural production input costs and improving marketing conditions; establishing and promoting local marketplaces that allow farmers to directly market

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- the products they produce; providing farmers with machinery and equipment support
- Extending the practice of selling ripened products or those with nearing Best Before Dates or Expiration Dates at lower prices; setting up sections for affordable products at food selling points for this purpose
 - Diversifying and increasing job opportunities, particularly in rural areas; improving livelihoods for the poor in a sustainable manner; developing national and international cooperation and policies on the conditions for generating income, particularly for small family businesses, that guarantee minimum living conditions
 - Reducing the margin between production costs and product prices
 - Strengthening the social policies on healthy and balanced diet for the poor, through an approach that also considers disadvantaged groups such as women, children and pregnant women
 - Regulating the rapid increase and fluctuations in food prices; strengthening the mechanisms that have been established
 - Developing systems towards reducing intermediaries between the producer and the end consumer
 - Having smallholders produce their own products on their own lands; improving land support particularly for young farmers
 - Reviewing the legislative infrastructure aimed at suppressing profiteering with a view to preventing companies from stocking up due to profiteering on food and putting foodstuffs to the market at higher prices during crises; increasing inspections against speculative behaviours; preventing unfair competition and continuing the implementation of the measures taken in this regard
 - Reducing external dependence in fodder and fertilizer (for plant production) which directly affect the price of milk and meat, which are among staple foods
 - Reviewing VAT rates for staple foods
 - Continuing to support farmers, and particularly young farmers; encouraging them to increase production
 - Improving rural income levels
 - Carrying out project-based efforts to improve the income levels of small rural family businesses that are engaged in subsistence agriculture; designing special agricultural support systems in integration with social aids
 - Ensuring a balanced distribution of income particularly among farmers and/or entrepreneurs who maintain their agricultural production activities
 - Establishing a balanced and equitable income distribution by producing optimum local, national and international agricultural management plans and product patterns
 - Planning the efforts to mitigate regional development disparities
 - Exploring opportunities to improve initiatives/incentives for exporting agricultural products
 - Developing e-commerce applications to market local products in the internal market
 - Establishing a certain income transfer and assistance mechanism at a global scale from developed countries to underdeveloped countries with hunger problems
 - Establishing alternative food systems to eradicate poverty

AT5: Increasing the Resilience of Sustainable Food Systems to Food Crises¹⁴ (2.69%)



Sustainable food systems should be enhanced and made further resilient against the impacts of outbreaks; natural disasters brought on by climate change-induced drought, floods or other reasons; food security issues

¹⁴ No further disaggregation due to low rate.



caused by global conflicts and the repercussions of global economic crises on food prices and trade. In this framework, the solutions and actions proposed by the stakeholders under this action track are given below.

Proposed Solutions and Actions

- Establishing global and national food systems; planning against food crises; strengthening stocking capacity; developing standards and cross-country cooperation on the subject
- Taking an active role in food crises within the scope of international organizations to which Türkiye is a member
- Promoting successful state-aided agricultural insurance policies and supporting the necessary infrastructure works (meteorology, registration of agricultural production) for agricultural insurance
- Increasing the employment of qualified technical personnel
- Providing the technological infrastructure to be used in inspections
- Enhancing the efficiency of commodity exchange markets; extending licensed storage practices and encouraging agricultural production
- Extending GAP (Good Agricultural Practices) throughout Türkiye; increasing the production and market share of products with high added value
- Raising awareness on water, irrigation and smart agriculture and including educational efforts in the curricula, starting from primary education; planning for agricultural water use
- Land- and product-based planning with regard to climate change adaptation; supporting variety development and R&D works against biotic and abiotic stresses
- Waste management; increasing the planting of fruit trees; improving pasturelands
- Making further commitments to reduce conflicts and ensure more equitable distribution of resources, income, education and food; strengthening traceability in this regard through global mechanisms and organs
- Input procurement and management for agricultural production in order to achieve food production at optimal prices; establishing a system for seed management particularly in agricultural production; ensuring access to and procurement of seeds at affordable prices to boost the sustainability and resilience of small enterprises; incentivizing the provision of quality seed, in particular; supporting ISTA (International Seed Testing Association) and OECD (Organization for Economic Cooperation and Development) seed standards; encouraging smallholders in particular to procure seeds at such standards
- As a lesson learned from experience during the pandemic, determining risks regarding seed procurement and supply and acting within the limits of such risks; improving and registering native seeds; preserving germplasms
- Adding new procedures to food security systems against food crises that are affected by such factors as public and business conflicts, outbreaks and natural disasters, climate change, etc. and ensuring their traceability and monitorability
- Introducing regulations that determine the mandatory available product-stock quantities according to business size
- Promoting R&D works on functional foods
- Enhancing communication and coordination among sectoral stakeholders; ensuring rapid, effective and reliable controls
- Extending R&D, innovation and use of technology in production and supply chains in the face of food crises such as outbreaks
- Supporting producers' planning efforts through active and protective incentives and insurance units



3. CONCLUSIONS

The Food Systems Summit will be held in September 2021 in New York to reinforce the UN 2030 Agenda and Sustainable Development Goals. As part of the Summit, member states were required to designate a National Dialogues Convenor to carry out the national dialogue process. The designated National Dialogues Convenor on behalf of the Republic of Türkiye was Ms. Aylin ÇAĞLAYAN ÖZCAN, Director General for European Union and Foreign Relations of the Ministry of Agriculture and Forestry, who carried out the national preparatory process with a participatory approach that considers women's empowerment and other disadvantaged groups such as children and the youth. The national dialogue process preparations towards improving/advancing sustainable food systems took into account the conclusions from the 3rd Agriculture and Forestry Council, which had the broadest participation to date, and the study which involved determining proposed solutions and actions based on the opinions and problems indicated by BCSD Türkiye and other stakeholders. The Council of Water meeting, the preparations for which are underway by the Ministry of Agriculture and Forestry, and the New Economic Programme, and the relevant actions contained in the Presidential 100-Day Action Plan will also boost the advancement/improvement of Sustainable Food Systems at the national level, in addition to the abovementioned efforts.

In this framework, the Council of Agriculture was established pursuant to the Regulation on the Council of Agriculture published in the Official Gazette of 17 May 2019 issue 30777. As a result of the Commission works that began on 17 July 2021, the 3rd Council of Agriculture and Forestry was held in Ankara between 18-21 November 2019 with the attendance of the academia, NGOs, private sector representatives, farmers as well as subject-matter experts from the Ministry of Agriculture and Forestry and other relevant public institutions. Under the 3rd Agriculture and Forestry Council, 21 Action Tracks were established at the Commission level, shedding light on the future of agriculture and forestry in Türkiye by receiving over 23,000 opinions from over 1,300 participants. Furthermore, the results of the study were spread across provinces and enhanced with further 7,500 ideas. The goals set at the Commission level, the publicly announced Conclusions Statement and action track reports, and all information and documentation

regarding the Council Meeting are available at <http://www.tarimormansurasi.gov.tr>. Accordingly, such actions and sub-actions as establishing a digital chain value from seed to table by 2023, formulating and implementing an alternative support model through contract farming, preventing food-related information pollution and increasing food literacy, building an infrastructure regarding food loss and waste, and introducing a law on water were determined and a monitoring and evaluation system established with regard to their implementation. Türkiye will convene the subsequent Council of Agriculture and Forestry in 2024.

The Sustainable Food Systems Country Report which served as a basis for this study and established the baseline on sustainable food systems was prepared, with designated focal points from Ministerial Departments and non-Ministerial entities. Furthermore, as part of the Summit preparations, regional studies were continued in the context of ECO-RCC, hosted by the General Directorate of European Union and Foreign Relations of the Ministry of Agriculture and Forestry in Türkiye, and the Black Sea Economic Cooperation (BSEC) Regional Cooperation Centre for Sustainable Food Systems (BSEC-CSFS) which is also hosted by the GD-EUFR.

The problems and intervention areas and proposed solutions and actions that were identified based on a questionnaire were evaluated separately for BCSD Türkiye and other stakeholders.

Through the questionnaire, which was filled out between 2 April 2021 and 14 April 2021 by 6 private sector representative firms that are well-known members of BCSD Türkiye, 14 problems and over 25 proposed solutions were identified. The areas of action identified by BCSD Türkiye mostly included interventions in sustainable agriculture and production, followed by climate change and energy efficiency/renewable energy intervention areas. In the context of the problems identified by BCSD Türkiye, the intervention area concerning climate change calls for improving sustainable agriculture/sustainable production, dominating the arguments for improving sustainable food systems.

With regard to other stakeholders of the sustainable food system; the online questionnaire was administered between 26 February and 8 April 2021 to elicit a maximum of three problems, proposed solutions and proposed actions, and responses were received from 258 stakeholders as part of the Summit preparations. The



responses provided in the questionnaire were processed and a total of 520 problems as well as over 1,000 proposed solutions and actions were received. Accordingly, one-third of the intervention areas identified concentrate on the main intervention area "Environment and Protection and Sustainable Use of Natural Resources". The first 5 intervention areas determined as a result of analyses are as follows.

AT3: Environment and Protection and Sustainable Use of Natural Resources (33.46%)

- Climate Change
- Scarcity and Efficient Use of Water Resources
- Sustainable Use of Natural Resources

AT2: Transition to Sustainable Consumption and Preventing Food Loss and Waste (15.58%)

- Food Loss and Waste
- Food Waste¹⁵
- Food Loss

AT1: Food Security (14.23%)

- Ensuring Food Security and Access to Safe, Healthy and Nutritious Food
- Healthy, Balanced, Sufficient Nutrition
- Management, Disposal, Recovery and Reuse of Waste relating to Nutrition and Nutrient Content

AT1: Public Health and Food Safety (11.92%)

- Production of Safe, Healthy and Nutritious Food
- Inspections and Controls Related to Ensuring Public Health and Food Safety
- Food Safety Issues-Other

AT4: Inclusive Sustainable Food Systems and Poverty Alleviation (11.54%)

- Rural-to-Urban Migration
- Advancing Equitable Livelihoods
- Improving Income Distribution for the Poor

This study includes detailed measures identified on the subject by the stakeholders. Efforts to advance and improve sustainable food systems will continue on the basis of other problems than these priority focus areas.

On the other hand, the Republic of Türkiye contributes to the global efforts under the UN Food Systems Summit through Action Tracks 2 and 5. In this framework, most measures were identified under the intervention area "Measures Against Food Crises Induced by Conflicts, Natural Disasters, Climate Change, Outbreaks" to build national and global cooperative efforts as part of Increasing the Resilience of Sustainable Food Systems to Food Crises.

Additionally, achieving the main and other intervention areas determined in line with the transformation of food systems depends on a change that will occur in the food supply chain, especially in agricultural production. Improving and extending the innovation that accompanies smart agricultural practices is one of the elements to accelerate this process. Thus, the quantity and style of agricultural aids, as well as training for farmers, hold an important place among the components of ensuring a change in the behaviour of farmers/producers. Financial aids and farmers' training programmes should be developed for the main and other intervention areas under designated ATs. Increasing the number and variety of national programmes such as organic farming, good agricultural practices and Environmentally Based Agricultural Land Protection support programmes; including these action track subjects and main intervention areas/intervention areas in research-based support topics/continuing the existing practices in this regard; supporting farmers' training projects for this purpose; supporting regional farmers' training projects to be developed by universities; including universities in agricultural training programmes and establishing close cooperation and coordination with them will boost the efficiency of the efforts towards achieving Sustainable Development Goals.

In this context, Türkiye shall continue its efforts towards the achievement of Sustainable Development Goals with all of its stakeholders while paying attention to strengthening national and international cooperation.

¹⁵ Indicated as a sub-area. Food loss and food waste are also indicated as a single problem and not gathered under food loss and waste in order to prevent loss in meaning.



REFERENCES

- Ministry of Agriculture and Forestry, 2021. Sustainable Food Systems Country Report, Ankara.
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<http://www.tarimormansurasi.gov.tr/>



ANNEX

ANNEX 1. 3rd Agriculture Forest Council

The Council of Agriculture was established pursuant to the Regulation on the Council of Agriculture published in the Official Gazette of 17 May 2019 issue 30777 in order to enable negotiations by and among authorities and representatives and make decisions to assist the formulation of agricultural development strategies with a view to improving agriculture and livestock breeding in Türkiye; implementing, extending and improving new technologies; determining the problems, and the solutions thereof, encountered in services related to agriculture and livestock. The third and most recent Council of Agriculture and Forestry meeting, for which the works were initiated on 17 July 2019, was held between 18-21 November 2019 in Ankara following nearly 4 months of work, with the attendance of the academia, NGOs, private sector representatives, farmers as well as subject-matter experts from the Ministry of Agriculture and Forestry and other relevant public institutions. Under the 3rd Agriculture and Forestry Council, 21 Action Tracks were established at the Commission level, shedding light on the future of agriculture and forestry in Türkiye by receiving over 23,000 opinions from over 1,300 participants. Furthermore, the results of the study were spread across provinces and enhanced with further 7,500 ideas. The goals set at the Commission level, the publicly announced Conclusions Statement and action track reports, and all information and documentation regarding the Council Meeting are available at <http://www.tarimormansurasi.gov.tr/>. The topics of Action Tracks established under the Council are as follows:

- Agricultural Structure and Transformation
- Crop Production and Plant Health
- Animal Production and Animal Health
- Fisheries and Aquaculture
- Agricultural Inputs and Financing
- Food Security
- Agricultural Meteorology, Environment and Natural Resources Management

- Agricultural Irrigation and Water Management
- Pasture Management
- Agricultural Education, Farmer Training, Extension and R&D
- Farmer Organization in Agriculture
- Agricultural Marketing and New Marketing Trends
- Rural Development and Employment in Agriculture
- Agricultural Support Policies
- Agriculture and Forestry Law
- Agricultural Production Planning
- Technological Transformations in Agriculture
- International Relations and Strategic Approaches
- Sustainable Forest Management
- Innovative Approaches in Combating Forest Fires
- Utilization of Forest Resources

The Conclusions Statement of the 3rd Agriculture Forest Council was announced to the public by President Recep Tayyip ERDOĞAN on 21 November 2019. The Statement comprised 60 items as presented below.

