



Food and Agriculture
Organization of the
United Nations



REPUBLIC OF TURKEY
MINISTRY OF AGRICULTURE
AND FORESTRY

SAVE YOUR FOOD

YOUR ACTIONS MATTER

TURKEY'S NATIONAL STRATEGY DOCUMENT ON
PREVENTION, REDUCTION AND MONITORING OF FOOD LOSS
AND WASTE AND ITS ACTION PLAN



**TURKEY'S NATIONAL STRATEGY DOCUMENT ON
PREVENTION, REDUCTION AND MONITORING OF FOOD
LOSS AND WASTE AND ITS ACTION PLAN**

Food and Agriculture Organization of the United Nations
Ankara, 2020

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1

Introduction

Hunger and malnutrition, along with food loss and waste, rank first among global problems. Food loss and waste represent a high economic loss for farmers, consumers and other stakeholders in the food value chain, which in turn implies economic losses for individual countries as well as significant environmental impacts.





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The global population is rising and is estimated to reach **9.8 billion in 2050**. In line with this trend, food production needs to **increase by 60 percent** above current levels to ensure sufficient supply to feed people.

The process of building up production capacity will increase pressure on natural resources. Mitigating this challenge will necessitate an increase in environmentally friendly production, on the one hand, and the development of efficient and effective production processes involving new practices and techniques, on the other. Reducing food loss and waste will thus be an important step in supporting future food security and nutrition.

At the global level, international organizations and countries, along with the private sector and the civil society, are working to identify and implement solutions in order to create a sustainable food system. In this context, the UN Decade of Action on Nutrition was established in 2016 under the normative framework of the Second International Conference on Nutrition (ICN2), with recommended actions for sustainable food systems and healthy

diets. In September 2015, the United Nations launched Agenda 2030 and the Sustainable Development Goals (SDGs), sub-target SDG 12.3 of which aims to prevent and reduce food loss along food supply chains and decrease food waste by up to 50 percent by 2030. In 2018, the Global Panel on Agriculture and Food Systems for Nutrition recommended that addressing the loss and waste of nutritious foods be made a priority for improving human nutrition globally. At the national and sub-national level, there are many examples from all continents of multi-actor actions focused on the prevention and reduction of food loss and waste, with the objective of ensuring a more sustainable and resilient food system.

VISION

For Turkey to contribute to the sustainability of the global consumption and production agri-food system through the prevention, reduction and management of food loss and waste.

A vertical collage of fresh vegetables. On the left side, there are green beans, a green zucchini with dark green stripes, and purple beets. On the right side, there is a carrot, a rutabaga, and more green beans. The background is white with a large number '2' and the text 'Actions Already Implemented' in the center.

2

*Actions Already
Implemented*



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In accordance with the international agenda, agriculture ministers of member countries during Turkey's G20 Presidency in 2015, emphasized that food systems should become more sustainable and productive in economic, social and environmental terms, and concomitantly agreed upon the need to reduce food loss and waste while pressures on natural resources, biodiversity and climate change increase.

As a result of Turkey's endeavours, **the "Technical Platform on the Measurement and Reduction of Food Loss and Waste" was established under the aegis of the Food and Agriculture Organization of the United Nations (FAO), headquartered in Rome.**

In 2017, the Ninth Meeting of the Standing Committee for Economic and Commercial Cooperation of the Organization of the Islamic Cooperation (COMCEC) Agriculture Working Group was held in Ankara on the theme of "Reducing Food Waste in the Organization of Islamic Cooperation (OIC) Member Countries". Representatives of Member States shared their experiences and the major causes of and measures needed to address food waste. In addition, efforts have continued to increase public awareness of the need to reduce food loss and waste, and to strengthen human resources and institutional capacity through

the "Reduction on Food Loss and Waste in the OIC Countries" project.

At the national level, a key initiative in Turkey regarding food loss and waste is the "Bread Waste Prevention Campaign", launched in 2013, with preliminary work dating back to 2008. The campaign aims to increase public awareness about food waste, prevent waste along the supply chain, and promote the consumption of whole wheat bread due to its quality, nutritional properties and role in preventing obesity. In order to observe the impact of the campaign's efforts on society and monitor waste trends, a measurement survey was conducted at the end of 2013, which found a 18 percent reduction in bread waste with an annual saving of approximately TRY 300 million. The consumption habits of Turkish people have also changed as a result of the campaign, with people purchasing bread in compliance with the recommendations, resulting in savings of TRY 2.5 billion. As a result of the one-year campaign, these annual savings contributed TRY 7.8 million per day and TRY 2.8 billion per year to the national economy, respectively. Due to its success, FAO recognized the "Bread Waste Prevention Campaign" as a good practice contributing to actions on preventing waste in the world.



2.1. BACKGROUND

The Eleventh Development Plan of Turkey, covering the years 2019-23, was prepared by the Turkish Republic Presidency Strategy and Budget Presidency. Article 411 of the plan states that “Efficient stock management in order to ensure food security, reduce losses in the supply chain, prevent waste and improve the rules and capacities to regulate markets will be ensured”. Moreover, Article 411.3 states that “Consumer awareness will be increased in order to prevent food loss and waste”.

In order to adopt a comprehensive strategy on food loss and waste, with a view to achieving the above-mentioned targets, a core-working group has been regularly convened since 2018 under the coordination of the Directorate General for European Union and Foreign Affairs of the Ministry of Agriculture and Forestry, with the participation of representatives from the FAO Subregional Office for Central Asia (FAOSEC) Office and other ministerial departments. Within this framework, focus group meetings have also been organized with the participation of relevant stakeholders, and the Strategy roadmap discussed and developed alongside current issues and proposed solutions.

An official letter was sent to the 81 Provincial Directorates of the Ministry with contributions from relevant local stakeholders (governorships, districts, municipalities, universities, NGOs,

etc.), with instructions to make assessments of the situation by examining food loss and waste at the local level. Reports were taken and analysed.

Recently, the Ministry has focused on reducing food loss and waste on a sustainable basis and has carried out several national and global studies. Aware that reducing food loss and waste is a global issue, Turkey has launched a national campaign under Ministry coordination, and in cooperation with FAO, entitled “Save Your Food”. A key regional initiative is the government-funded project, “Reduction of Food Loss and Waste in the SEC Countries”, developed under the FAO-Turkey Partnership Programme on Food and Agriculture (FTPP II). The ongoing project aims to assist Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan to develop measures to reduce food loss and waste.