1. Formulating agricultural and forestry policies on the basis of strategic production and sustainability principles and implementing them through a holistic and integrated method,
2. Establishing a guiding support system that improves the structure of the agricultural sector, protects natural resources and environment, covers a period of at least three years and is focused on active farmers, production, quality, accessible prices and sustainability,
3. Planning activities by making definitions of small, medium and large scale enterprises in agricultural enterprises,
4. Ensuring that agricultural production planning



- based on sustainability, productivity and competition principles, which will provide maximum benefit from unit water, is turned into a state policy and secured,
5. Accelerating the land consolidation and classification projects and completing them within ten years, preparing agricultural land use plans based on soil information system,
 6. Establishing and disseminating alternative models such as land banking and co-production in order to bring idle agricultural lands into production, solving the inheritance problem in agricultural lands by developing inheritance legislation,
 7. Eliminating risks that may arise in the long term, ensuring product diversity, ensuring continuity in foreign trade, reducing product costs, and most importantly, maintaining land leases in order to encourage strategic production in foreign countries in terms of geopolitical politics, providing institutional infrastructure for international agriculture and forestry activities,
 8. Establishing a digital value chain from seed to table, conducting agricultural census and establishing an updateable database, through effective cooperation with all relevant institutions and organizations,
 9. Establishing a stock tracking system in order to prevent price hikes in agricultural products within the free market order, ensuring traceability in food warehouses,
 10. Increasing the products within the scope of Licensed Warehousing of Agricultural Products, improving the system, disseminating the trade of electronic product bills formed by licensed warehouses based on agricultural products,
 11. Supporting entrepreneurship among women and young people to ensure the sustainability of family business,
 12. Promoting the production of domestic drugs and vaccines in the effective fight against plant and animal diseases,
 13. Achieving international averages in calf mortality and reproduction statistics,
 14. Promoting the consumption of ovine meat in the red meat sector and increasing its market share,
 15. Increasing the efforts for conservation and breeding of domestic breeds in ovine and cattle breeding through breeding and similar projects in the hands of the public,
 16. Carrying out pasture services, completing the determination and limitation of the pasture areas immediately, allocating them to producers and producer organizations, promoting the development of plant seeds to be used in pasture breeding,
 17. Ensuring rural and urban restructuring of neighbourhoods in metropolitan municipalities, protection of village legal entity structure in rural neighbourhoods, coordination of rural life with a holistic and integrated perspective within the Ministry of Agriculture and Forestry,
 18. Improving fish processing sector in fisheries, supporting marketing and trademark registration, increasing export and domestic consumption,
 19. Increasing production and efficiency within the framework of sustainability principles in alternative aquaculture species in aquaculture and hunting,
 20. Disseminating the Intelligent Agricultural Applications by integrating information technology into the agricultural sector in order to increase agricultural productivity and make more efficient use of resources, increasing the number of farmers/ engineers/intermediate staff trained in Smart Agriculture by applying special programs,
 21. Continuing the efforts to disseminate the use of certified seeds,
 22. Conserving, developing and trading of ancestral (local) seed varieties which are the local treasure of our country,
 23. Providing effective traceability from seed to table throughout the chain in order to ensure food and feed security, public health, phytosanitary, animal health and welfare and increase the effectiveness of the control system,
 24. Providing effective use of meteorological



- information in all stages of production in agriculture and forestry, increasing activities for monitoring and researching the impacts of climate change and developing action plans to prevent possible impacts,
- 25. Ensuring that land and water resources are used, protected and monitored within the framework of sustainable management principles,
 - 26. Enacting the Water Law in order to manage the water resources of our country more effectively and more efficiently and to provide the necessary legal infrastructure,
 - 27. Completing new irrigation investments and rehabilitation projects in the next 25 years, ensuring efficient and efficient use of water in agriculture,
 - 28. Establishing a new institutional infrastructure including public, private sector and universities in order to use resources more efficiently in R&D and innovation,
 - 29. Increasing the studies on detection, protection, breeding and dissemination of indigenous genetic resources and biodiversity in agriculture and forestry,
 - 30. Completing quality and standardization studies in agricultural and forestry products and disseminating certification studies,
 - 31. Supporting brand, quality, standardization, promotion and promotion activities in order to increase export revenues to desired levels in agricultural, food and forestry products grown in our country and in high demand in international markets, conducting the promotional activities of the products in which we are the leader in world production at the professional level and increasing the market shares,
 - 32. Disseminating occupational health and safety practices in agriculture and forestry,
 - 33. Evaluating all agricultural and forestry legislation in a holistic way and establishing a lean and non-conflicting legislation structure,
 - 34. Ensuring effective control of animal movements by renewing registration, transportation, animal markets and slaughterhouse infrastructure,
 - 35. Supporting and disseminating contracted plant and animal production models that meet the agricultural input and financing needs,
 - 36. Increasing efficiency in bee products production and diversification of value-added bee products, disseminating training of non-honey products, increasing consumption,
 - 37. Increasing recycling facilities in order to achieve zero waste target in waste management, supporting R&D projects for waste utilization,
 - 38. Increasing the market diversity with products bearing geographical indications, branding and value-added production, reviewing the governance and auditing processes of geographical indications and completing the legislation,
 - 39. Completing the registration of the forests whose cadastre is finalized to the title deed and eliminating the property problems experienced in the determination and designation of the places to be taken out of the forest boundary (2/B),
 - 40. Completing national forest inventory in accordance with international standards,
 - 41. Making our country a forest sapling production and marketing centre in the international arena,
 - 42. Disseminating the use of timber, determining structural timber standards and regulating timber structure legislation,
 - 43. Continuing the studies on the determination, protection, development and monitoring of natural resources and biological diversity,
 - 44. Diversifying non-wood forest products and promotion of agricultural forestry in order to increase the income levels of forest villagers,
 - 45. Disseminating the use of renewable energy systems in agricultural production and forestry activities,
 - 46. Establishing occupational standards for the activities carried out in the Agriculture and Forestry sector, in particular farming, opening farming vocational training institutions and encouraging young people receiving education, developing vocational training in agriculture and forestry,



47. Promoting the production and use of organic and organo-mineral fertilizers, reducing the importation of chemical fertilizers and environmental pollution, and disseminating biological and biotechnical control,
48. Directing Producer Organizations to increase their effectiveness in supplying inputs, production and marketing stages,
49. Determining the definition and framework of information pollution in food, and enacting legislation to impose criminal sanctions on those who cause information pollution,
50. Increasing nutritional literacy,
51. Developing national policies to prevent food loss and waste and increasing national and international cooperation,
52. Making regulations in the legislation for effective deterrence of food imitation and adulteration penalties,
53. Promoting international projects for exchange of experience and know-how,
54. Establishing the necessary legal arrangements for fire safety in residential and workplace licenses in and around forests,
55. Using high technology and artificial intelligence applications in response to forest fires,
56. Using convicts who are fined for working in the public interest within the scope of probation in agriculture and forestry activities carried out by public institutions and organizations,
57. Conducting the fight against desertification and erosion effectively and efficiently, providing effective cooperation with international organizations,
58. Issuing income-guaranteed product insurance in order to reduce risk and uncertainty, which is the most important problem of the agricultural sector,
59. Establishing a regional or basin based management model in order to reflect the synergy arising from the gathering of agriculture, forest

and water management under the same roof into the economy in the most effective manner,

60. Organizing the next Agriculture and Forestry council in 2024.

Based on the Conclusions Statement as declared by the 3rd Agriculture and Forestry Council, the Ministry of Agriculture and Forestry formulated 46 actions and associated sub-actions (324 actions in total) in the early 2020, and quarterly monitors the progress and discloses to the public by the end of 2023. The titles of the said 46 actions are listed below.

Applicable Actions by the end of 2023¹⁶

1. Establishing a Digital Value Chain from Field to Fork
2. Establishing and Implementing an Alternative Support Model with Contractual Production
3. Transition to a Region or Basin-Based Management Model in the Area of Agriculture and Forestry
4. Making legislative arrangements and put into practice for penalties to the deter of food fraudulence and adulteration
5. Preventing information pollution in food and increasing food literacy
6. Establishing the infrastructure to prevent food loss and waste
7. Encouraging the Consumption of Capri and Ovine Animals' Meat and Increasing its Market Share
8. Establishing 7 more heifer centers under the Breeding Heifer Production Center Project; consequently, increasing the total number to 32
9. Building mass feeding houses and establishing a mulberry garden within the scope of Silkworm Production Basin Project
10. 10. Completion of Branding Infrastructure Works for Agriculture and Forestry Products
11. Efficient use of meteorological information in every stage of production in agriculture and forestry

¹⁶ Sub-actions not indicated.



12. Continuing to lease land to promote strategic production in foreign countries.
13. Increasing the Production of Fiber Plants to be Used for Industrial Purposes
14. Use of high technology and artificial intelligence applications in response to forest fires
15. Diversification of non-wood forest products, afforestation of forest areas to increase added value and encouragement of agricultural forestry
16. Establishing the necessary legal regulations in terms of fire safety in licensing of dwellings and workplaces in and around the forest
17. Enhancing Cooperation among Public, Private Sector and University for R&D and Innovation
18. Promoting international projects for the exchange of experience and know-how.
19. Evaluating all legislation on agriculture and forest with a holistic approach, establishing a simple legislative structure
20. Rearrangement of neighbourhoods as rural and urban in metropolitan municipalities, preserving the village legal entity structure in rural neighbourhoods
21. Enacting Water Law
22. Establishing and disseminating alternative models such as land banking and co-production in order to bring idle agricultural lands to production and solving the problem of transfer in agricultural lands by developing inheritance legislation
23. Using Soil and Water Resources within the Framework of Sustainable Management Principles
24. Supporting women and youth entrepreneurship to ensure the sustainability of family business
25. To conduct fight against desertification and erosion effectively and efficiently
26. Uncovering our nature tourism potential and becoming an international brand in nature tourism
27. Completing the identification and restraint studies of pastures, highlands and winter quarters
28. Supporting R&D projects for the re-use of wastes in order to reach the zero waste goal
29. Development of Licensed Warehousing, dissemination of electronic product trade
30. Increasing Buffalo Number and Productivity
31. Reaching international averages in calf mortality and fertility statistics
32. Increasing the share of sheep and ovine meat in red meat production by increasing the number of sheep and goats
33. Increasing alternative aquaculture species, production and productivity in aquaculture and hunting activities within the framework of sustainability principles
34. Development and Expansion of Domestic and National Seed and Seedling Sectors
35. Conservation, development and commercialization of local (Ata) seed varieties
36. Increasing production and marketing opportunities with Medicinal and Aromatic Plants Action Plan
37. Thanks to promoting the production and use of organic and organomineral fertilizers, reducing the import of chemical fertilizers and environmental pollution, spreading the biological and biotechnical control methodologies
38. Conservation and Breeding of Our Pet Genetic Resources
39. Increasing studies on determination, protection, improvement and dissemination of domestic genetic resources and biodiversity in the areas of agriculture and forestry, genetic resource database project
40. Production of Veterinary Biological Products and Pharmaceutical Active Ingredients by encouraging technology and R&D investments
41. Completing the national forest inventory

- 
42. Making our country an international forest sapling production and marketing center.
 43. Eliminating the ownership problems experienced in the allocation and determination of the places to be moved beyond the forest boundary, by completing the registration of the forests whose cadastre has been finalized
 44. Preparation of land use plans and agricultural land use plans, completion of detailed soil surveys
 45. Completion of land consolidation projects by ten years
 46. Prioritization of new irrigation investments and rehabilitation projects

The actions are reviewed and updated every year, taking into consideration their completion status. Türkiye will have accomplished the main and sub-actions formulated under the UN Food Systems Summit 2021 by the end of 2023.



PART II.

FINAL REPORT ON

NATIONAL WORKSHOP

ON SUSTAINABLE

FOOD SYSTEMS

TOWARDS ACHIEVING

SUSTAINABLE

DEVELOPMENT GOALS

BY 2030



1. INTRODUCTION

Türkiye has been carrying out the national summit preparation process for the Food Systems Summit 2021 to be held on 23 September 2021 with a view to reinforcing the United Nations (UN) 2030 Agenda and Sustainable Development Goals. The dialogue process, which is planned to involve three stages as member state dialogues, global dialogues and independent dialogues; is carried out between November 2020 and September 2021 through a participatory stakeholder approach that pays regard to the public and private sectors, academia, Non-Governmental Organizations (NGOs), chambers of profession as well as gender equality and disadvantaged groups.

As part of the preparatory process for the Summit, an online workshop was held on 7 September 2021 under the name “National Dialogue Workshop on Sustainable Food Systems towards Achieving Sustainable Development Goals by 2030”, attended by over 130 stakeholder groups including public institutions, universities, international organizations, NGOs, agri-businesses, and cooperatives. The workshop included opening presentations to increase awareness of the Food Systems Summit and the preparatory process, followed by private sessions under each Action Track. The opinions and proposed concrete actions by stakeholders were integrated with previous proposed actions and strategies and included in the national pathway.

2. PURPOSE AND SCOPE OF WORKSHOP

The national workshop has three core purposes: increasing the level of awareness of relevant national stakeholders on the United Nations Food Systems Summit; in cooperation with relevant stakeholders, determining actions in line with the transformation of food systems and the 2030 Sustainable Development Goals set out by the United Nations; and finally, involving disadvantaged groups in the process of determining such actions to ensure that they have a voice in political decision-making. To that end, participants from the public and private sectors,

non-governmental organizations and universities, including disadvantaged groups in particular, were invited to the workshop.

In order to serve said goals, taking the rapidly advancing technology towards 2030 into consideration, presentations and evaluations were made on the most urgent problem areas that will trigger a transformation in national food systems and the proposed solutions thereto, the thematic areas for such proposals that require stakeholder cooperation, and the potential of cooperation with regard to such areas; in this direction, discussion sessions were held in the presence of moderators.

3. PREPARATIONS FOR AND METHOD OF WORKSHOP

First, a preparation process was carried out under the national workshop. As part of the Summit preparations, an online focus group meeting was held on 1 September 2021 to discuss the current actions obtained through the online surveys previously conducted by the Ministry of Agriculture and Forestry; the meeting was attended by approximately 30 stakeholders representing focal points for sustainable food systems from the Ministry of Agriculture and Forestry and other relevant Ministries, universities and other public institutions. The focus groups reviewed all actions, designating focal points and relevant entities for each action, and the compiled information served as guidance for the matters to be addressed in the national workshop.

The online meeting held on September 2021 comprised three parts in line with the targeted core objectives. In the first part of the workshop, opening presentations on the Summit, Summit preparations, the significance of sustainable food systems to achieve the United Nations Agenda for Sustainable Development Goals as well as the national pathway efforts towards enhancing the sustainability of food systems in Türkiye were made by the National Dialogues Convenor of Türkiye and Director General for European Union and Foreign Relations of the Ministry of Agriculture and Forestry, Ms. Aylin ÇAĞLAYAN ÖZCAN; the UN Resident Coordinator



in Türkiye, Alvaro RODRIGUEZ; UN Food and Agriculture Organization (FAO) Sub-Regional Coordinator for Central Asia and FAO Representative in Türkiye, Dr. Viorel GUTU; and the Food Systems Summit Dialogues Senior Advisor, Dr. David NABARRO.

In the second part of the workshop, the participants were separated into discussion rooms to identify detailed problem areas and formulate solution proposals for each Action Track (AT), establishing thematic group topics on the following Action Tracks which were designated by the UN throughout the Summit preparations. The participants were asked on their invitation to select two thematic focus groups to which they would like to attend. Excessive demands for or low interest levels in certain action groups were resolved through the second choices made by the participants. A moderator and a rapporteur was selected for each thematic group.

Action Track (Discussion Session) Topics, Moderators and Rapporteurs:

AT1: Ensure Access to Safe and Nutritious Food for All (Moderator: Assoc. Prof. Dr. Taylan KIYMAZ (International Fund for Agricultural Development), Rapporteur: Dr. Korkut Gökhan KURTAR (Ministry of Agriculture and Forestry))

AT2: Shift to Sustainable Consumption Pattern (Moderator: Prof. Dr. Gökhan ÖZERTAN (Bosphorus University), Rapporteur: Zeynep ÖZKAN (Ministry of Agriculture and Forestry) and Ulviye Burcu SERİN (Ministry of Agriculture and Forestry))

AT3: Boost Nature Positive Production at Sufficient Scale (Moderator: Prof. Dr. Bülent GÜLÇUBUK (Ankara University), Rapporteur: Dr. Burçak YÜKSEL (Ministry of Agriculture and Forestry) and İrem ŞAFAK ŞİMŞEK (Ministry of Agriculture and Forestry))

AT4: Advance Equitable Livelihoods (Moderator: Arzu KARAARSLAN AZİZOĞLU (United Nations Development Programme); Rapporteur: Nihan ATAY HASPOLAT (Ministry of Agriculture and Forestry))

AT5: Build Resilience to Vulnerabilities, Shocks and Stresses (Moderator: Mehmet TARAKÇIOĞLU (UN Food and Agriculture Organization-FAO), Rapporteur: Songül ELHANAY (Ministry of Agriculture and Forestry))

Objective, Promotion and Overall Assessment of Discussion Groups: Dr. Coşkun ŞEREFOĞLU (Ankara Development Agency) and Aytül GÜNGÖR (Ankara Development Agency)

Before the workshop, a meeting for the moderators and rapporteurs was held on 6 September 2021 to discuss expectations and exchange ideas on how the process should proceed. The participants in each thematic group were asked by the group moderator to specify main problems within the frame of the following questions and to provide responses on how and through which methods to solve such problems. Afterwards, proposals were received from the participants on the actions that are required for each problem indicated in the sessions. The participants were also asked to prioritize the urgency status (very urgent, medium-term, long-term) of each action. Finally, the participants were asked to present their opinions on which institutions should be responsible and which stakeholders should be cooperated with in performing the actions.

- The following questions were addressed in the discussion sessions:
- Which urgent actions are required under this axis/session topic?
- What are the actions that will have the highest impact by 2030?
- Which of the urgent actions under this axis/session topic will require further cooperation?
- Which ecosystem parties will assume the most critical roles in coordination and implementation under this axis/session topic?
- What are some legislative proposals on food systems under this axis/session topic?
- What are the potential cross-cutting actions/actions that require cooperation?

The final part of the workshop involved a general evaluation by summarizing the matters addressed in the discussion sessions, and a brief instant online survey was carried out to guide the evaluation. The survey required participants to indicate the AT which they believe to be the most urgent, the disadvantaged group which they believe to be the most affected by climate change, and the areas of cooperation

that are cross-cutting or that require collaboration. The feedback received on the basis of each AT was analysed together with the survey results and used as input in the proposed actions section of the national pathway.

4. WORKSHOP PARTICIPANT PROFILES

Nearly 300 individuals were invited to the National Dialogue Workshop on Sustainable Food Systems

towards Achieving Sustainable Development Goals by 2030. The invitations extended to various groups such as public institutions, NGOs, universities, the private sector, cooperatives and small agri-businesses resulted in the registration of 185 individuals to the workshop, while 75% of those registered actually attended the workshop. As the participants comprise the majority of those who registered, this section was prepared by considering that the detailed profile of the registered individuals may reflect that of the participants.

Nearly 57% of those who registered to the workshop is women, and when examining the profile by age group, the majority (64%) is of 31-50 years of age.

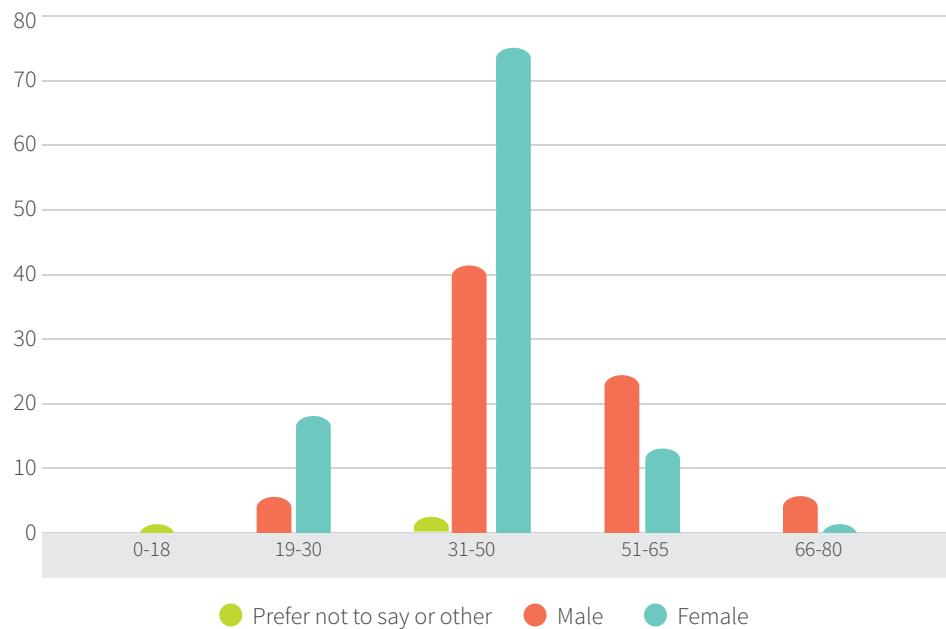


Figure 1. Distribution of Registered Individuals by Gender and Age

While the majority (28%) of those registered represent public and national institutions, this is followed by the scientific and academic communities with 14%, local NGOs with 12%, large national businesses and United

Nations with 11% each, and SMEs and craftsmen with 6%. The workshop was also attended by various groups such as non-governmental organizations, smallholders and consumers.

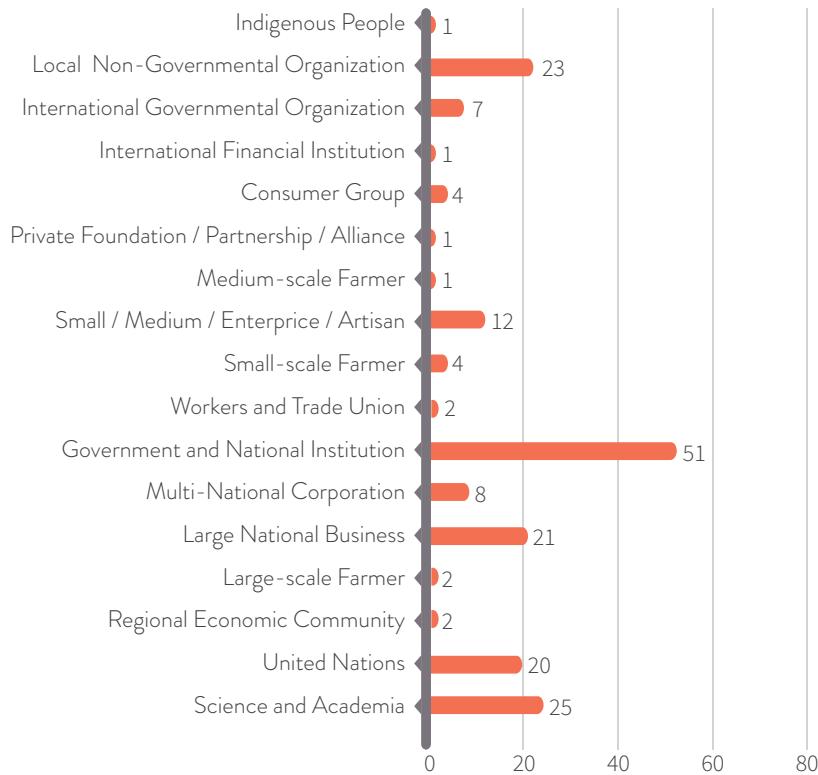


Figure 2. Distribution of Registered Individuals by Group

When examining the distribution of registered individuals by sector, the majority was comprised of a private sector group specified as 'other', and the most sectoral interest came from the agriculture/crops sector as shown in the figure below. The second most

registered individuals were from national and local governments at 10% while the third rank was shared by the environment and ecology and food processing sectors at 9%.



Figure 3. Sectoral Distribution of Registered Individuals

The opening sessions of the workshop were attended by nearly 140 individuals out of the 185 who registered. Since the workshop was held online, the numbers occasionally changed due to disconnections and other technical problems. After the opening session,

some of the participants left while the remaining 93 participants stayed by the end of the discussion sessions that were held under 5 action tracks. 22 individuals attended Session 1, 23 to Session 2, 19 to session 3 and 15 to session 4.



5. DISCUSSIONS OF SESSION OUTCOMES

Action Track 1

The session for AT1: Ensure Access to Safe and Nutritious Food for All was participated by 22 individuals. Action Track 1 focused on food/healthy nutrition and equitable access to food, in the framework of which evaluations were made on such topics as limited access to healthy food at reasonable prices, nutritional values, food security, inequality, transforming food systems, food demands and dietary changes, gain and loss balances, access to financing for small landowners, obesity, local production, agricultural extension, transfer of technology, and digitalization.

During the session, the participants were required to present important problem areas, their proposed solutions to such problem areas, and their opinions on cross-cutting issues with other ATs.

The main problem areas indicated by the session

participants are as follows:

- Lack of balanced diet for certain groups and segments
- Productivity issues in agricultural production
- Unstable food prices
- Lack of professional knowledge in agricultural production
- Challenges faced by vulnerable groups in accessing food
- The requirement to review incentive policies

The participants indicated their proposed solutions and actions towards the specified problem areas. The entities that will be responsible for and contribute to implementing such actions were also addressed in the session. The participants were further requested to specify levels of urgency for the actions, as a result of which proposed actions were listed at the following levels: 1: *very urgent*; 2: *urgent or moderately urgent*; 3: *routine (non-urgent) or achievable in the long term*. The actions proposed by the participants are given below, with the most urgent ones listed at the top.

Table 1. AT1 Session Proposed Solutions and Actions

No	Problems	Proposed Solutions/Actions	Responsible Institutions	Other Relevant Stakeholders	Urgency Level	Other Relevant AT Sessions
1	Lack of education and consumer awareness of conscious nutrition and healthy food consumption	<ul style="list-style-type: none">• Providing adult education through a lengthy curriculum• Correct labelling and awareness raising on food literacy• Awareness raising and preventing losses in food preparation and consumption• Promoting healthier, less processed food instead of heavily processed food• Lifelong education for the society• Awareness raising for mothers and soldiers, in particular	Ministry of Health, Ministry of National Education	Universities, SBO, NGOs, MoNE, Ministry of National Defence, Universities	1	AT2
2	Low productivity and efficiency in agricultural production	<ul style="list-style-type: none">• Promoting the use of technology• Eliminating the barriers to exploring new approaches such as biotechnology• Input planning	Ministry of Agriculture and Forestry	Producer organizations, Ministry of Health, Strategy and Budget Office, Ministry of Treasury and Finance.	1	AT3



No	Problems	Proposed Solutions/Actions	Responsible Institutions	Other Relevant Stakeholders	Urgency Level	Other Relevant AT Sessions
3	Lack of certain nutritional elements and the problem of obesity	<ul style="list-style-type: none"> Increasing food enhancement efforts for lack of vitamin D and iron Research and prescription of regional nutritional element deficiencies Guiding the public towards healthy food instead of high energy food Promoting local production and consumption 	Ministry of Health	Ministry of Agriculture and Forestry, NGOs, TURKSTAT	1	AT4 and 5
4	Controlling food prices and losses	<ul style="list-style-type: none"> Further efficient use of existing monitoring systems and ensuring monitoring Most efficient data sharing among institutions Supporting necessary logistics investments Promoting bringing the producer and the consumer together on the same platform Inspection of wholesale markets and improving storage conditions 	Ministry of Agriculture and Forestry, Ministry of Treasury and Finance, Ministry of Trade,	Ministry of Trade, Municipalities, NGOs, Ministry of Transport and Infrastructure, TOBB, Producers, Unions, Private Sector	1	AT2 and 3
5	Outdated data on vulnerable groups and nutritional deficiencies	<ul style="list-style-type: none"> Keeping and collecting up-to-date data Monitoring micro nutritional deficiencies 	TURKSTAT	Ministry of Health, Universities	2	AT2
6	Non-sustainable food production	<ul style="list-style-type: none"> Planned use of resources Economic/optimum use of input Further use of technology in production Providing producers with the appropriate support for resilience to vulnerabilities such as the pandemic 	Ministry of Agriculture and Forestry	Producer organizations, SBO, Ministry of Treasury and Finance	2	AT3
7	Alternative agricultural production models and deficiencies in innovative approaches	<ul style="list-style-type: none"> Vertical agriculture Urban agriculture Allocating space for family farming and hobbies at the local level 	Ministry of Agriculture and Forestry	Producer organizations, Municipalities	2	AT3
8	Guiding incentives	<ul style="list-style-type: none"> Providing producers with state aid to produce low-calory and highly nutritious products 	Ministry of Treasury and Finance	Ministry of Agriculture and Forestry, Ministry of Trade	2	AT2



Action Track 1 Evaluation

This action track aims to ensure equal and highly nutritious food for all. The majority of the actions determined under the action track also serve AT3 while some are associated with AT4, focusing on improving agricultural production activities for vulnerable groups and others that focus on transforming eating habits are associated with AT2. This action track prioritizes enhancing production planning, ensuring a high nutritional value and affordable price for the accessed food and that producers generate satisfactory and equitable income. One of the proposed solutions involves incentives provided by the state; in that, the proposal involves a structural change in incentives, emphasizing the need to focus on incentives for having high nutritional value foods produced by producers. Similarly, the action that involves improving urban agriculture will be a stabilizing factor in terms of enhancing regional systems. Furthermore, involving women and immigrants in production will be extremely beneficial in terms of climate change by reducing logistics-induced greenhouse gas, and enhancing consumers' access to healthy nutrition and strengthening collective actions.

Action Track 2

The discussion session for AT2: Shift to Sustainable Consumption Pattern was attended by 23 individuals. With a focus on promoting the sustainability of resources and supply chain in the agri-food sector, the session involved evaluations on productivity, food demand and dietary changes, production planning, aquacultural diversity, reducing post-harvest losses, enhancing public awareness of sustainable nutrition and diets.

During the session, the participants were required to present important problem areas, their proposed solutions to such problem areas, and their opinions on cross-cutting issues with other ATs.

The main problem areas indicated by the session participants are as follows:

- Volatile market prices caused by supply chain disruptions
- Consumed products impacting the use of resources
- Prioritization issues in protecting biodiversity
- Failure to reutilize food waste
- Low extension rate of organic farming

Table 2. AT2 Session Proposed Solutions and Actions

No	Problems	Proposed Solutions/ Actions	Responsible Institutions	Other Relevant Stakeholders	Urgency Level	Other Relevant AT Sessions
1	Inadequate production of eggs from free chicken	<ul style="list-style-type: none"> Introducing the necessary legislation and raising consumers' awareness of healthy nutrition 	Ministry of Agriculture and Forestry	Producers, Producer unions, Consumers and the groups representing consumers		AT2
2	Wide gap between producer-consumer prices due to supply chain disruptions	<ul style="list-style-type: none"> Carrying out efforts to develop an alternative supply chain 	Ministry of Agriculture and Forestry	Ministry of Trade, Municipalities, Ministry of Transport and Infrastructure, Relevant Chambers of Profession and Unions		AT2
3	Different resource consumption between animal and herbal products	<ul style="list-style-type: none"> In terms of food labelling; increasing consumers' awareness by labelling products with high greenhouse gas emission and water footprint differently 	Ministry of Agriculture and Forestry,	Ministry of Environment and Urbanization, Ministry of Trade, Ministry of Health, Relevant Chambers of Profession and Unions		AT1
4	Failure to prioritize protecting biodiversity	<ul style="list-style-type: none"> Ensuring that biodiversity is a priority issue in policies 	Ministry of Agriculture and Forestry	Ministry of Environment and Agriculture		AT3
5	Problem of access to safe food	<ul style="list-style-type: none"> Extending good agricultural practices and organic farming 	Ministry of Agriculture and Forestry	Ministry of Health, TSE, Relevant Chambers of Profession and Unions		AT1



No	Problems	Proposed Solutions/ Actions	Responsible Institutions	Other Relevant Stakeholders	Urgency Level	Other Relevant AT Sessions
6	Disruptions in the supply chain	<ul style="list-style-type: none"> Formulating further efficient shipment and appropriate storage conditions 	Ministry of Trade, Ministry of Transport and Infrastructure	Ministry of Agriculture and Forestry, TOBB		AT5
7	In terms of aquaculture; lacking conservation and monitoring programmes and management strategies for aquatic systems	<ul style="list-style-type: none"> Developing strategies for the monitoring and conservation of aquaculture 	Ministry of Agriculture and Forestry	Central Union for Aquaculture Producers, Cooperatives		AT1
8	Waste produced in consumption channels	<ul style="list-style-type: none"> Introducing deterrent legislation on waste reduction and prevention by the public 	Ministry of Trade	Ministry of Agriculture and Forestry, Ministry of Environment and Urbanization, Municipalities		AT1
9	Inadequate reutilization of food waste	<ul style="list-style-type: none"> Extending the use of by-products in fodder and pharmacology 	Ministry of Trade, Ministry of Environment and Urbanization	Ministry of Agriculture and Forestry, Municipalities, Private Sector, Unions, TOBB, Universities		AT5
10	Problems in smallholders' access to financing and technology	<ul style="list-style-type: none"> Developing new models for smallholders' access to financing and technology 	Ministry of Trade, Ministry of Agriculture and Forestry, Ministry of Industry and Technology	Banks		AT1, AT4
11	Poor connection between entrepreneurs and large firms	<ul style="list-style-type: none"> Developing mechanisms to bring large firms and entrepreneurs together 	Ministry of Industry and Technology	Ministry of Agriculture and Forestry, Development Agencies		AT4