With this campaign, the Ministry and FAO aim to combat food loss and waste both at the national and international level, raise awareness of the issue, and make Turkey a role model for efforts in this regard in the international arena. To this end, the Ministry and FAO have organized a series of events with the involvement and assistance of relevant stakeholders to contribute to the planning and implementation of activities to be realized within the scope of the campaign.

Two events have contributed to the planning and implementation of overall work for the National Strategy under the “Save Your Food” campaign. The first was a workshop organized and held in Ankara on 19 February 2019, where representatives of Provincial Directorates presented the results of investigations in their own provinces to representatives of ministerial departments and FAOSEC.

The second event, organized in Ankara on 4 April 2019, with the participation of representatives of civil society organizations, professional chambers, universities and public institutions, aimed to establish the final roadmap to be followed prior to the opening meeting of the campaign, and to provide input to the preparations for the National Strategy and Action Plan.

On 18-19 June 2019, in Ankara, Camelia BUCATARIU, a Food Waste Analysis and Reduction Consultant, was commissioned by FAO to guide the drafting process of “Turkey’s National Strategy Document on Prevention, Reduction and Monitoring of Food Loss and Waste and its Action Plan”. Following the initial drafting

process the documents were shared with central and provincial organizations and affiliated bodies of the Ministry of Agriculture and Forestry and relevant public institutions along with an official letter.

More than 50 reviews were received. Many institutions and organizations did not provide additional opinions stating that their expressed views were already included in the draft documents. After the review phase was finalized, the documents were sent to more than 100 stakeholders including NGOs, international organizations, academia and the private sector for revision. The consultation phase was then declared completed.

In light of the above, Turkey, in cooperation with all countries and relevant stakeholders, aims to intensify efforts at regional, national and international levels, to reduce and prevent food loss and waste. The most important objective of the National Strategy Document is to ensure that action is taken to prevent food loss and waste through the adoption of concrete solutions drawing on the advice of concerned stakeholders and local perspectives.

The success of the National Strategy depends on the cooperation of the public sector, industry, consumers, academia and non-governmental organizations. The strategy has adopted the approach shown in the shown in the figure (Dubbeling et al., 2016).

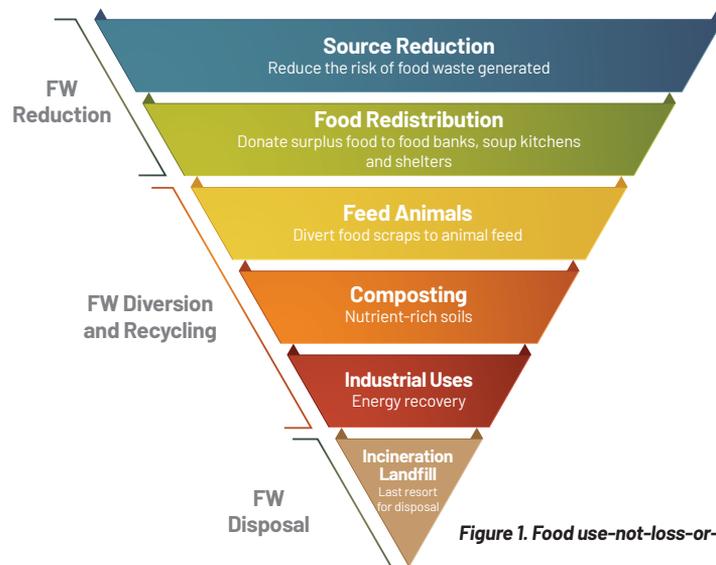


Figure 1. Food use-not-loss-or-waste hierarchy



3

Institutional Framework: Concept and Causality

3.1. The concept of food loss and waste (FLW)

According to Turkish Law No. 5996, food is “any substance or product, whether processed, partially processed or unprocessed, intended to be, or reasonably expected to be ingested by humans, excluding feed, live animals that are not introduced for direct human consumption, pre-harvest plants, medicinal products used for treatment purposes, cosmetics, tobacco and tobacco products, narcotic or psychotropic substances and including drinks, chewing gum and any other substance, including water, used in the production, preparation or treatment of food (5996 Law on Veterinary Services Plant Health Food and Feed).

Food loss equates to “the reduction in the amount of edible food available for human consumption at various stages of the supply chain”. In addition to quantitative losses, food products may also deteriorate in quality, resulting in loss of economic and nutritional value (FAO, 2019).



Food waste results from the decision to discard or throw safe food while it still has value (social, economic and nutritional), from retail, food services and at the household level (ibid.).

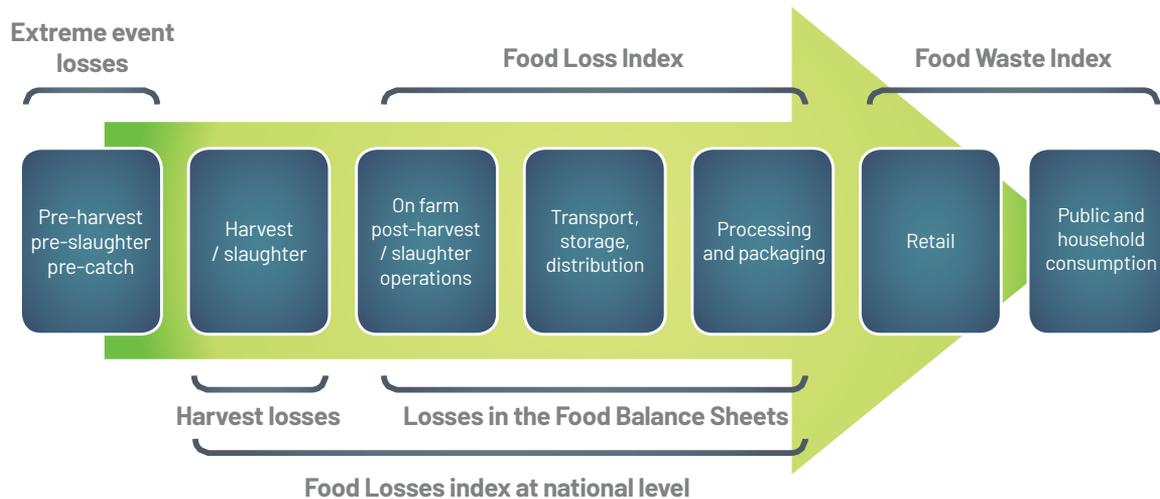


Figure 2.