No	Problems	Proposed Solutions/ Actions	Responsible Institutions	Other Relevant Stakeholders	Urgency Level	Other Relevant AT Sessions
12	Inadequate organic agriculture production	<ul style="list-style-type: none"> Increasing organic agriculture production within the frame of the European Green Deal, supporting organic farmers Developing mechanisms for consumers to purchase organic agricultural products at affordable prices 	Ministry of Agriculture and Forestry	Ministry of Trade, Producers unions, Consumer Associations		AT3
13	Existing problems in the food chain	<ul style="list-style-type: none"> Improving all stages of the food chain, from producers to consumers, in the context of technological infrastructure 	Ministry of Trade, Ministry of Agriculture and Forestry, Ministry of Industry and Technology	Chambers of Profession, Private Sector, Unions and Cooperatives		AT5
14	Local production and local consumption are uncommon	<ul style="list-style-type: none"> Increasing consumers' awareness of production at the local level 	Ministry of Agriculture and Forestry, Ministry of Trade	Municipalities, Ministry of Culture and Tourism		AT5
15	Product labelling issues	<ul style="list-style-type: none"> Increasing consumers' awareness of product labels 	Ministry of Agriculture and Forestry	Municipalities, Ministry of Trade, Chambers of Profession, Ministry of Trade		AT1, AT4
16	Lacking production planning and product monitoring system in egg poultry	<ul style="list-style-type: none"> Providing planning support to protect smallholders in egg poultry and developing product monitoring systems 	Ministry of Agriculture and Forestry	Producers unions, Ministry of Trade		AT1, AT5



No	Problems	Proposed Solutions/Actions	Responsible Institutions	Other Relevant Stakeholders	Urgency Level	Other Relevant AT Sessions
17	Fraudulent food products	<ul style="list-style-type: none"> Developing effective mechanisms to prevent fraudulent food products 	Ministry of Agriculture and Forestry	Ministry of Trade, Ministry of Industry and Technology		AT1
18	Poor competitive abilities of smallholders	<ul style="list-style-type: none"> Establishing short supply chains where producers can be brought together 	Ministry of Agriculture and Forestry	Ministry of Trade, Producers, Retail Sector, NGOs		AT4
19	Inability of smallholders to last in the market due to trusts and cartels	<ul style="list-style-type: none"> Developing infrastructures to introduce smallholder products to the market as part of short chains 	Ministry of Agriculture and Forestry, Ministry of Trade	Municipalities, Development Agencies		AT4
20	High wastage in consumable foods	<ul style="list-style-type: none"> Developing food banking mechanisms to bring consumable foods into consumption 	Ministry of Agriculture and Forestry, Ministry of Family and Social Services	Municipalities, NGOs, Ministry of Trade, Ministry of Treasury and Finance		AT1
21	Negative impacts of climate change on the agricultural sector	<ul style="list-style-type: none"> Encouraging waste control for firms; national land use planning; enhancing climate resilient product range 	Ministry of Agriculture and Forestry, Ministry of Environment and Urbanization	Ministry of Industry and Technology, Union of Agricultural Chambers, Universities		AT5, AT3
22	Unbalanced nutrition	<ul style="list-style-type: none"> Product labelling systems should be enhanced, and food additives reduced. 	Ministry of Health	Ministry of Trade, Municipalities, NGOs, Universities, Ministry of Agriculture and Forestry		AT1

* Not in any order of priority.



Action Track 2 Evaluation

With an emphasis on the disruptions in food supply chains, Action Track 2 involves evaluations on improving market mechanisms to protect smallholders, in particular. It was discussed that enhancing marketing infrastructures and short supply chains was important for smallholders to generate further added value from their products. Another highlighted problem was the matter of unbalanced nutrition; when looking at the eating habits of Turkish society, salt and sugar or food additive rates are extremely high while vitamin and mineral consumption is below the recommended quantities. From a consumers' perspective, it was proposed to introduce food labels that indicated product-specific environmental emissions. The actions under this action group overlap with AT5 and AT3, in particular, while cross-cutting issues include climate change and preservation of biodiversity.

Action Track 3

The discussion session for AT3: Boost Nature Positive Production at Sufficient Scale was attended by 19 individuals. The session focused on the sustainable use and protection of natural resources. It involved evaluations on such topics as climate change, land degradation, biodiversity, water efficiency and management, enhancing sustainable soil management, strengthening rural areas and enterprises through high local value creation, establishing job opportunities for the rural population, and enhancing resources and markets to boost industrial connections and economic transformations.

During the session, the participants were required to present important problem areas, their proposed solutions to such problem areas, and their opinions on cross-cutting issues with other ATs.

The main problem areas indicated by the session participants are as follows;

- High food losses
- Low consumer awareness
- Inefficient use of water in agriculture
- Lack of climate positive agricultural practices
- Lacking biodiversity and genetic studies
- Production planning problems
- Need to develop early warning systems
- Lacking awareness of a holistic perspective to food systems



Table 3. AT3 Session Proposed Solutions and Actions

No	Problems	Proposed Solutions/Actions	Responsible Institutions	Other Relevant Stakeholders	Urgency Level	Other Relevant AT Sessions
1	Inability to put national decisions into practice	<ul style="list-style-type: none"> Establishing and following up on monitoring and evaluation systems for implementing national decisions 	Ministry of Agriculture and Forestry	Ministry of Trade	1	AT2
2	Inability to ensure the sustainability of data production suitable for digitalization	<ul style="list-style-type: none"> Supporting farmers with regard to smart agriculture techniques and data logging, establishing a data bank 	Ministry of Agriculture and Forestry	Ministry of Industry and Technology	1	AT1
3	Inefficient water resources management	<ul style="list-style-type: none"> Introducing Water Law 	Ministry of Agriculture and Forestry	Ministry of Environment and Urbanization	1	AT5
4	High share of agricultural water use in overall water consumption	<ul style="list-style-type: none"> Controlling water use through commissioning sensitive technologies Creating a product pattern for plants that are drought resilient and/or consume less water, particularly in sensitive lands 	Ministry of Agriculture and Forestry	Ministry of Environment and Urbanization, Irrigation Cooperatives	1	AT5
5	Pressure on agricultural lands and pastures due to faulty land development policies	<ul style="list-style-type: none"> Uncompromising and full implementation of Law No. 5403 Implementing agricultural land use plans 	Ministry of Agriculture and Forestry	Ministry of Environment and Urbanization	1	AT5
6	Lacking climate friendly agricultural practices	<ul style="list-style-type: none"> Extending climate friendly agricultural practices and implementing projects similar to the Environmentally Based Agricultural Land Protection project 	Ministry of Agriculture and Forestry	Universities	1	AT5



No	Problems	Proposed Solutions/Actions	Responsible Institutions	Other Relevant Stakeholders	Urgency Level	Other Relevant AT Sessions
7	Deficiencies in implementing erosion control methods in agricultural lands	<ul style="list-style-type: none"> Formulating risk management plans and implementing sustainable projects in this regard 	Ministry of Agriculture and Forestry	Universities	1	AT5
8	Loss and decrease of the locality of animal biodiversity through rehabilitation and genetic works, lacking protection policies	<ul style="list-style-type: none"> Diversifying and increasing existing aids to protect local diversity and genetic resources 	Ministry of Agriculture and Forestry	Universities	1	AT5
9	Lack of efficient production planning	<ul style="list-style-type: none"> Formulating and complying with short-, medium- and long-term plans for agricultural basins and sharing them with farmers 	Ministry of Agriculture and Forestry	Ministry of Treasury and Finance	1	AT5
10	Problems encountered in irrigation systems	<ul style="list-style-type: none"> Promoting the shift to pressurized irrigation systems Informing producers of correct irrigation programming techniques 	Ministry of Agriculture and Forestry	Irrigation Cooperatives	1	AT5
11	Lack of a holistic approach towards food systems (only water, pasture, fishery, etc.)	<ul style="list-style-type: none"> Establishing sustainable food systems that include all natural assets and implementing policies and training programmes in this regard 	Ministry of Agriculture and Forestry	Relevant Ministries	1	AT1
12	Lack of programmes and up-to-date lessons on agriculture, environment, natural assets, aquaculture, livestock breeding, food, etc. in higher education	<ul style="list-style-type: none"> Updating higher education lesson contents in terms of agriculture, the environment, and all natural assets Reviewing existing programmes; paying particular attention to the conservation of soil and water resources; extending scholarship programmes in priority fields 	CoHE	Ministry of Agriculture and Forestry	1	



No	Problems	Proposed Solutions/Actions	Responsible Institutions	Other Relevant Stakeholders	Urgency Level	Other Relevant AT Sessions
13	Low consumer awareness	<ul style="list-style-type: none"> Increasing consumers' awareness through such practices as food labelling 	Ministry of Trade	Consumer Associations	2	AT2
14	Inability to reduce food losses and reintroduce them into production	<ul style="list-style-type: none"> Improving the rural industry, extending such practices as food banking 	Ministry of Agriculture and Forestry	Ministry of Industry and Technology	2	AT1
15	Deficiencies in farmer training activities on soil health and efficient water use; inadequate use of technology in this regard	<ul style="list-style-type: none"> Informing, training and inspecting land owners regarding the use of natural resources 	Ministry of Agriculture and Forestry	Universities, TZOB	2	AT1, AT5
16	Inadequate use of sensitive agricultural technologies	<ul style="list-style-type: none"> Extending the use of geographic information systems and smart agricultural practices (by commissioning sensitive technologies) Implementing support policies that are based on impact analyses; implementing such policies based on business size and product pattern Supporting start-ups and R&D projects 	Ministry of Agriculture and Forestry	Universities, TZOB	2	AT5
17	Unclear definition of the systems to protect natural resources among all actors; failure to inform products adequately on this subject; changes in aids	<ul style="list-style-type: none"> Clarifying and informing the producers on the roles and responsibilities of all components in protecting natural resources Eliminating the confusion of terms (that are difficult in practical terms) Informing and raising the awareness of all actors on sustainable protection systems 	Ministry of Environment and Urbanization	Ministry of Agriculture and Forestry, NGOs	2	



No	Problems	Proposed Solutions/Actions	Responsible Institutions	Other Relevant Stakeholders	Urgency Level	Other Relevant AT Sessions
18	Damage to biological diversity through the extensive use of hybrid and standard seeds	<ul style="list-style-type: none"> Establishing an effective monitoring and inspection system on seed use Maintaining and sustainable use of village populations suitable for local conditions Developing inspection and penalty mechanisms to mitigate the damages caused by the chemical inputs used in agriculture on biological diversity 	Ministry of Agriculture and Forestry	Universities	2	AT5
19	Land degradation continues and legal regulations are lacking in this regard	<ul style="list-style-type: none"> Facilitating inheritors' access to financing Informing farmers of legal regulations 	Ministry of Agriculture and Forestry	Banks	2	AT4
20	Animal production causes excessive carbon emission; the need to redirect the public towards plant-based protein sources	<ul style="list-style-type: none"> Formulating and implementing sustainable agricultural plans 	Ministry of Agriculture and Forestry	Universities	2	AT5
21	Land degradation and loss of efficiency	<ul style="list-style-type: none"> Extending national projects to offset land degradation Formulating Sustainable Land Management plans 	Ministry of Agriculture and Forestry	Universities	2	AT1
22	Lack of holistic risk management plans; lack of early warning systems	<ul style="list-style-type: none"> Formulating risk management plans based on all sub-topics and implementing the plans in a forward-looking manner 	Ministry of Agriculture and Forestry	Ministry of Industry and Technology	2	AT5



No	Problems	Proposed Solutions/Actions	Responsible Institutions	Other Relevant Stakeholders	Urgency Level	Other Relevant AT Sessions
23	The knowledge produced in universities and research institutes is not adequately communicated to farmers	<ul style="list-style-type: none"> Building closer relationships particularly with the provincial organization of the Ministry of Agriculture and Forestry to communicate such knowledge to farmers; establishing a different structure and subjecting the application status of such knowledge to impact analysis 	Ministry of Agriculture and Forestry	Universities	2	AT4
24	Failure to see the projection-based consequences of climate change impacts	<ul style="list-style-type: none"> Sharing the projections with the public and implementing them accordingly 	Ministry of Agriculture and Forestry	TURKSTAT	3	AT5

Action Track 3 Evaluation

Action Track 3 covers the sustainable use of natural resources, aiming to increase production at a sufficient scale based on protecting the nature and natural resources. In this context, production planning that considers supply and demand is extremely important. Similarly, food systems require a holistic perspective; in that, all system actors should act in coordination for the effective transformation of food systems. Particularly, relevant ministries should work in coordination and the subject of food systems should be updated in the learning curricula. Awareness raising activities should be held for the extension of climate-friendly agricultural practices among farmers and the extension system, together with universities, should carry out efforts to enhance the level of perception required. Another significant matter is irrigation systems; the use of surface irrigation in Türkiye is up to 80%. It is critical to take measures for the efficient use of water resources and pressurized irrigation systems such as drip irrigation. Another important subject regarding the protection of natural resources is land development plans; increasing deterrent measures against the misuse of agricultural lands and pastures is critical in terms of food security.

Action Track 4

The discussion session for AT4: Advance Equitable Livelihoods was attended by 14 individuals. The aim of the session was to focus on the problem areas and proposed solutions with regard to formulating more inclusive policies for vulnerable groups such as the women in the agri-food sector, young people, seasonal workers, persons under temporary protection, children, etc. During the session, the participants were required to present important problem areas under AT4, their proposed solutions to such problem areas, and their opinions on cross-cutting issues with other ATs.

The problem areas specified by the participants during the session is grouped under the following seven topics:

- Lack of awareness of nutrition
- Information pollution on healthy and nutritious food
- Discord among national and global stakeholders with regard to information and practices related to proper nutrition
- Access to healthy and nutritious food



- Lack of professional knowledge in agricultural production
- Definition and acquisition of the rights of agricultural sector workers
- Challenges of young farmers in accessing financial resources

Participants' proposed solutions and actions for the specified problem areas were communicated. The

entities that will be responsible for and contribute to implementing such actions were also addressed in the session. The participants were further requested to specify levels of urgency for the actions, in the context of which the proposed actions were listed at the following levels: *1: very urgent; 2: urgent or moderately urgent; 3: routine (non-urgent) or achievable in the long term*. The actions proposed by the participants are given below, with the most urgent ones listed at the top.

Table 4. AT4 Session Proposed Solutions and Actions

No	Problems	Proposed Solutions/ Actions	Responsible Institutions	Other Relevant Stakeholders	Urgency Level	Other Relevant AT Sessions
1	Access to healthy and nutritious food	<ul style="list-style-type: none"> Extending social support programmes that are designated through targeted food support programmes/needs analyses 	Central Authority (Ministry of Family and Social Policies)	Local Governments, International Institutions	1	AT1
2	Lack of nutritional knowledge	<ul style="list-style-type: none"> Providing information on proper nutrition Establishing a nutrition modality particularly for women and children as well as Asylum-seekers with Temporary Protection Status, to guide proper nutrition 	Central Authority (Ministry of Health, Ministry of National Education)	Local Governments/ International Institutions, Ministry of Agriculture and Forestry, Ministry of Interior, Unions, NGOs, Universities, International Organizations, the EU	2	AT1
3	Lack of professional knowledge in agricultural production	<ul style="list-style-type: none"> Providing practical training on agricultural production Ensuring the referral and employment of Asylum-seekers with Temporary Protection Status based on their competencies and professional knowledge 	Central Authority (Ministry of Agriculture and Forestry, Ministry of Labour and Social Security)	Local Governments, International Institutions, the EU, Ministry of Interior	2	AT3



4	Challenges of young farmers in accessing financial resources	<ul style="list-style-type: none"> Extending and ensuring the use of advanced technologies Organizing training activities to consider potential opportunities such as e-commerce 	Central Authority (Ministry of Agriculture and Forestry, Ministry of Industry and Technology)	Local Governments, International Institutions, Universities, Chambers of Profession and Unions	2	AT3
5	Information pollution on healthy and nutritious food	<ul style="list-style-type: none"> Ensuring that food authorities strengthen the necessary infrastructure to provide consumers with reliable information and prevent information pollution regarding food 	Central Authority (Ministry of Agriculture and Forestry, Ministry of Health, Ministry of National Education)	Local Governments, Universities, RTUK, Chambers of Profession, Unions, NGOs, Ministry of Justice	3	AT1
6	Definition and acquisition of the rights of agricultural sector workers	<ul style="list-style-type: none"> Improving agricultural work that is covered by social security, and enhancing association Putting cooperativism and contract production into the legislation as well as into practice 	Central Authority (Ministry of Agriculture and Forestry / Ministry of Labour and Social Security, Ministry of Trade)	Cooperatives/ Producer Unions	3	AT3
7	Discord among national and global stakeholders with regard to information and practices related to proper nutrition	<ul style="list-style-type: none"> Ensuring sustainable communication among national and global actors 	Central Authority (Ministry of Agriculture and Forestry, Ministry of Health, Ministry of National Education, International Institutions and Platforms)	-	3	AT1



Session 4 Evaluation

Those of the proposed solutions and actions mentioned in the session that need to be addressed in conjunction with other Action Tracks (AT) were particularly pointed out. It was also mentioned that the provision of reliable information by food authorities also covered AT1: Access to Safe and Nutritious Food for All objectives, with regard to which it is important for central authorities to cooperate with NGOs and media organizations. The proposed action to increase the use of technologies to increase the efficiency of young farmers is also relevant to AT3: Boost Nature Positive Production at Sufficient Scale and central authorities should work together to enhance this action. Increasing the accessibility to technology among young people can boost their capacity to find jobs as well as supporting efficient agricultural production by ensuring that their technical know-how is reflected to agricultural production. Low awareness, communication and education levels with regard to Sustainable Food Systems was also mentioned as a cross-cutting problem area across all ATs. It was considered to partner with the central authority, international institutions, non-governmental and media organizations to carry out efforts in sub-areas such as increasing awareness of production and consumption to ensure the transformation of the existing food systems towards sustainable ones, and generating and extending technical know-how to ensure productivity growth as required by the systems.

In Session 4, matters related to the problems of the disadvantaged and improving socio-economic opportunities for groups who earn their living from the agri-food industry were discussed under the topic of Advancing Equitable Livelihoods towards transformation to sustainable food systems. The eating habits and nutritional deficiencies, particularly of foreigners under temporary protection were emphasized with regard to ensuring access to healthy and nutritious food for all, which also makes up a significant part of the contents of AT1. It was also highlighted that the nutritional modalities of such groups differ from those of the local community and that there are findings that such conditions as stunting, against which our country has won the battle, can be seen in such groups as a result of malnutrition. In this context, it is important to carry out research on disadvantaged groups and up-to-

date malnutrition analyses on target groups without adequate analysis (foreigners with a temporary protection status, children and young people in terms of new eating habits, etc.) and to raise the awareness of such target groups by establishing target group-specific nutritional modalities based on the analyses. The issue of information pollution regarding food is another subject that was mentioned in the session with regard to awareness raising and that has significance in each AT. An excessive quantity of sources offer conflicting information on healthy and nutritious food, both for producers and consumers. Therefore, it is crucial that national authorities working in this field produce reference content on healthy and safe food in cooperation with international organizations and ensure access to such content by all, and particularly by disadvantaged groups with more limited access to knowledge.

Another matter highlighted in the session involved making the necessary legal and technical legislation for the disadvantaged, and particularly those under temporary protection and young people, to get involved in agricultural production with equal rights. In this regard, providing the rural youth with technical and practical training with a view to enhancing technical know-how in agricultural producers and extending the use of technology in agricultural production is also important in preventing rural-to-urban migration. Furthermore, guiding the communities in our country who are under temporary protection towards agricultural production, as far as allowed by their competencies, should be specifically addressed in terms of providing them with job opportunities as well as increasing their access to healthy food. Formalizing the workers who are involved in agricultural production but are not officially in formal employment; establishing additional support programmes to increase the access of producers who are facing difficulties (women, smallholders, etc.) to financing; guiding such groups towards cooperativism and providing technical and financial support to cooperativism activities are also considered to be significant actions towards the efforts to ensure access to equitable livelihoods.



Action Track 5

The discussion session for AT5: Build Resilience to Vulnerabilities, Shocks and Stresses was attended by 15 individuals. Focusing on building and enhancing resilience to the vulnerabilities, shocks and stresses in food systems, the session involved exploring such areas as food insecurity in the face of outbreaks, drought, floods, economic fluctuations, natural disasters, etc. and evaluations of such areas as social security, development propagation, enhancing equality in food systems, agroecology, agro-industrial green areas, community organization and local renewal. During the session, the participants were required to present important problem areas under AT5, their proposed solutions to such problem areas, and their opinions on cross-cutting issues with other ATs.

Some of the problem areas indicated by participants are listed below:

- The vulnerability and the disruptive role of livelihoods in the food system as the most triggering issue against climate change and other shocks
- Problems of local food systems

- Soil losses caused by overuse and misuse
- Cross-sectoral land and water use management problems
- Poor governance of outbreaks and other shocks
- Breakdowns in the food chain
- The need to improve extension systems for producers
- Inadequacy of data-based Emergency Management Planning

Participants' proposed solutions and actions for the specified problem areas were communicated. The entities that will be responsible for and contribute to implementing such actions were also addressed in the session. The participants were further requested to specify levels of urgency for the actions, in the context of which the proposed actions were listed at the following levels: 1: *very urgent*; 2: *urgent or moderately urgent*; 3: *routine (non-urgent) or achievable in the long term*. The actions proposed by the participants are given below, with the most urgent ones listed at the top.

Table 5. AT5 Session Proposed Solutions and Actions

No	Problems	Proposed Solutions/Actions	Responsible Institutions	Other Relevant Stakeholders	Urgency Level	Other Relevant AT Sessions
1	The vulnerability and the disruptive role of livelihoods in the food system as the most triggering issue against climate change and other shocks	<ul style="list-style-type: none">• Creating livelihoods, systematizing programmes towards enhancing the resilience of smallholders	Ministry of Agriculture and Forestry, Ministry of Treasury and Finance, Ministry of Trade, other organizations and stakeholders	NGOs, Universities, Ministry of Treasury and Finance	1	
2	The likelihood that the current High Level Panel of Experts on Food Security and Nutrition (HLPE) and Science-Policy Interface of the UN Committee on World Food Security (CFS) governance structures of the 2021 United Nations Food Systems Summit (UNFSS) will be replaced by a new structure in the future	<ul style="list-style-type: none">• Maintaining dialogues based on the current HLPE	United Nations	International organizations, Universities	1	



No	Problems	Proposed Solutions/Actions	Responsible Institutions	Other Relevant Stakeholders	Urgency Level	Other Relevant AT Sessions
3	Problems of local food systems	<ul style="list-style-type: none"> Supporting local food systems in local food networks, agroecological agriculture, etc., separately from industrial agriculture and food 	Ministry of Agriculture and Forestry	Public and private sectors, family smallholders, NGOs, Universities, Municipalities	1	AT4
4	Soil losses caused by overuse and misuse	<ul style="list-style-type: none"> Terracing and vegetation Increasing the use of organic substances and reducing the use of chemicals 	Ministry of Agriculture and Forestry	Private Sector, Municipalities, Chambers of Profession and Cooperatives	1	AT3
5	Cross-sectoral land and water use management problems	<ul style="list-style-type: none"> Drafting and introducing land use plans (Eliminating the negative impacts of mining, HPPs, etc. on soil and water) 	Ministry of Agriculture and Forestry, Ministry of Energy and Natural Resources	Relevant Public Institutions	1	AT3
6	Poor governance of outbreaks and other shocks	<ul style="list-style-type: none"> Formulating projections and plans for emergency and long-term resilience management 	AFAD	NGOs, Private Sector, Relevant Public Institutions	1	
7	Breakdowns in the food chain	<ul style="list-style-type: none"> Supporting the actors in the food chain and alternative food chains 	Ministry of Agriculture and Forestry, Ministry of Industry and Technology	Ministry of Treasury and Finance	1	AT3



No	Problems	Proposed Solutions/Actions	Responsible Institutions	Other Relevant Stakeholders	Urgency Level	Other Relevant AT Sessions
8	Poor stress governance by producers against various shocks	<ul style="list-style-type: none"> Activating Producer Unions to diversify resilience-oriented support instruments against emergencies 	Ministry of Agriculture and Forestry	NGOs, Producer Unions, Ministry of Treasury and Finance	1	
9	Inadequate support against shocks	<ul style="list-style-type: none"> Enhancing the resilience of farmers to emergencies (Providing tax-related advantages, etc.) 	Ministry of Agriculture and Forestry, Ministry of Treasury and Finance	TARSIM	1	
10	The need to improve extension systems for producers	<ul style="list-style-type: none"> Informing farmers and raising awareness about shocks by organizing local research and training programmes through public-university cooperation 	Ministry of Agriculture and Forestry (donor)	Universities, NGOs, Chambers of Profession, Unions and Cooperatives	1	
11	Lack of channels outside the market economy	<ul style="list-style-type: none"> Supporting local food networks and producer markets 	Ministry of Agriculture and Forestry	NGOs, Municipalities, Ministry of Industry and Technology	1	
12	Failure to efficiently use the circular economy that will enable organic transformation	<ul style="list-style-type: none"> Supporting practices such as urban gardening, etc. 	Ministry of Environment and Urbanization, Municipalities	Ministry of Agriculture and Forestry	1	AT3



No	Problems	Proposed Solutions/Actions	Responsible Institutions	Other Relevant Stakeholders	Urgency Level	Other Relevant AT Sessions
13	Inadequacy of Emergency Management Plans	<ul style="list-style-type: none"> Formulating local and regional management plans with the participation of stakeholders 	AFAD	Relevant Public Institutions	1	
14	Inadequacy of policy implementations based on data and monitoring and evaluation; inadequacy of data sharing among stakeholders	<ul style="list-style-type: none"> Extending evidence-based policy making processes and data sharing 	Relevant Public Institutions	Universities, NGOs,	1	

Session 5 Evaluation

The matters under AT5 that should be addressed hand in hand with other Action Tracks included *raising highly aware and qualified farmers by changing inappropriate and unsustainable production methods; terracing and vegetation; use of organic substances; less use of chemicals; drafting and introducing land use plans (including the use of pastures, etc.); efficiently implementing the circular economy that will ensure organic transformation*; it was evaluated that the efforts to be carried out in such fields would serve the objectives of AT3, as well. In sum, the efficient use of natural resources for sustainable agricultural production, adopting such approaches as circular economy to achieve sustainable production, enhancing the technical equipment of producers and launching innovative methods in sustainable production, and making the necessary basis plans for the efficient use of land under the leadership of the Ministry of Agriculture and Forestry and other relevant public institutions and in cooperation with significant stakeholders such as universities and NGOs will directly contribute to the objectives of AT3 and AT5.

As part of Session 5, each problem and solution area was urgently evaluated by the participants as required

by the urgency of the combat against the disasters and shocks faced by food systems. It is evident that the food systems of countries and all actors involved in such systems should be made further resilient to emergencies resulting from climate change, the undeniable distress caused by the COVID-19 pandemic on food systems as such in all systems, and other similar disasters. The significant topics in this session include the lack of resilience of particularly smallholders to climate change and shocks; weak local food systems; decreasing soil and water resources due to misuse; the need to improve governance mechanisms against outbreaks and shocks; and the inadequacy of propagation services in combating disasters. The priority actions regarding such topics are making projections, plans and procedures on emergency and long-term resilience management against outbreaks, disasters and shocks with the active cooperation of NGOs, universities and the private sector and ensuring that these new contents are acknowledged and applied by all actors in the food system. In this context, the bases and data systems that will enable the data-based examination of natural resources and how they change need to be established in order to make such plans and projections.

Shifting to sustainable production and the efficient and productive use of natural resources are also emphasized under AT5 in terms of preparing for the shocks and



disasters to be faced by food systems. In this regard, the practices related to terracing and vegetation, increasing the use of organic substances in production, using less chemicals, efficient use of water resources and efficient implementation of circular economy should be supported. In terms of enhancing the resilience of the food system actors; it is recommended to support the actors in the agri-food chain, and particularly smallholders, against shocks through special policies, supporting producer unions, improving extension services for producers, and supporting local food networks and producer markets.

Evaluation of the Survey Conducted at the End of Discussion Sessions

After the discussion sessions for action groups were completed, all participants were re-convened in a single general session. In this part of the workshop, the participants were asked to provide instant responses to the following three questions on the transformation of countries' food systems, in addition to their post-discussion perceptions. The multiple-choice questions and the corresponding options are as follows:

Q-1. Which action track do you believe is the most urgent for Türkiye?

- AT1: Ensuring Access to Safe and Nutritious Food for All through transformation of food system
- AT2: Shift to Health and Sustainable Consumption Patterns
- AT3: Boost Nature Positive Production
- AT4: Advance Equitable Livelihoods
- AT5: Building Resilience to Vulnerabilities, Shocks and Stresses

Q-2. Which disadvantaged group is affected more negatively by climate change?

- Women
- Babies under 5 years old
- Children and Youth
- Immigrants
- Small holders
- Agricultural enterprises

Q-3. Which of the following under the action tracks is the most important cross-cutting area that requires cooperation?

- R&D Innovation
- Biotechnology
- Digitalization
- Access to finance
- Co-operation and Partnership
- Agricultural extension

AT1 was determined to be the most urgent issue by national workshop participants; 42% of the participants considered AT1 to be the most urgent action track for Türkiye whereas AT3 was the second most urgent action track, at 24%. While 21% of the participants mentioned AT2 and 8% mentioned AT4 as the most urgent action track, only 5% regarded AT5 as the most urgent.

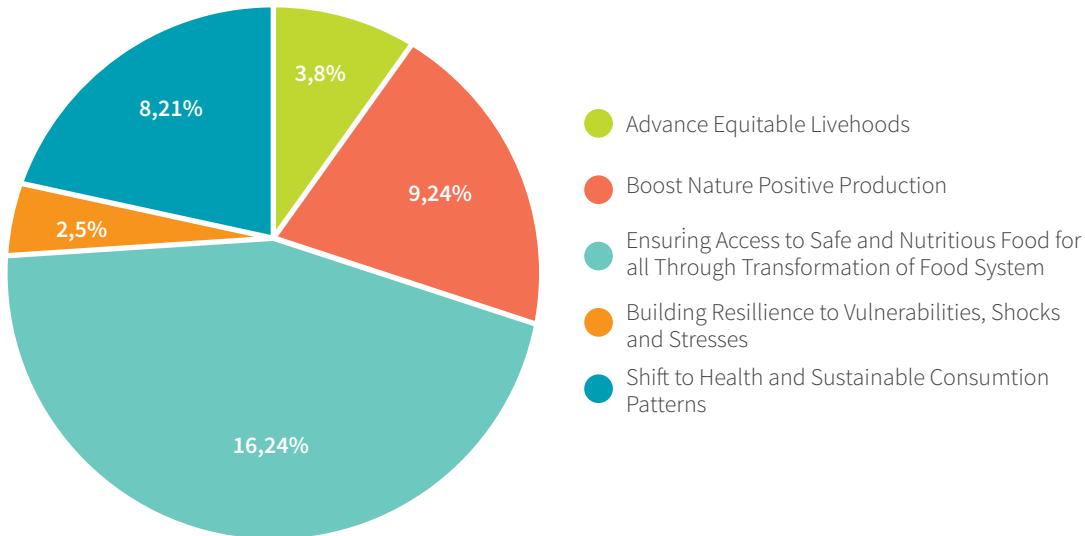


Figure 4. Q-1 Distribution of Responses (Which action track do you believe is the most urgent for Türkiye?)

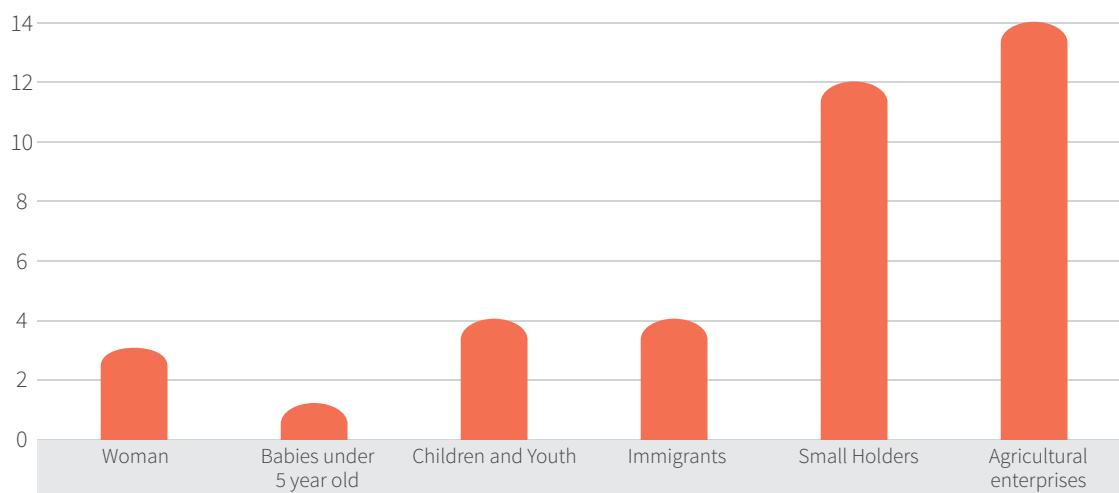


Figure 5. Q-2 Distribution of Responses (Which disadvantaged group is affected more negatively by climate change?)