Stages of the food supply chain according to the operational definition of the Global Food Loss Index (GFLI)

SDG 12.3 relating to the reduction of food loss and waste along the whole food supply chain falls within the overarching goal for sustainable production and consumption (SDG 12). A global system of monitoring progress towards SDG 12.3 has been established at the UN level. This system enables countries to monitor and report their data on FLW. Global Food Loss and Waste Indicators inform policies that can improve the efficiency of the food value chain, change the behaviour of the various actors to reduce waste, and encourage better use of food products and their co- and by-products.

Food Loss and Waste Indexes aim to measure structural losses and waste along value chains. Pre-harvest losses caused by extreme events and natural disasters should be covered by SDG 1.5¹, as to include them under SDG 12.3 would result in double counting.²

In 2019, the FAO Food Loss Index (i.e. the global food loss indicator for SDG 12.3) issued the first global food loss estimates, which showed that 13.8 percent of food produced in 2016 was lost between the farm and retail, food services and households (FAO, 2020). "The National Strategy on Prevention, Reduction and Management of Food Loss and Waste" will facilitate linkages between national efforts and monitoring and reporting for the Turkish National Food Loss Index.

Identification of the causes of food loss and waste is fundamental to the identification of solutions for reduction of this trend and priorities for action. Loss and waste along the food supply chain often results from interrelated causes, some of which can be traced back to the harvest or even pre-harvest stage. In 2014, the High-Level Panel of Experts on Food Security and Nutrition

(HLPE) proposed to disentangle the complexity and diversity of causes at three different levels (HLPE, 2014):

1. Micro-level:

These are causes of FLW at each particular stage of the food chain, from production to consumption, that result from the actions or non-actions of individual actors, in response (or not) to external factors.

2. Meso-level:

These include secondary causes or structural causes of FLW. A meso-level cause may be found at the same or another stage of the chain where FLW occurs, or may result from the way in which different actors are organized together, relationships along the food chain, or the state of infrastructure, etc. Meso-level causes can contribute to the existence of micro-level causes, or determine their extent.

3. Macro-level:

This higher level relates to food loss and waste resulting from more systemic issues, such as a malfunctioning food system, or lack of institutional or policy conditions to facilitate the necessary coordination of actors (including securing contractual relationships) to enable investments and the adoption of good practices. Macro causes favour the emergence of all other causes of FLW, including meso and micro causes, and represent a major cause of the global extent of FLW.

¹ SDG target 1.5: "by 2030 build the resilience of the poor and those in vulnerable situations, and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters".

² Sustainable Development target 12.3: "By 2030, to 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." As co-custodians for this target, FAO and UN Environment have proposed two separate indicators, taking leadership on methodological development for food loss and food waste measurement, respectively. In this light, FAO has developed a Global Food Loss Index (GFLI) to monitor food loss at a global level for a basket of key commodities in the food systems, including crops, livestock and fishery products. The index focuses on the supply stages of food chains and measures changes in percentage losses over time. The purpose of the index is to allow for policy-makers to look at positive and negative trends in food loss compared to a baseline year, in order to improve the food supply system efficiency against food losses. Source: FAO. 2018) Methodological proposal for monitoring SDG target 12.3: the global food loss index design, data collection methods and challenges.

3.2. Stage-specific causes of FLW along the food supply chain

“The National Strategy on Prevention, Reduction and Monitoring of Food Loss and Waste” adopts a comprehensive approach to identifying stage-specific causes, in order to facilitate the identification of adequate goals, targets and actions.

3.2.1. Pre-harvest factors and produce left unharvested

Although pre-harvest conditions and field activities are not included within the scope of “food loss and waste”, damages caused by adverse climatic conditions and various pre-harvest factors (weeds, insect pests, diseases, etc.) may indirectly affect losses in the later stages of the chain. Differences in production and agronomic practices can affect quality at harvest, suitability for transport, storage stability and shelf life – all variables that need to be considered when addressing FLW.

Moreover, some produce is left unharvested because of failure to meet certain quality standards (shape, size, weight) dictated by processors, retailers or target markets, contributing significantly to FLW. Harvest failure may also be due to meso-level, economic reasons such as low market price at the time of harvest and high labour costs. In some cases, producers opt to leave the crop in



the field, as the returns do not justify the cost of harvesting and transport.

Other causes of food loss in the field include inability to follow meteorological forecasts, failure to conduct soil analyses, lack of attention to appropriate pesticide application instructions and poor harvest planning.



3.2.2. Harvesting and initial handling

Poor harvest scheduling and timing, as well as rough, careless handling of produce and lack of adequate packaging, are key contributors to FLW along the food chain. Harvesting techniques can also contribute to food loss. Multiple handling steps increase damage, especially for highly perishable commodities such as fruits and vegetables.

Temperature and moisture management is key to the maintenance of safety and quality for all foodstuffs. For instance, failure to maintain a low temperature or appropriate humidity level for produce immediately after harvest is a major contributor to spoilage at subsequent stages of the value chain.

3.2.3. Storage

During post-harvest handling stages, food items can be stored from a few hours to several months depending on the product and storage conditions. Storage serves as a means to deal with time, allowing for delayed marketing and consumption of the produce. This is only possible if conditions are optimized, otherwise storage may result in significant loss of produce. For example, the use of low-quality containers can crush and jam products. It should be noted, however, that even with the best storage conditions, shelf life is dependent on initial quality and storage stability resulting from decisions made at earlier stages of the supply chain.



3.2.4. Transport and logistics

Transport can be a major cause of FLW. The time taken for transport of produce between production and consumption is of particular importance for fresh products, and can introduce additional risks of mechanical and heat injury as well as cross-contamination.

Causes of FLW related to transport and logistics include: improper vehicle loading and unloading methods, poor packaging, long shipping processes, poor road structures, inadequate cooling and humidity control systems in the transport process, uncontrolled movement of products within the vehicle, lack of cooling before loading, movement of products that are not suitable for transportation together and losses caused by the driver of the vehicle.