Although AT5 was considered to be the most urgent topic for only 5% of the national workshop participants, the actions proposed for increasing the resilience of the groups that are most affected by such shocks as climate change were brought to discussion under almost all action tracks. When the participants were asked to indicate the disadvantaged group which they believed to be the most affected by climate change, agri-businesses were determined as the most affected

group with 37%. With 32%, the second most affected group was believed to be smallholders, followed by immigrants and children and young people at 11% each and women at 8%. Babies under 5 years old was the lowest ranking group, at only 3%. In line with these results, AT5 discussion session participants placed particular emphasis on the significance of the measures and actions regarding enhancing the resilience of small agri-businesses and smallholders



for a sustainable food system approach. The proposals to achieve this specific objective included developing local research and training programmes through public-university cooperation, and carrying

out information, training and awareness raising programmes on combating shocks and disasters for target groups

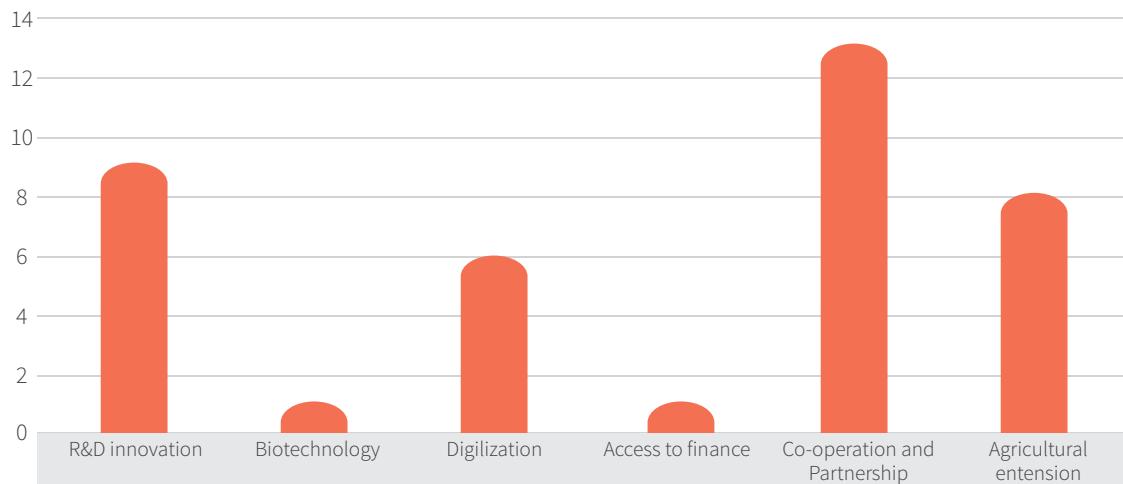


Figure 6. Q-3 Which of the following under the action tracks is the most important cross-cutting area that requires cooperation?

According to the online survey, 34% of the participants consider “Cooperation and Partnership” to be the most important cross-cutting area in all action tracks; it is followed by R&D and Innovation with 24%, Agricultural extension with 21%, Digitalization with 16%, and Biotechnology and Finance with 3% each. Cooperation and partnership is necessary for all public institutions with varying responsibilities in all action tracks; it is also important to make use of the opinions and cooperation provided by producer and consumer groups, universities and NGOs that are among the target groups of the action tracks.

including members of the Business Council for Sustainable Development (BCSD) Türkiye, as a result of which the problem areas, and actions including proposed solutions were determined. The second online study covering February-April was shared with over 1,000 members that participated in the 3rd Council of Agriculture and Forestry as well as the central and provincial organizations of the Ministry of Agriculture and Forestry, other relevant Ministries and certain NGOs. The provincial organization of the Ministry, in particular, was asked to complete a single form for their area of operation by seeking the opinions of local stakeholders. The survey was responded to by 258 stakeholders, the majority of which comprised public institutions. In a focus group meeting held on 1 September, the actions that were determined as a result of both studies were opened to the views of the Sustainable Food Systems focal points and various organizational representatives officially designated by the Ministry of Agriculture and Forestry. Additionally, opinions and recommendations were welcomed on the organizations and institutions under the responsibility of which the relevant actions should be carried out. The relevant actions were further shared with public institution representatives through e-mail, seeking their opinions and making the necessary

6. GENERAL EVALUATION AND CONCLUSIONS

The national workshop was held with a view to expanding the stakeholder base for transforming food system, and to ensure the involvement of disadvantaged groups in the process. Two online surveys were conducted earlier to serve as a basis for the National Pathway. In March 2021, a workshop and an online survey was held with the private sector,



revision studies in line with such the opinions received. Finally, a national workshop representing sectoral differences and involving disadvantaged groups was held, in which problems, proposed solutions and concrete actions were welcomed with regard to each action track. The concrete actions determined by the end of the workshop were compared with the outcomes of previous studies; the study was completed by removing similar actions and proposals and adding new and different ones. The process will be completed by opening the actions that were determined as a result of this study, which was designed to serve as a basis for the National Pathway to Food Systems, to be discussed by relevant entities.

When examining the results of the workshop based on action groups, the most significant topic to which participants draw attention is enhancing production planning under access to Safe and Nutritious Food for All (AT1). There is a need to establish mechanisms to balance supply and demand in the market, and model approaches for a ‘win-win’ for producers and consumers. A structural change in state incentives was also proposed, indicating that special incentives should be applied for the production of food with high nutritional value by the producers. The subjects of improving urban agriculture and enhancing regional systems that will serve food systems at the local level and ensure access to nutritious food for all were also discussed in-depth. Furthermore, involving women and immigrants in production will be extremely beneficial in terms of climate change by reducing logistics-induced greenhouse gas, and enhancing consumers’ access to healthy nutrition and strengthening collective actions.

With an emphasis on the disruptions in food supply chains, Shift to Sustainable Consumption Pattern (AT2) involved evaluations on improving market mechanisms to protect smallholders, in particular. It was indicated that enhancing marketing infrastructures and short supply chains was important for smallholders to generate further added value from their products. Another highlighted problem was the matter of unbalanced nutrition; when looking at the eating habits of Turkish society, salt and sugar or food additive rates are extremely high while vitamin and mineral consumption is below the recommended quantities. From a consumers’ perspective, it was proposed to introduce food labels that indicated product-specific environmental emissions. The

actions under this action group overlap with AT5 and AT3, in particular, while cross-cutting issues include climate change and preservation of biodiversity.

Boost Nature Positive Production at Sufficient Scale (AT3), covering the sustainable use of natural resources, aims to boost production at sufficient scale based on the protection of the nature and natural resources. In this context, production planning that considers supply and demand is extremely important. Similarly, food systems require a holistic perspective; in that, all system actors should act in coordination for the effective transformation of food systems. Particularly, relevant ministries should work in coordination and the subject of food systems should be updated in the learning curricula. Awareness raising activities should be held for the extension of climate-friendly agricultural practices among farmers and the extension system, together with universities, should carry out efforts to enhance the level of perception required. Another significant matter is irrigation systems; the use of surface irrigation in Türkiye is up to 80%. It is critical to take measures for the efficient use of water resources and pressurized irrigation systems such as drip irrigation. Another important subject regarding the protection of natural resources is land development plans; increasing deterrent measures against the misuse of agricultural lands and pastures is critical in terms of food security.

The action track for Advancing Equitable Livelihoods (AT4), discussed the matters related to the problems of the disadvantaged and improving socio-economic opportunities for groups who earn their living from the agri-food industry. The eating habits and nutritional deficiencies, particularly of foreigners under temporary protection were emphasized with regard to ensuring access to healthy and nutritious food for all, which also makes up a significant part of the contents of AT1. It was highlighted that the nutritional modalities of such groups differ from those of the local community. In this context, it is important to carry out research on disadvantaged groups and up-to-date malnutrition analyses on target groups without adequate analysis (foreigners with a temporary protection status, children and young people in terms of new eating habits, etc.) and to raise the awareness of such target groups by establishing target group-specific nutritional modalities based on the analyses. The issue of information pollution regarding food is another subject that was mentioned in the session with



regard to awareness raising and that has significance in each AT. An excessive quantity of sources offer conflicting information on healthy and nutritious food, both for producers and consumers. Therefore, it is crucial that national authorities working in this field produce reference content on healthy and safe food in cooperation with international organizations and ensure access to such content by all, and particularly by disadvantaged groups with more limited access to knowledge. Another matter highlighted in the session involved making the necessary legal and technical legislation for the disadvantaged, and particularly those under temporary protection and young people, to get involved in agricultural production with equal rights. In this regard, providing the rural youth with technical and practical training with a view to enhancing technical know-how in agricultural producers and extending the use of technology in agricultural production is also important in preventing rural-to-urban migration. Formalizing the workers who are involved in agricultural production but are not officially in formal employment; establishing additional support programmes to increase the access of producers who are facing difficulties (women, smallholders, etc.) to financing; guiding such groups towards cooperativism and providing technical and financial support to cooperativism activities are also considered to be significant actions towards the efforts to ensure access to equitable livelihoods.

Build Resilience to Vulnerabilities, Shocks and Stresses (AT5) Action Track discussed enhancing countries' food systems and the resilience of all actors involved in such systems against climate change-induced emergencies, the undeniable distress caused by the COVID-19 pandemic on food systems as such in all systems, and other similar disasters. The significant topics in this session include the lack of resilience of particularly smallholders to climate change and shocks; weak local food systems; decreasing soil and water resources due to misuse; the need to improve governance mechanisms against outbreaks and shocks; and the inadequacy of propagation services in combating disasters. The priority actions regarding such topics are making projections, plans and procedures on emergency and long-term resilience management against outbreaks, disasters and shocks with the active cooperation of NGOs, universities and the private sector and ensuring that these new contents are acknowledged and applied by all actors in the food system. In this context, the bases and data

systems that will enable the data-based examination of natural resources and how they change need to be established in order to make such plans and projections.

Shifting to sustainable production and the efficient and productive use of natural resources should also be emphasized under AT5 in terms of preparing for the shocks and disasters to be faced by food systems. In this regard, the practices related to terracing and vegetation, increasing the use of organic substances in production, using less chemicals, efficient use of water resources and efficient implementation of circular economy should be supported. In terms of enhancing the resilience of the food system actors; it is recommended to support the actors in the agri-food chain, and particularly smallholders, against shocks through special policies, supporting producer unions, improving extension services for producers, and supporting local food networks and producer markets.

In conclusion, the national dialogue workshop provided an opportunity to make evaluations to complement and support the previous outputs that were obtained as part of Summit preparations under five action tracks (ATs). While the subject of access to safe and nutritious food for all was considered to be a priority compared to other ATs, the cross-cutting issues of the workshop that required cooperation included eliminating the information pollution on food, extending sustainable agricultural practices and enhancing local food systems by developing special socio-economic policies for the disadvantaged. While the workshop placed a particular emphasis on the importance of cooperation and joint efforts among organizations and stakeholders to achieve the 2030 goals, the need for R&D and innovation support was also highlighted in all proposed actions under all ATs.





PART III. FINAL REPORT ON REGIONAL WORKSHOP ON SUSTAINABLE FOOD SYSTEMS TOWARDS ACHIEVING SUSTAINABLE DEVELOPMENT BY 2030

1. INTRODUCTION

In preparation to the UN Food Systems Summit, which took place in 23-24 September 2021, following the official designation of the National Dialogues Convenor (i.e. DG for European Union and Foreign Relations of the Ministry of Agriculture and Forestry of Türkiye); a fully-fledged national dialogue roadmap for Türkiye has been prepared with an aim to support transformation of the food systems through a more sustainable approach with the inclusion of respective stakeholders at regional, national and local levels. Sustainability of food systems has been among the key areas of intervention for Türkiye with increasing political and institutional commitment and further efforts have been made to get prepared for the Food Systems Summit 2021. In this sense:

- Türkiye prepared Sustainable Food System Country Report-Türkiye in English for COMCEC 34th Ministerial Meeting in 2019. In an effort to support national dialogues, the Turkish content of the Report has quickly been updated with inputs from ministerial departments and line ministries and some CSOs.
- Between 18-21 November 2019, 3rd National Agriculture Forest Council was held in Ankara with the participation of representatives from academia, NGOs, public and private sectors, farmers etc, at the end of 4-month preparation period. Consequently, the Council Declaration was announced, and a commitment was made to the public and 46 main actions and 324 sub-actions that covers all main aspects of the food systems were determined to be implemented by Ministry of Agriculture and Forestry by 2023.
- Taking into considerations of COVID - 19 pandemic conditions, to be able to elaborate between national dialogues and findings of the report and get more info and contributions for national dialogues from the stakeholders; an online survey was designed and conducted between 26th February and 14th April 2021 separately for two different target groups. Contributed by the national and local stakeholders operating in the food systems domain, the online survey revealed a total number of 534 problems and more than 1000 solutions and action recommendations from

public, private sector, academia, CSO etc. The survey has been analyzed by using appropriate quantitative methods to transform food systems more sustainable and better ones under five action tracks. Accordingly, the report has been prepared.

- Through the facilitation and technical assistance of FAO, the Convenor's Office is also engaged with regional projects/Issue based coalitions on sustainable food systems.
- A National Dialogues Workshop on Sustainable Food Systems towards the Achievement of Sustainable Development Goals was held in 7 September. More than 130 participants representing the public sector, private sector, academia, civil society, and business organizations attended the virtual workshop organized by National Dialogue Convenor Office in Türkiye with the support of the UN Türkiye Resident Coordinator's Office and UN Food Systems Summit (UNFSS) Secretariat.
- A draft National Pathway for Türkiye was prepared upon outputs of up to date dialogue processes and studies.

As per the FSS Roadmap of the National Convenor's Office, the studies presented above were planned to be complemented/strengthened with the outputs of Regional Workshop. Thus "Regional Workshop for Black Sea Economic Cooperation Members (BSEC) and Economic Cooperation Organization (ECO) under UN Resident Coordinator Request to access Financial Resources to Support Member State-led Food Systems Summit Dialogues" was conducted on 18th of October. The workshop aimed to increase regional stakeholder engagement from BSEC and ECO in the process of transforming and improvement of foods systems in to sustainable structure in line with UN sustainable Development Goals. Possible coalition and cooperation areas and intention for collective efforts among stakeholders were discussed in the workshop. The outputs of this workshop will also contribute to determine the post - Summit Activities that could be realized with contribution of regional actors.



2. WORKSHOP OBJECTIVE AND SCOPE

Regional Workshop for Black Sea Economic Cooperation Members (BSEC) and Economic Cooperation Organization (ECO) under UN Resident Coordinator Request to access Financial Resources to Support Member State-led Food Systems Summit Dialogues was conducted on 18 October 2021.

The workshop aimed to increase regional stakeholder engagement from BSEC and ECO in the process of transforming and improvement of foods systems in to sustainable structure in line with UN sustainable Development Goals. Possible coalition and cooperation areas and intention for collective effort among stakeholders were expected to arise in the workshop.

The regional workshop was organized for Organization of Black Sea Economic Cooperation (BSEC) members which are Republic of Albania, Republic of Armenia, Republic of Azerbaijan, Republic of Bulgaria, Georgia, Hellenic Republic, Republic of Moldova, Republic of North Macedonia, Romania, Russian Federation, Republic of Serbia, Republic of Türkiye, Ukraine and Economic Cooperation Organization (ECO) members which are Republic of Türkiye, Republic of Azerbaijan, Islamic Republic of Iran, Pakistan, Afghanistan, Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan and Turkmenistan are member-states of ECO.