3.2.5. Processing and packaging

For many products, transformation can be a way to reduce FLW and increase shelf life, particularly for perishable products.

Food loss at the processing stage is due mainly to technical malfunctions and inefficiencies. Errors during processing often lead to defects in the end product, such as wrong size, weight, shape, appearance or damaged packaging. Although these defects have no bearing on the safety or quality of the product, processed food can be discarded for not adhering to set standards. Furthermore, lack of proper process management and standards to ensure food safety and quality can result in some processed products being unsafe and nutritionally poor.

Packaging can be an important factor in extending shelf life and preventing food loss and waste. While reduction of packaging may constitute an important element of waste policies, it could have the unintended consequence of increasing the amount of food waste.

Packaging and its optimization should be considered from the moment of harvest to end consumers, as all actors in the food value chain rely on this stage for preservation of food safety and quality.

3.2.6. Retail

According to Law No. 5996, retail is defined as “main distribution centres, catering services, business and corporate cafeterias, restaurants and other similar food providing services, shops, wholesale places, supermarket distribution centres, including the end consumer sales or distribution point processing or storing food”.

Retailers have a significant impact on the supply chain as they offer food directly to the end consumer. Storage and preservation conditions (temperature, relative humidity, lighting, gas composition, etc.), appropriate display that minimizes contact

with consumers, and loading or transport, also affect the quality of the product, shelf life and customers' decision to purchase the product.

The tendency to propose aesthetically pleasing homogenous products (in terms of colour, shape, size, freedom from blemishes) has led most retailers to set high standards for products. This represents a major cause of waste, as failure to adhere to these standards by producers results in rejection at different points in the food supply chain, including harvest, aggregation and selection, and delivery.

Other examples of food waste at retail level include:

- lack of planning for production in mass consumption places such as catering, cafeterias and restaurants, leading to food waste
- inadequate stock management, negative hygiene conditions, inadequate training level of staff, lack of alternative serving sizes, open buffets
- complimentary food without consulting the consumer
- damage to fresh produce from consumer handling
- inability to sell products close to the 'best before' date.



3.2.7. Consumption

Income growth and demographic changes over the past 20 years have brought a shift in eating habits with an explosion in the consumption of processed foods, together with a relative convergence of diets (consumption of meat, chicken, aquaculture and dairy per capita), and the emergence of obesity problems which have risen rapidly even in some cases among the poorest segment of the population. Consumer food waste may also increase with household wealth.

Among the causes of food waste at consumer level are:

- poor planning of purchases often leading to buying more than is needed and impulsive or advance purchasing of food that is not required immediately
- discarding food due to confusion over 'best before' and 'use by' dates
- poor storage or stock management in the home
- preparation of excess portions that are not eaten
- poor food preparation techniques that lead to less food being eaten or food quality loss and waste, and lack of knowledge on how to consume/use food more efficiently (e.g. use of leftovers for other recipes instead of discarding).

In Turkey, according to a study conducted by the Ministry of Trade (2018), 5.4 percent of consumers stated that they throw away leftovers, with approximately 23 percent of the food bought going to Waste (Republic of Turkey Ministry of Trade, 2018). According to the same study, about 31 percent of consumers go shopping with a pre-prepared list. Unplanned and over-purchasing leads to deterioration of food. According to another study, households throw away mostly fruit and vegetables (42 percent) followed by milk and dairy products (41 percent) (Nielsen, 2019).

Table 1. Causes of food loss and waste in agriculture and food products

Pre-harvest factors and produce left unharvested	Harvesting and initial handling	Storage	Transport and Logistics	Processing and packaging	Retail	Consumption
Biological and biotic factors (not included in the scope)	Poor harvest scheduling and timing	Lack of optimized storage conditions	Improper vehicle loading and unloading methods	Errors during processing leading to defects in the end product	Lack of protective packaging	Poor purchase planning
Differences in suitability for transport and shipping	Careless handling of produce		Poor packaging	Lack of proper process management and standards	Lack of temperature and humidity control	Poor purchase planning
Differences in storage stability	Inappropriate temperature management		Long shipping processes		Lack of proper display	Poor storage conditions
Differences in shelf life post-harvest	Inappropriate harvesting techniques		Poor road structures		Tendency to propose homogenous and perfect products	Excess portions prepared and uneaten
Failure to meet certain quality standards			Inadequate cooling and humidity control systems in the transport process		Inadequate stock management	Poor food preparation techniques
Low market price and high labour costs			Uncontrolled movement of products within the vehicle			
Lack of planning			Lack of cooling before loading			
			Movement of products that are not suitable for transportation together			
			Losses caused by the driver of the vehicle			

4 Goals and Targets



STRATEGIC GOAL 1. PREVENT AND REDUCE FOOD LOSS AND WASTE

TARGET 1.1 *Raise awareness*

SCOPE

Raise awareness of the causes of food loss and waste, and promote solutions and training on prevention and reduction.

CONTENT

Awareness-raising activities and campaigns will be organized for all food system actors, and synergies created across the food chain. Food literacy for all consumers is vital. The National Strategy will facilitate actions focused on educational materials and activities targeted directly at households, including children and youth. The “Save Your Food” logo will be inserted into related materials.

ACTIONS	Responsible institution	Partners
Raise awareness of the causes of food waste at household level and solutions for consumers		
Action 1.1.1 Raise awareness among consumers through training and workshops of suitable food storage conditions, the preservation and reuse of leftovers, and the importance of planned shopping	Ministry of Agriculture and Forestry, Ministry of Family, Labour and Social Services	Ministry of Youth and Sports, FAO, The Union of Chambers and Commodity Exchanges of Turkey (TOBB), The Confederation of Turkish Tradesmen and Craftsmen (TESK), NGOs, national media companies
Action 1.1.2 Disseminate food waste reduction tips for consumers at points of sale (private and public) through different tools (training, e-mail, social media, official Save Your Food Campaign website announcements, pop-ups etc.)	Ministry of Agriculture and Forestry	Ministry of Youth and Sports, NGOs
Action 1.1.3 Manage a national SAVE FOOD social media account and website with a section for households and consumers	Ministry of Agriculture and Forestry	Presidency
Action 1.1.4 Raise awareness of date marking (including the difference between ‘use by’ and ‘best before’ dates) and promote concrete advice on safe consumption	Ministry of Agriculture and Forestry	Presidency, Ministry of Youth and Sports, Ministry of National Education, consumer associations, The Turkish Radio and Television Corporation (TRT) and national media companies, NGOs, trade associations

<p>Action 1.1.5 Disseminate messages on healthy diets and nutrition among consumers to prevent obesity, while also addressing food waste (e.g. imperfect (ugly) fruits and vegetables that are safe and nutritious to consume)</p>	Ministry of Agriculture and Forestry, Ministry of Health	TRT and national media companies
<p>Action 1.1.6 Disseminate recipes and solutions to reduce food waste at household level, in collaboration with local authorities and NGOs</p>	Ministry of Agriculture and Forestry, Union of Municipalities of Turkey (TBB)	Ministry of Youth and Sports, NGOs, TRT and national media companies
<p>Action 1.1.7 Incorporate information about food waste into the basic military education curriculum, schools, prisons, public student dormitories, youth centres, youth camps and hospitals, via posters, seminars, videos, etc.</p>	Ministry of National Education, Ministry of Health, Ministry of Interior, Ministry of Defence, Ministry of Youth and Sports, Ministry of Justice	Ministry of Agriculture and Forestry, Ministry of Interior
<p>Action 1.1.8 Raise awareness among households of methods of preparation and cooking, preserving leftovers and extending the shelf life of food, as well as purchasing adequate amounts of fruit and vegetables, in collaboration with women's associations, and cultural and artistic activities, including Ramadan</p>	Ministry of Agriculture and Forestry, TBB	Ministry of Youth and Sports, Turkish Red Crescent, The International Federation of Red Cross and Red Crescent Societies (IFRC), NGOs, national media companies
<p>Action 1.1.9 Insert information on food loss and waste into films and TV programmes</p>	Ministry of Culture and Tourism	Ministry of Agriculture and Forestry, national media companies
<p>Raise awareness of the causes of and solutions to food waste at retail level (main distribution centres, caterers, business and corporate cafeterias, restaurants and other similar food services, shops, wholesale, supermarkets)</p>		
<p>Action 1.1.10 Produce and disseminate to all retailers – through their specific monitoring systems – technical guidance on action-oriented measures and good practice guides to prevent, reduce and collect food waste</p>	Ministry of Trade, NGOs	Ministry of Agriculture and Forestry, Ministry of Environment and Urbanization
<p>Raise awareness of the causes of and solutions to food loss along the food chain from primary production to wholesale</p>		
<p>Action 1.1.11 Include food loss – from primary production to wholesale – in strategic plans and other steering documents of public institutions and organizations</p>	Ministry of Agriculture and Forestry, Ministry of Trade	All public institutions, NGOs, private sector
<p>Action 1.1.12 Raise awareness of opportunities represented by food recovery and redistribution for direct human consumption among producers, transporters and wholesalers, in collaboration with civil society, through the production and dissemination of action-oriented technical briefs</p>	Ministry of Agriculture and Forestry	Ministry of Trade, TBB, NGOs, private sector
<p>Action 1.1.13 Inform donors that they can provide financial support associated with religious worship through food banks or other means of safe and nutritious food recovery and redistribution for direct human consumption</p>	Ministry of Agriculture and Forestry, Religious Affairs Administration	TBB, NGOs (particularly working on food banking and circular economy), Turkish Red Crescent

Dissemination of knowledge on food loss and waste prevention, reduction and management

<p>Action 1.1.14 Establish the National Platform on Food Loss and Waste (FLW) Prevention, Reduction and Management as the body responsible for discussing, revising, elaborating and monitoring strategies and actions on a regular basis to prevent food loss and waste. Include a working group that represents the public and private sectors, academia and CSOs. The platform will allow for an online-based network between stakeholders and interested groups for the prevention of food loss and waste, and support, where applicable, the initiatives of the other interested parties within the scope of the Food Your Save Campaign.</p>	<p>Ministry of Agriculture and Forestry</p>	<p>All public institutions, NGOs, private sector, universities</p>
<p>Action 1.1.15 Prepare and disseminate multi-actor briefs on methods to quantify and analyse the causes of food loss and food waste as well as approaches to identify and prioritize solutions, linked with the Action Plan of the National Strategy and SDG 12.3</p>	<p>Ministry of Agriculture and Forestry, Turkish Statistical Institute (TURKSTAT)</p>	<p>Universities, private sector, NGOs</p>
<p>Action 1.1.16 Prepare documents on good practices for reducing food loss and waste – including information on environmental impacts and hunger – for dissemination at national and international level to public entities, universities, professional chambers, cafeterias, schools, private sector enterprises, airports/airplanes, print and online media, public spaces, hotels, restaurants and bakeries.</p>	<p>Ministry of Agriculture and Forestry</p>	<p>All public institutions, NGOs, private sector, universities</p>
<p>Action 1.1.17 Announce a National Week on Prevention, Reduction and Management of FLW in the national calendar and link it to the implementation of the Action Plan of the National Strategy</p>	<p>Ministry of Agriculture and Forestry</p>	<p>Presidency</p>
<p>Action 1.1.18 Prepare a joint declaration/letter of intention to reduce food loss and waste and identify joint activities and bilateral and multilateral cooperation with international partners</p>	<p>Ministry of Agriculture and Forestry</p>	<p>Ministry of National Education, Ministry of Health, Ministry of Environment and Urbanization, Ministry of Foreign Affairs, Ministry of Youth and Sports</p>
<p>Action 1.1.19 Review the relevant Turkish legislation on food labels (i.e. more legible and visible information) in order to promote better understanding and implementation by industry (from primary producers to retail) of 'use by' and 'best before' dates</p>	<p>Ministry of Agriculture and Forestry, Ministry of Trade</p>	<p>Ministry of Environment and Urbanization</p>
<p>Action 1.1.20 Raise awareness of the use of food no longer intended for human consumption as animal feed, without compromising food and feed safety or competing with safe and nutritious food recovery and redistribution for direct human consumption</p>	<p>Ministry of Agriculture and Forestry</p>	<p>Ministry of Environment and Urbanization, NGOs</p>
<p>Action 1.1.21 Raise awareness of food waste segregation, processing by proper technologies and the conversion of organic waste to organic fertilizers, without competing with safe and nutritious food recovery and redistribution for direct human consumption</p>	<p>Ministry of Agriculture and Forestry</p>	<p>Ministry of Environment and Urbanization, TBB, private sector, universities</p>

TARGET 1.2 *Measure, monitor and evaluate food loss and waste*

SCOPE

All actors of the food supply chain, including households, must measure, monitor and evaluate food loss and waste.