In order to realize the objectives mentioned, presentations and evaluations as well as discussion session were held on the basis of Action Tracks in order for participants to emphasize and comment on the potential cooperation topics under these action groups. The participants discussed the results of recently held UN Food Systems Summit, sustainable food systems, food security, as well as regional priorities and possible cooperation areas.

3. WORKSHOP METHODOLOGY

The workshop was held in three parts, including keynote speeches (opening remarks), a presentation on “Potential Regional Cooperation Areas for Each Action Track / Introduction of Methodology for Discussion Section” and a discussion session.

The workshop started with opening speeches to increase awareness and share assessments regarding the Food System Summit Processes. The opening speeches, which included general evaluations on the effects of the Food Systems Summit held on September 23, the importance of sustainable food systems to achieve the United Nations 2030 Sustainable Development Goals, and the national pathway studies prepared to increase the sustainability of the food systems of BSEC and ECO member states were given by Ms. Aylin ÇAĞLAYAN ÖZCAN, Director General for European Union and Foreign Relations of Ministry of Agriculture and Forestry of Republic of Türkiye, National Dialogues Convenor of Republic of Türkiye, Dr. David NABARRO, UN Food Systems Summit Dialogues, Senior Adviser, Bülent AÇIKGÖZ, Partnerships and Development Finance Officer, The Office of the UN Resident Coordinator in Türkiye (on behalf of Mr. Alvaro RODRIGUEZ, UN Türkiye Officer in Charge), Dr. Viorel GUTU, Sub-Regional Coordinator for Central Asia FAO Representative in Türkiye, Dr. Sayed Yahya AKHLAQI, Deputy Secretary General of Economic Cooperation Organization and H.E. Ambassador Traian CHEBELEU, Deputy Secretariat General of BSEC Permanent International Secretariat.

In the second part of the workshop, Dr. Coşkun ŞEREFOĞLU, who was the moderator, gave a presentation on “Potential Regional Cooperation Areas for Each Action Track” by highlighting regional priorities for BSEC and ECO region on the basis of national pathways of BSEC and ECO Member States. After this presentation that revealed key intervention areas for collaboration of the participant states, about 60 minutes discussion session was held.

In the discussion session participants were enabled to talk about opportunities for regional cooperation and common areas that possible coalitions, joint future projects opportunities could be formed at the

regional level. Discussions were moderated through seeking answers for below questions;

- What action track or action subject is most urgent for your country/region?
- Which concrete actions in the National Pathway are most convenient for regional and international cooperation?
- Have you started cooperation actions/projects under any actions track with different regions, countries? If so what is the aim and the structure of the cooperation project?
- What sort of cooperation is required to implement these actions at regional level and who would be the stakeholders of those cooperation?
- Which financial mechanisms are required to achieve the actions on regional cooperation?

In the beginning of wrap up session of the workshop, a quick survey was conducted to determine some priority areas in regional aspects and to measure for perception on sustainable food systems of participants. The workshop ended with elaboration of the discussion session and closing remarks.

4. WORKSHOP PARTICIPANTS

The dialogue was conducted among member states of the BSEC and the ECO with the participation of member states' Food Summit Dialogue conveners, consultants and the relevant representatives. Totally 112 people registered to the workshop and 77 of registered, stated to participate for all sessions and 34 stated to participate to only opening sessions. About 80% out of registered (84 participants in total), participated to the workshop and most of the participants attended the workshop until the end of the discussion sessions. Since the participants were the majority of those who registered, the profile of those who registered for the online workshop is discussed in this section, considering that it may reflect the profile of the participants.

Participants represented 16 different countries, more than half of the participants were from Türkiye that organized the event. Georgia had the second largest participant rate with %6 of the registered list of participants.

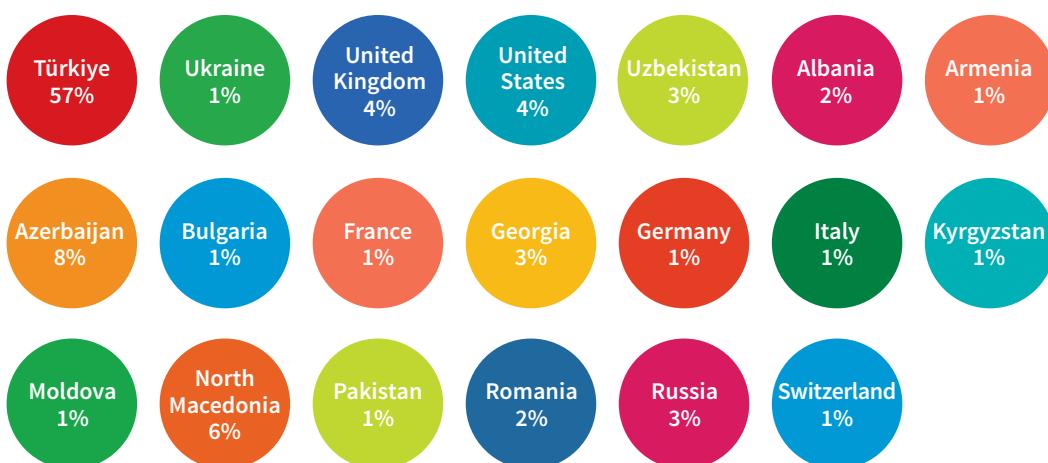


Figure 1. Distribution of Workshop Registrants by Country

As it is seen from the above figure, countries not included in BSEC or ECO region were also interested in attending in the workshop. These participants were mostly from UN agencies. Thus, workshop presented a great regional inclusion as it was intended in the preparation process.

Among participant there were Turkish, English and Russian speakers, thus simultaneous translation in three languages was carried out at the workshop.



5. DISCUSSION SESSION AND OUTPUTS

The key challenges indicated in figure 2 were stated by Moderator for discussion. The key challenges based on National pathways of the BSEC and ECO countries are low level of education and low level of income of small holders, broken cold chain, insufficient agricultural insurance systems, rural women, agricultural extension, aging population, irrigation problems and water shortages, technology integration and linear models which do not touch to lives of small holders, insufficient horizontal and vertical cooperation, limited access to finance, limited access to nutritious food and climate change.

Key Challenges for BSEC and ECO Members		
Low level of education and low level of income of small holders	Agricultural extension	Insufficient horizontal and vertical cooperation
Broken cold chain	Aging population	Limited access to finance
Insufficient agricultural insurance systems	Irrigation problems, water shortages	Limited access to nutritious food
Rural Woman	Technology integration & linear models	Climate change

Figure 2. Key Challenges for BSEC and ECO Members

Following the key challenges, potential coalition areas for BSEC and ECO members were discussed with participants. The potential coalition areas based on national pathways shown in figure 3 are food traceability, digitalization of agri-food systems, short supply chain, building resilience of food systems and sustainable development.



Figure 3. Potential Coalition Areas for BSEC and ECO Members

After giving the challenges and potential coalition areas, the targets of the national pathways of member states were indicated on the basis of action tracks. Regarding Action Track 1, vertical and horizontal cooperation, investing in digitalization of agri-food systems, focusing on technologies to reduce food waste and loss, improving food quality and shortening food supply chain are among targets.

Table 1. Targets for Action Track 1

Action Track 1 Ensure Access to Safe and Nutritious Food for All	Targets for BSEC Members	
	Albania	Ensure competitive value-chains in the food systems, setting up a reliable data set, horizontal and vertical cooperation
	Armenia	Reducing uncultivated land and develop land market, developing credit market , increasing the access to nutritionally diversified food, investing in national digital agriculture platforms and digitalization initiatives, applying food security dimensions into the safety-net measures
	Azerbaijan	Ensuring fully digitalization of agri-food system and promoting advanced technologies
	Georgia	Ensure competitive value-chains in the food systems, improving irrigation and drainage systems, bolstering extension and consultation services
	Russia	Making efforts to reduce all forms of malnutrition among the population, ensuring the quality and safety of food products, digitalization of agriculture, system information support
	Serbia	Development of short food supply chains and local food markets, food waste and loss , digitalization, veterinary and phyto-sanitary cooperation , creating of a multi-sectoral mechanism
	Türkiye	School nutrition, school meal and school food programs , improving public health, food safety and strengthening inspections and controls with innovative methods, development of food traceability infrastructure through the widespread use of digital technology, shortening food supply chain
	Ukraine	Healthy nutrition , healthy and varied food in sufficient quantities for everyone in Ukraine
Action Track 1 Ensure Access to Safe and Nutritious Food for All	Targets for ECO Members	
	Kazakhstan	Ensuring food security and improving product quality
	Kyrgyzstan	Increasing production of all types of food, effective management of the required food quality infrastructure, cluster development , healthy nutrition, agricultural efficiency growth, agricultural producer's integration support, the resilience of food systems
	Pakistan	Increasing the level of production of diversified safe food that allow supply to overtake the projected increase in demand
	Tajikistan	Harmonize policies, legislations, and regulatory framework related to food production standards, distribution and trade, quality and safety, and environmental safeguards
	Uzbekistan	Ensuring food security of the population, implementation of regular food security assessment system and continuous monitoring based on internationally recognized methods

With respect to Action Track 2, the priority areas addressed by the member states are promoting healthy diets, setting up effective systems for food

safety, reducing food loss and waste, adopting calorie and environmental labeling for food items and encouraging traceability mechanism in food systems.



Table 2. Targets for Action Track

Targets	
Action Track 2 Shift to Sustainable Consumption Patterns	Albania Strengthening food safety and promoting healthy diets
	Armenia Ensuring effective systems of food/feed safety , veterinary and plant protection, craft nutrition policies, promoting enhancing consumer awareness on nutrition, strengthening post-harvest storage and processing
	Azerbaijan Introducing internationally recognized food safety risk management systems, investing in national digital agriculture platforms and digitalization initiatives , establishing early warning system components for food security, increasing access to nutritious diversified food
	Georgia Ensuring effective systems of food/feed safety, veterinary and plant protection
	Russia Strengthening the agro-industrial complex , which is a source of economic growth, reduction of food loss and waste
	Serbia Healthy diet and principles, food loss and waste
	Türkiye Encouraging the sustainability supply and value chain in agri- food sector, reducing and preventing and to manage food waste and loss , decreasing food-borne diseases , raising consumer awareness and promoting sustainable consumption
Action Track 2 Shift to Sustainable Consumption Patterns	Ukraine Changing the culture of food consumption and recovery after a pandemic
	Targets
	Kazakhstan Optimization of support mechanisms focus on competitive products, creation of a unified system aimed at the needs of the agro-industrial complex , building sustainable production and distribution chains
	Kyrgyzstan Expansion of organic agriculture and the halal industry , : increase of processed agricultural products, supporting the creation of trade and logistics centers, support of export infrastructure and export commodity transport corridors, the availability and quality of technical regulations conformity services, and the introduction of a traceability mechanism
	Pakistan Mass marketing of dietary guidelines with traditional and new recipes, adopting calorie and environmental labeling for food items , food governance & regulatory monitoring and consumer awareness campaigns on importance of taking nutritionally balanced food.
	Tajikistan Reinforcing food systems infrastructure , management, organization and multi-sectoral institutional capacity
	Uzbekistan Creating a favorable agribusiness environment and added value chains , development of long-term programs to promote healthy food culture,

Under the Action Track 3, sustainable use of natural resources, good agricultural practices, improving efficiency of knowledge and experience transfer, effective utilization of renewable energy sources,

focusing on bio-economy, biomass and circular economy approaches and nature-positive production methods and regenerative agriculture are among the priorities.

Table 3. Targets for Action Track 3

Action Track 3 Boost Nature Positive Production	Targets	
	Albania	Strengthening the fight against climate change and disasters through sustainable use of natural resources, improving quality of education and research, strengthening collaboration between science and policy making
	Armenia	Sustainable use of natural resources, environmental protection , preservation of ecosystems, climate change mitigation and adaptation, developing multi-sectoral approaches
	Azerbaijan	Maintaining good agricultural practices, biodiversity , and environmental sustainability programs, improving effectiveness and efficiency of knowledge and experience transfer
	Georgia	Sustainable use of natural resources , environmental protection, preservation of ecosystems , climate change mitigation and adaptation , effective utilization of renewable energy sources
	Russia	Ensuring the sustainable development , rational use of soil resources , fight against antimicrobial resistance , sustainable management of forest and fish resources
	Serbia	Promote nature-positive production methods and regenerative agriculture , Promote and further develop “ protected geographical origin ”, “ fine food ” and “ organic ” products, regional specialization, development of value-added products, expansion of public-private partnership
	Türkiye	Conducting research and modelling studies on the short, medium and long-term effects of climate change on food supply , efficient use of water resources, sustainable use of natural resources, continuing to disseminate organic agriculture and good agricultural practices by including bio-economy, biomass and circular economy approaches, prevent water loss and waste, calculating water foot print for agricultural products, identifying agricultural areas sensitive to erosion and applying erosion control methods
	Ukraine	Eco-friendly production, adaptation of agriculture to climate change , System of state policy, state support and financial and credit system takes into account the requirements of environmental and social management, sustainable natural resources management , increasing role of science and education
Action Track 3 Boost Nature Positive Production	Targets	
	Kazakhstan	Developing of the commercialization and transfer system, development and strengthening of phytosanitary and veterinary services , modernization of the material and technical base of higher educational institutions, scientific, experimental-production organizations involved in the agro-industrial complex
	Kyrgyzstan	Agricultural producer's integration support through institutional mechanisms creation, stimulation of integration, and cooperation processes using economic incentives and technical support
	Pakistan	Incentivizing regenerative and organic agriculture , promoting use of resource conservation technologies and green-manuring, promoting use of bio-chemicals in crop production & protection. Promulgating organic regulations and certification procedures & laboratories for branding organic products
	Tajikistan	Improving information and knowledge sharing to support sustainable production and consumption
	Uzbekistan	Improving the registration system of pesticides and the maximum permissible levels of pesticides (MRL) in accordance with the International Plant Protection Convention and other relevant international standards, providing information to exporters and manufacturers

The priorities highlighted under Action Track 4 are supporting small-scale farmers by strengthening bargaining power of them, increasing competitiveness abilities of young people engaging in agriculture

sector, implementing social protection and food assistance programs, particularly for women and youth and migrants and digital formal production loans.



Table 4. Targets for Action Track 4

Targets	
Action Track 4 Advance Equitable Livelihoods	Albania Fostering food processing small and medium businesses and supporting cooperation activities among small-scale farmers
	Armenia Developing agri-tourism and short value chains as mechanisms of rural development
	Azerbaijan Improving economic viability, fostering cooperation, aggregation, and value chain integration , developing measures to encourage rural entrepreneurship development, implement social protection and food assistance programs .
	Georgia Promotion of the engagement of women and young producers in agri-food sector
	Russia Competitiveness of young people in the labor market
	Serbia Small and medium scale producers to build resilience , access resources and strengthen their links to markets, developing customized grant scheme for women agribusiness entrepreneurs.
	Türkiye Implementing a young farmer programme, empowering women working in the agriculture sector, disseminate digital literacy and use of smart applications among smallholders and women, soup-kitchen for elderly, disabled, homeless and diseased people, improving access to finance for small farmers and cooperatives, small businesses, food banking
Action Track 4 Advance Equitable Livelihoods	Ukraine Increasing the share of small and micro agricultural producers in food systems ,
	Targets
	Kazakhstan Growth of incomes and level of life support systems of the rural population, development of rural infrastructure , formation of effective land-use systems and water use for the production of agricultural products
	Kyrgyzstan Increasing the availability of quality food for vulnerable groups of the population, and overall support for socially vulnerable groups
	Pakistan Increasing the bargaining power of the farmers while providing competitive marketing options. The initiatives include entrepreneurial skill development, digital formal production loans , financial services for micro, small and medium sized enterprises (MSMEs)
	Tajikistan Increase food security and nutritional needs of different population groups, especially those who are food insecure and vulnerable, eliminate gender and social inequality in food systems
	Uzbekistan Improving the mechanisms for providing food to socially vulnerable segments of the population

Action Track 5 is related with vulnerabilities, shocks and stress against climate change. Green transformation, adaptation and mitigation under climate change, increasing crop resilience, meteorological forecast

systems, early warning, establishing Agriculture Index Insurance Pool and setting up effective systems for the crisis management are among targets.