CONTENT

Systemic efforts are required to measure food loss and waste, due to the involvement of many stakeholders, including small farmers, transporters, food processing establishments, retailers and households as well as waste management. Thanks to these data, companies will be able to identify at which stages food loss occurs and find appropriate solutions. As a result, business profitability will increase and food loss prevention and reduction will lead to higher productivity. Food waste can be prevented through partnerships with other stakeholders operating in the areas of recovery and redistribution of safe and nutritious food for direct human consumption.

ACTIONS	Responsible institution	Partners
Action 1.2.1 Estimate and measure food loss and waste with TURKSTAT to assess the impact of prevention and reduction actions	Ministry of Agriculture and Forestry	TURKSTAT
Action 1.2.2 Prepare a monitoring strategy for the National FLW Strategy and Action Plan, review developments periodically on implementation and report the results to the Presidency through the forthcoming National FLW Platform	Ministry of Agriculture and Forestry	National Platform on Combatting Food Loss and Waste
Action 1.2.3 Establish systems and practices to measure, monitor and evaluate FLW for all actors involved in the food chain	Ministry of Agriculture and Forestry	Universities, NGOs
Action 1.2.4 Ensure that chambers of commerce and industry review and evaluate waste statistics and plan necessary actions	Ministry of Agriculture and Forestry, Ministry of Commerce	TOBB
Action 1.2.5 Identify and conduct scientific studies and projects related to food loss along food supply chains, and waste reduction and collection and innovative assessment of waste from retail to household level, in line with bio-economic approaches	Ministry of Agriculture and Forestry	Ministry of Environment and Urbanization, Ministry of Commerce, TBB, universities, Ministry of Industry and Technology, The Scientific and Technological Research Council of Turkey (TUBITAK)
Action 1.2.6 Supervise implementation of the National FLW Strategy and Action Plan for consecutive 12-month periods. Revise and update the Action Plan in accordance with the monitoring and evaluation results	Ministry of Agriculture and Forestry	

TARGET 1.3 *Capacity building*

SCOPE

Build capacity among different actors in the food chain to prevent, reduce and manage food loss and waste, and change consumer behaviour.

CONTENT

Success in prevention and reduction of food loss and waste along the food supply chain depends on building the capacity of all food system actors, including end consumers and those involved in waste management. Target 1.3 focuses on evidence-based campaigns, training and workshops, and facilitation of cooperation at all levels (local, regional, national and international).

ACTIONS	Responsible institution	Partners
Action 1.3.1 Enhance cooperation between the Ministry of Agriculture and Forestry of Turkey and the Technical Platform for the Measurement and Reduction of Food Loss and Waste	Ministry of Agriculture and Forestry	FAO
Action 1.3.2 Train institutions and charities on food safety, food recovery and the redistribution of safe and nutritious food for direct human consumption	Ministry of Agriculture and Forestry	Ministry of Environment and Urbanization, Ministry of Youth and Sports, TBB, NGOs, universities
Action 1.3.3 Establish a consultancy system on food loss and waste for enterprises, farmers and retailers through the national extension services network	Ministry of Agriculture and Forestry	Ministry of Commerce, NGOs, universities
Action 1.3.4 Organize training programmes for farmers on pre-harvest loss (from seed to harvest)	Ministry of Agriculture and Forestry	TBB, NGOs, universities, private sector
Action 1.3.5 Strengthen human capacity for all actors in the food chain in terms of food storage, storage techniques, cooking and prolonging shelf life (including electronic and/or printed training materials, guidance documents, preparation of cookbooks, workshops)	Ministry of Agriculture and Forestry	Ministry of Family, Labour and Social Services, Ministry of Culture and Tourism, Ministry of Environment and Urbanization, TBB, NGOs
Action 1.3.6 Strengthen capacities for coordination and cooperation between Directorate Generals, Heads of Departments and other institutes of the Ministry of Agriculture and Forestry to reduce food loss and waste nationwide	Ministry of Agriculture and Forestry	
Action 1.3.7 Determine national focal points (at the local and central level) from the public and private sector, academia, NGOs and CSOs to ensure proper coordination and implementation of the strategy and action plan by different stakeholders	Ministry of Agriculture and Forestry	All public institutions, NGOs, private sector, universities