Table 5. Targets for Action Track 5

Action Track 5 Build Resilience to Vulnerabilities, Shocks and Stress	Targets	
	Albania	Climate change resilience farming system that can ensure green transformation of food system
	Armenia	Elaboration of effective systems for the crisis management , developing insurance market , strengthening food supply management systems
	Azerbaijan	Supporting risk mitigation and climate change adaption
	Georgia	Elaboration of effective systems for the crisis management
	Russia	Balanced counteraction to transboundary epizootics and plant diseases , development of animal husbandry, including the poultry sector
	Serbia	Climate change mitigation and adaptation
	Türkiye	Investing in e-commerce applications for virtual marketing, accelerating digital transformation in agriculture, increasing the crop resilience, meteorological forecast systems, early warning systems and registration in agriculture, improvement of supply management system on agricultural inputs and efficient use of renewable energy
	Ukraine	Improving the energy efficiency of food systems, resistance to market instability and food availability for all, helping global food security
Action Track 5 Build Resilience to Vulnerabilities, Shocks and Stress	Targets	
	Kazakhstan	Formation of effective land-use systems and water use for the production of agricultural products
	Kyrgyzstan	Improving the resilience of food systems , consolidating arable land, preserving and restoring the fertility of arable land, new approaches to managing lands of the State Fund of Agricultural Lands, and pasture management. Increasing irrigation water resource efficiency and reducing water losses are associated with investments in the irrigation system and improved water use in the state irrigation network and networks of Water Use Associations (WUAs), the development of water-saving technologies for irrigation, the improvement of the genetic potential of farm animals and seeds, and a change in the structure of cultivated crops
	Pakistan	Introducing agriculture parametric insurance products leading to the establishment of «Agriculture Index Insurance Pool»
	Tajikistan	Ensuring environment-friendly practices in the whole food system consistent with agreed climate change measures and strategies to preserve and promote biodiversity
	Uzbekistan	Improvement of services provided by the Crop Variety Testing Center, creation of the National Gene Bank for the storage of new plant species

During the discussion session participants commented on their country's food system current situation, key areas that are highlighted in their national pathways and possible cooperation areas among BSEC and

ECO region states. Summaries of the comments of participants on country base is enclosed as a table in the Annex 1.



One of the main areas underlined by representatives as well as national pathways of member states are digitalization of agriculture. It was indicated that small holders are one of the vulnerable groups in the food ecosystem. Digitalization would help small holders to increase their income generating and the value added of their products. Regarding different aspects of digitalization, one of the issues addressed by member states is that there are many strategy documents and researches conducted in the countries but they are not implemented in the field. So, transferring good practices and models among countries would be so useful and multiplying effects in transformation of food systems. Developing monitoring and evaluation systems also play an essential role in cooperation among countries. The key areas stated by FAO representative are to develop capacity and training to agro-territorial tools to improve competitiveness of value chains (value chain analysis; Geographic Indications, agro-based clusters, incubators, etc); to increase institutional capacities of associations and cooperatives; adopting climate smart agriculture and natural resources management; technologies and practices; strengthening food monitoring and evaluation of FSA indicators; efficient use of water resources; encouraging food safety and trade and digitalization (for short supply chains, for monitoring indicators, for food safety checks etc.). An important cross-cutting area in the National pathways, is the agricultural extension. Exchange of know-how and experiences among member states plays an essential role in transforming of food systems horizontally. Particularly, there are weak cooperation among farmers and institutions. The best way to handle is to strengthen the structure of agricultural cooperatives. By doing so, it will be more seamless for small farmers to gain access to financial instruments. Another alternative suggested is to establish one central platform that all financial mechanisms could be seen in the regions by small holders. With respect to nutritious food, it was discussed that almost all member states put concrete targets for increasing the quality of food in the next decade. So, developing of public health by ensuring sustainability of value chain in agri-food sector is important.

As the last part of the discussion session the participants were asked to give instant answers to the following questions about the country's food systems transformation and possible collaboration key intervention areas of food systems, together with

their perceptions after the discussions. The questions were in multiple choice format (more than one choice was possible). These questions and answer options are below:

Q1-Which action track in your national pathway is mostly covered?

- Action Track 1 (AT1): Ensure Access to Safe and Nutritious Food for All
- Action Track 2 (AT2): Shift to Sustainable Consumption Pattern
- Action Track 3 (AT3): Boost Nature Positive Production at Sufficient Scale
- Action Track 4 (AT4): Advance Equitable Livelihoods
- Action Track 5 (AT5): Build Resilience to Vulnerabilities, Shocks & Stresses

Q2-Which action track to have the greatest impact over the next three years under regional cooperation?

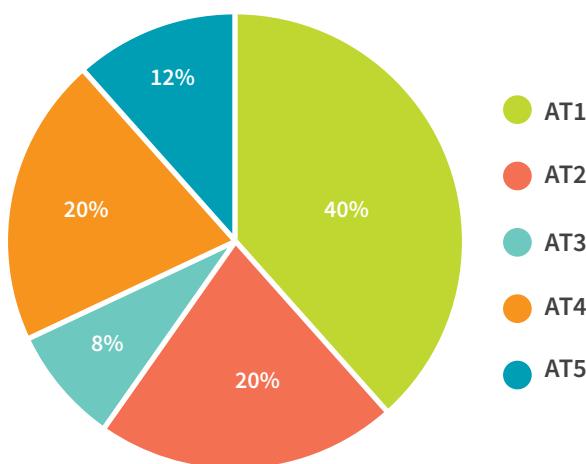
- Action Track 1 (AT1): Ensure Access to Safe and Nutritious Food for All
- Action Track 2 (AT2): Shift to Sustainable Consumption Pattern
- Action Track 3 (AT3): Boost Nature Positive Production at Sufficient Scale
- Action Track 4 (AT4): Advance Equitable Livelihoods
- Action Track 5 (AT5): Build Resilience to Vulnerabilities, Shocks & Stresses

Q3-What action areas are urgently needed for regional cooperation?

- Fair Access to Safe and Nutritious Food
- Climate Change
- Natural Resources Management
- Water Resources Management
- Improving Public Health, Food Safety
- Reducing Food Loss and Waste
- Balanced Diet and Healthy Nutrition and

Promoting Sustainable Consumption

- Empowerment of Women and Young in especially Rural Areas
- Increasing the Rural Vitality
- Digitalization and Innovation in Agri-Food Sector
- Increasing Resilience of Food Systems Against Natural Disasters, Pandemics, Climate Change etc.
- School Feeding
- Access to finance for small-holders
- Agricultural extension
- Development of Food Supply Chain
- Cluster development in Agri-food sector
- Other (please write to chat box)



Q4-For which disadvantaged group a regional cooperation is needed urgently for increasing access to safe and nutritious food?

- Women
- Babies under 5 year-old
- Children and Youth
- Immigrants
- Small holders
- Other

The poll was responded by limited participants (13) however participants were from 6 different countries; thus poll results were valued to show an important direction towards the perception of food systems transformation.

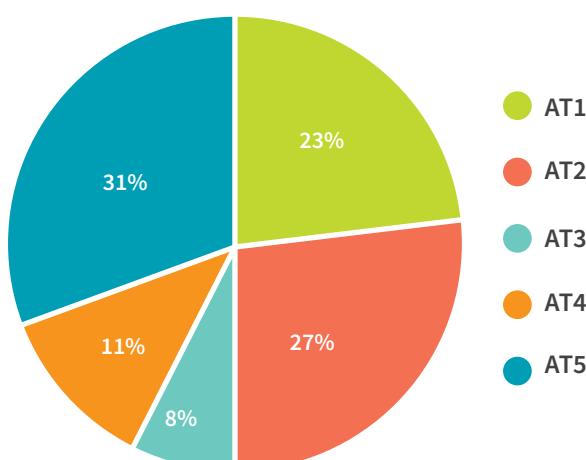


Figure 4. Distribution of Responses for Q-1 (Which action track in your national pathway is mostly covered?)

AT1 is the most covered action track among national pathways of the respondent countries. AT2 and AT4 are second most covered action tracks where as AT3 is the least one.

Figure 5. Distribution of Responses for Q-2 (Which action track to have the greatest impact over the next three years under regional cooperation?)

According to poll results AT5 was considered as having the greatest impact over next three years. This result may include the impacts of latest stresses (pandemic, natural disasters etc.) on the global scale.



Figure 6. Distribution of Responses for Q-3 (What action areas are urgently needed for regional cooperation?)

According to participants of the poll, “development of the food supply chain” and “climate change” are equally emphasized as the most urgent areas to start regional cooperation. “Increasing resilience of food

systems against natural disasters” and “digitalization and innovation in agri-food sector” are the following urgent subjects for collaborations.

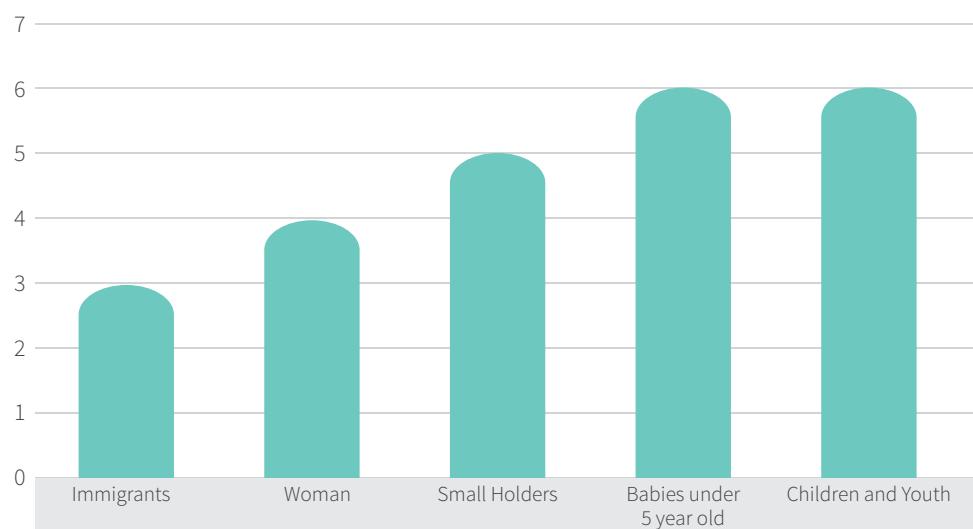


Figure 7 Distribution of Responses for Q-4 (For which disadvantaged group a regional cooperation is needed urgently for increasing access to safe and nutritious food?)



According to poll results babies and children and youth are seen the most urgent groups for increasing access to safe and nutritious food. Smallholders come after children and youth.

It is also seen from the poll results that member states indicated accessing to safe and nutritious for all but especially vulnerable groups as important in their national pathways. And for regional cooperation areas, the development of food supply chain, increasing resilience against critical conditions and climate change, digitalization and agricultural extension were considered as key areas to work together.

CONCLUSION

The “Regional Workshop for Black Sea Economic Cooperation Members (BSEC) and Economic Cooperation Organization (ECO) under UN Resident Coordinator Request to access Financial Resources to Support Member State-led Food Systems Summit Dialogues” was conducted among member states of the BSEC and the ECO in order to increase regional stakeholder engagement in the process of improvement of foods systems in line with UN sustainable Development Goals. The participants discussed the results of recently held UN Food Systems Summit, sustainable food systems, food security, as well as regional priorities and possible cooperation areas.

The workshop was very fruitful in the sense that intentions were shown by the participant states to collaborate on key areas to transform global food systems and many similar regional workshops could be conducted as a follow up activity.

In sum up, restructuring agri-food sector in the direction of applying high technologies, prioritizing the development of standards on the management of quality systems in animal husbandry, smart cultivation, improving the efficiency of agricultural production; geographic information systems, big data analysis for farming, food traceability system, promoting backup food safety will play an important role in the member states by 2030 and follow up activities for collaboration on those areas can be planned as post-summit activities.



ANNEX

Annex 1. Discussion Results

Country	Do you have started cooperation actions/projects under any actions track with different regions, countries? If so what is the aim and the structure of the cooperation project?	Which concrete actions in the National Pathways (for transformation into sustainable food systems) are most convenient for regional and/or international cooperation?	Which financial mechanisms are required to achieve the actions on regional cooperation?
Georgia	<ul style="list-style-type: none">• Solid projects should be suggested, challenges and gaps are already known• projects for co-financing the smallholders will be very important	<p><u>Challenges and key priority areas:</u></p> <ul style="list-style-type: none">• Rural economic activities,• ensuring competitive food value chain• Food security• Climate change• Sustainable use of natural resources• crisis management systems Questions?• Digitalization is important but are farmers ready for digitalization?	Rural and agricultural development strategies State budget is not enough Some donors are needed
Iran	A cooperation started with ECO members states for achieving food security goals in countries	Programs are started on the subjects: <ul style="list-style-type: none">• increasing food security in Iran in terms of sustainability, stability• accessibility and availability of food in Iran• there are some limitations in the programs	
Azerbaijan	BSEC sustainable food system project	<ul style="list-style-type: none">• There are lots of national programs and strategies for food safety• fight against climate change• sustainable use of natural resources• combating with environmental emergency• climate change, environmental production, emergency measures• cooperation needs to be increased in those areas	



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FAO		<ul style="list-style-type: none"> • Final chapter is to provide ideas for next steps for food system transformation • water is important • capacity building is necessary on agro territorial tools; geographical indication etc. in regional level • monitoring regional level indicators is another important point <p>Regional cooperation within BSEC and potential regional projects could be</p> <ol style="list-style-type: none"> 1) Developing capacity and training to agro-territorial tools to improve competitiveness of value chains (value chain analysis; Geographic Indications, agro-based clusters, incubators, etc) ; 2) associations and cooperatives; 3) climate smart agriculture and natural resources management; technologies and practices; 4) food monitoring and evaluation of FSA indicators; 5) efficient use of water resources; 6) food safety and trade; etc 7) digitalization (for short supply chains, for monitoring indicators, for food safety checks etc.) 	
Romania		<ul style="list-style-type: none"> • production is dominated by small farmer lands • more capacity building is needed to form cooperatives • access to finance is another challenge 	<ul style="list-style-type: none"> • one central platform can be established that all finance mechanisms could be seen in the regions



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Türkiye		<p>Türkiye's key priorities in the pathway;</p> <ul style="list-style-type: none"> • school food and school meal is important • fair access to nutritious s and safety food is another important area • development of public health • ensuring sustainability of value chain in agri-food sector • defining innovative methods for small holders and climate change supports • reducing food loss and waste is another priority area • efficient use of water resources and sustainable use of natural resources • land banking, land planning, fight against erosion • rural vitality • increasing resilience against climate change 	
FAO Türkiye	<p>Capacity building and training are the areas for UN agencies to start cooperation projects among countries.</p> <p>BSEC regional projects:</p> <p>Regional projects are possible but ideas need to come from national convenors. Then fund for the projects can be sought.</p>		Specific funds exist for countries.
Azerbaijan		<p>There is also need to enhance capacity building on food safety, healthy diet and nutrition from food systems perspectives</p>	
Türkiye		<ul style="list-style-type: none"> • digitalization is important especially in the light of Covid-19 • decreasing labor incomes, fluctuations in food prices, change in customer attributes, export and import are some results • small holders are the most vulnerable group • digitalization may be an important tool to combat with this solution • digitalization shall be started step by step 	



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ECO	3 of 10 ECO members are low income food deficit countries -Pakistan also became one due to drought and flood because of climate change	<ul style="list-style-type: none"> • climate change 	
Romania		<ul style="list-style-type: none"> • Different aspects of digitalization exist. • some farmers may be readier than others • Digitalization makes administration more efficient • Verification and monitoring will be much easier with digitalization • e-commerce was important for producers • access to smart phone is common, this provided direct communication with customers for small holders • B2C aspects is important • B2B platform is also possible with digitalization 	
Azerbaijan	Integrated electronic information system in 2019 a-ager web site was launched. Azerbaijan integrated agricultural system. -Ensure full access to agricultural services -Platform provided free access to seed	<ul style="list-style-type: none"> • Integrated digital systems 	
Georgia	Agricultural extensions services are under regional agency's control. Quite good agricultural extension exists in the country but improvement shall be made	<ul style="list-style-type: none"> • Agricultural extensions 	



NOTES



TOWARDS THE TRANSFORMATION OF FOOD SYSTEMS IN TÜRKİYE



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