<p>Action 1.3.8 Promote and support measures and actions for the prevention of food loss and waste at the international level, introduce this issue at different international forums, and support the creation of new platforms to address this issue</p>	<p>Ministry of Agriculture and Forestry</p>	<p>EU, FAO, Organization of Islamic Cooperation, Turkish Red Crescent, The International Federation of Red Cross and Red Crescent Societies (IFRC), ECO and other international organizations</p>
<p>Action 1.3.9 Prepare and conclude agreements to reduce food loss and waste and identify joint activities and develop cooperation at the national level</p>	<p>Ministry of Agriculture and Forestry</p>	<p>All public institutions, TBB, NGOs</p>
<p>Action 1.3.10 Implement the "Reduction of Food Loss and Waste Project in Central Asian Countries (Azerbaijan, Kazakhstan, Tajikistan, Turkey, Turkmenistan and Uzbekistan)" in cooperation with FAO</p>	<p>Ministry of Agriculture and Forestry</p>	<p>FAO</p>
<p>Action 1.3.11 Implement the project "Establishing a BSEC Sustainable Food Systems Regional Cooperation Office (Albania, Azerbaijan, Bulgaria, Armenia, Georgia, Greece, Moldova, Romania, Russian Federation, Turkey and Ukraine)" in cooperation with FAO and the Black Sea Economic Cooperation Organization (BSEC)</p>	<p>Ministry of Agriculture and Forestry</p>	<p>Ministry of Foreign Affairs, FAO, BSEC</p>
<p>Action 1.3.12 Deepen cooperation on reduction of food loss and waste within the scope of the ECO Food Security Regional Coordination Centre 3rd Steering Committee Meeting, held in cooperation with FAO and the Economic Cooperation Organization (ECO)</p>	<p>Ministry of Agriculture and Forestry</p>	<p>Ministry of Foreign Affairs, FAO, ECO, ECO-RCC</p>
<p>Action 1.3.13 Implement the "Reduction of Food Loss and Waste Project in the OIC Member Countries" in cooperation with The Standing Committee for Economic and Commercial Cooperation of the Organization of the Islamic Cooperation (COMCEC)</p>	<p>Ministry of Agriculture and Forestry</p>	<p>Ministry of Foreign Affairs, COMCEC</p>
<p>Action 1.3.14 Prepare a regional strategy on reduction of food loss and waste in FAOSEC countries, in cooperation with FAO</p>	<p>Ministry of Agriculture and Forestry</p>	<p>FAO</p>
<p>Action 1.3.15 Enhance cooperation with the Turkish Cooperation and Coordination Agency (TİKA) and establish a programme to reduce food loss and waste, to the extent possible, in regions where TİKA is operational, in the context of the Save Your Food Campaign</p>	<p>Ministry of Agriculture and Forestry</p>	<p>TİKA, Ministry of Environment and Urbanization, Ministry of Foreign Affairs</p>
<p>Action 1.3.16 Take steps to include food loss and waste, and safe and nutritious food recovery and redistribution for direct human consumption, into priority areas for current funding provided by national institutions, and provide consultancy support to target groups from enterprises responsible for primary food production and food processing</p>	<p>Ministry of Agriculture and Forestry</p>	<p>Ministry of Environment and Urbanization, NGOs</p>
<p>Action 1.3.17 Augment the number and implementation capacities of staff carrying out operational controls</p>	<p>Ministry of Agriculture and Forestry</p>	<p>TBB</p>
<p>Action 1.3.18 Play a leading role in the preparation of policy documents to deepen cooperation on reducing food loss and waste within the G20 platform, and promote the sharing of best practice examples at G20 Agriculture Representatives Meetings</p>	<p>Ministry of Agriculture and Forestry, Ministry of Treasury and Finance</p>	<p>Ministry of Foreign Affairs, FAO, G20 Members</p>

TARGET 1.4 *Increase efficiency of the food supply chain*

SCOPE

Increase efficiency along the entire food supply chain to avoid discarding safe and nutritious products. Inefficient functioning of the food supply chain can lead to the discarding of safe and nutritious food, such as fresh fruits and vegetables, due to their shape and colour.

CONTENT

Foods that are safe and nutritious but considered unsuitable due to their shape, colour and size are mostly wasted. These products need to be integrated into the market for human consumption through available channels, including digital technology, at each stage of the supply chain.

ACTIONS	Responsible institution	Partners
<p>Action 1.4.1 Develop and disseminate good hygiene practices for food establishments, especially those used for mass consumption and retail</p>	Ministry of Agriculture and Forestry	Turkish Standards Institution (TSE), TBB, NGOs
<p>Action 1.4.2 Regulate effective supervision and minimum standards for cold-chain vehicles used in food transportation</p>	Ministry of Transport and Infrastructure	TSE, Ministry of Agriculture and Forestry, TBB
<p>Action 1.4.3 Support R&D studies in the following areas:</p> <ul style="list-style-type: none"> a) the development of varieties resistant to harmful organisms b) the field of combating animal diseases and preventive medicine c) extending the shelf-life of products without compromising human nutrition and food safety d) the use of innovative methods to exploit whey otherwise lost through processing for human and animal consumption e) the identification of measures to prevent livestock weight loss, loss of edible vegetables and fruits, and quality degradation due to waiting periods at customs f) Remote monitoring tools such as built-in cameras in refrigeration systems, and software activities supported by image analysis g) automatic detection of foods that have passed their shelf life and the creation of recipes for their use for transmission to end users via a dedicated application h) the development or use of digital technologies to increase productivity in the food chain i) increasing traceability in the food supply chain through the use of Blockchain and Internet of Things (IoT) systems 	Ministry of Agriculture and Forestry	Universities, Ministry of Industry and Technology, TUBITAK
<p>Action 1.4.4 Extend the use of local seeds to prevent genetic and hybrid seed loss</p>	Ministry of Agriculture and Forestry	NGOs
<p>Action 1.4.5 Review relevant Turkish legislation on food products in customs, in order to prevent loss of food products under state control and associated legal processes</p>	Ministry of Agriculture and Forestry	Ministry of Commerce

<p>Action 1.4.6. Promote and increase the number of licensed warehouses for agricultural products, especially for fresh fruits and vegetables, potatoes and onions throughout Turkey</p>	Ministry of Commerce	Ministry of Agriculture and Forestry, NGOs
<p>Action 1.4.7. Re-evaluate the support mechanisms for the primary food production and food processing industry provided by the Ministry of Agriculture and Forestry with a view to combatting food loss and waste</p>	Ministry of Agriculture and Forestry	Ministry of Commerce, NGOs
<p>Action 1.4.8 Extend the shelf life of recovered safe and nutritious food, and increase their added value for redistribution for direct human consumption through processing (e.g. soups, sauces, jams or pickles).</p>	Ministry of Agriculture and Forestry	Ministry of Environment and Urbanization, Ministry of Commerce, NGOs
<p>Action 1.4.9 Integrate imperfect (ugly) produce into supermarkets through different marketing and pricing policies and accompany these actions with an information poster on the safety and quality of food beyond aesthetics</p>	Ministry of Commerce	Ministry of Agriculture and Forestry, Ministry of Environment and Urbanization
<p>Action 1.4.10. Integrate imperfect (ugly) produce into restaurants and catering companies and accompany these actions with an information poster on the safety and quality of food beyond aesthetics</p>	Related trade associations	Ministry of Agriculture and Forestry, Ministry of Environment and Urbanization

TARGET 1.5 *Optimizing packaging and its use for all actors, including consumers*

SCOPE

Optimize the size, design and materials of packaging in order to enable actors across the food chain to market and consume the entire edible part of any product.

CONTENT

Food loss and waste can occur due to a lack of optimized packaging. Most household waste is caused by spoilage of fresh produce.

ACTIONS	Responsible institution	Partners
<p>Action 1.5.1 Improve handling and packaging systems and support the use of indicator and pilots with smart packaging applications</p>	Ministry of Commerce Ministry of Agriculture and Forestry	Ministry of Industry and Technology
<p>Action 1.5.2 Enable consumers to consume the entirety of products and ensure the products last longer, without compromising nutritional value by optimizing the size and design of food packaging and prioritizing the usage of recyclable materials</p>	Ministry of Agriculture and Forestry	Ministry of Industry and Technology, TUBITAK

TARGET 1.6 *Enable cold chain management*

SCOPE

Prevent product loss by applying cold chain practices along food supply chains.

CONTENT

The delivery of food products at non-appropriate temperatures increases food loss and waste. Cold chain management ensures that consumers receive products at the correct temperature. Cold chain practices can be developed through joint studies with the private sector and NGOs, and good practices can be shared with firms. Such studies carried out under the responsibility of companies can prevent avoidable food loss.

ACTIONS	Responsible institution	Partners
Action 1.6.1 Regulate effective supervision and minimum standards for cold-chain vehicles used in food transportation	Ministry of Agriculture and Forestry, Regional Development Authorities	Ministry of Treasury and Finance, TSE, Ministry of Industry and Technology
Action 1.6.2 Enable collaboration through the National Platform on FLW with NGOs and regional and local authorities to prepare and disseminate posters with information on cold storage management at household level, with action-oriented measures to prevent food waste distributed at national level through all identified channels such as schools, hospitals and civil society networks	Ministry of Agriculture and Forestry	Ministry of Environment and Urbanization, Ministry of Youth and Sports, NGOs, TBB
Action 1.6.3 Ensure the improvement of vehicles and equipment carrying perishable food in national and international transportation, and establish roadside inspections	Ministry of Transport and Infrastructure	Ministry of Industry and Technology, Ministry of Interior, Ministry of Health, Ministry of Commerce, TSE, NGOs, private sector

TARGET 1.7 *Prevent and reduce waste in food services*

SCOPE

Reduce food waste in food services such as restaurants, caterers and cafeterias.

CONTENT

Food services can create waste through technical and managerial gaps in stock management, methods and quantities used for cooking, and the use of flawed marketing strategies such as inefficient open buffets, the use of food as decoration and offering portion sizes that do not cater to the real needs of consumers. Solutions to minimize waste in food services from preparation to table are available, and the National Strategy will enable their dissemination and implementation.

ACTIONS	Responsible institution	Partners
Action 1.7.1 Make available the SAVE FOOD National Campaign Logo to all private and public sector actors interested in implementing related activities. Efforts by enterprises to display the certificate and logo will demonstrate their willingness to combat food loss and waste, and support for the Save Your Food campaign will increase the visibility of these actions through the National FLW Platform.	Ministry of Agriculture and Forestry	Ministry of Culture and Tourism, TBB
Action 1.7.2 Support innovative applications, including drying facilities, to extend the shelf life of products (cereals, fruits and vegetables)	Ministry of Agriculture and Forestry	Ministry of Industry and Technology, TUBITAK, universities
Action 1.7.3 Introduce a reward system for businesses that reduces food loss and waste	Ministry of Agriculture and Forestry	Ministry of Culture and Tourism, TBB
Action 1.7.4 Reduce plate sizes in open buffets	Food Services Sector	Ministry of Culture and Tourism, NGOs

TARGET 1.8 *Prevent and reduce food waste at retail level*

SCOPE

Reduce food waste at retail level by improving inventory management and tracking the shelf life of products.

CONTENT

Retailers can improve their inventory management systems and record the shelf life of food they cannot sell, the amount they donate to food banks or other methods of food recovery and redistribution, the amount of food wasted and the associated reasons. Store managers can make improvements on prevention, reduction and management of food waste by setting reduction targets, sharing food waste data and good practices for prevention and reduction, and by being transparent about cost-benefit data.

ACTIONS	Responsible institution	Partners
Action 1.8.1 Disseminate the 'Suspended Bread Project'	Ministry of Agriculture and Forestry	Bakery Association, national media, TBB

Action 1.8.2 Prepare checklists to combat food waste for entrepreneurs in retail and collective consumption services such as food courts, hotels, restaurants, etc.	Ministry of Agriculture and Forestry	TOBB, TESK, Ministry of Culture and Tourism Ministry of Culture and Tourism, TBB
Action 1.8.3 Give training on checklists to officers (food inspectors and other relevant staff) from the Ministry of Agriculture and Forestry. Inform the relevant parties (collective consumption services such as food courts, hotels, restaurants, etc.) about the checklists and implementation through official channels and other instruments	Ministry of Agriculture and Forestry, universities	TOBB, Ministry of Culture and Tourism, TBB
Action 1.8.4 Encourage the usage of client information on portion sizes and pricing and the use of doggy bags in restaurants and open buffets to avoid wastage	TOBB, TESK	Ministry of Agriculture and Forestry, Ministry of Health TBB, Ministry of Culture and Tourism Federation of Restaurants and Bakery

TARGET 1.9 *Prevent and reduce food waste at household level*

SCOPE

Prevent and reduce food waste at household level by improving food literacy for all age groups.

CONTENT

FAO (2011) estimated that consumer food waste accounts for 22 percent of all food, while distribution-related waste was estimated at 12 percent.³ In order for consumers to play an active role in the prevention and reduction of food waste, their food literacy should be functional, interactive and critical. Food literacy is multifaceted and some of its variables and parameters refer to direct consumer agency (e.g. purchasing, preparation, leftover management), while others are built on decisions and competencies by/of other actors along the food supply chain (e.g. availability, labelling or packaging). Once safe and nutritious food is available and accessible to consumers, food waste prevention and reduction relies directly on the level of consumers' food literacy, and their access to adequate home appliances, energy and clean water.

ACTIONS	Responsible institution	Partners
Action 1.9.1 Include subjects in the curriculum and lifelong learning programmes to promote prevention of food loss and waste, collection of food waste and recycling, and improvement in students' awareness of social responsibility	Ministry of National Education	Ministry of Agriculture and Forestry, Ministry of Environment and Urbanization, National Agency

³ The Food Waste Index (the food waste Indicator for SDG 12.3) is under development in 2019.

<p>Action 1.9.2 Through the National FLW Platform, work with the food safety and quality agency and civil society to develop concrete action-oriented tools for food acquisition, preparation and preservation at household level, with a view to preventing, reducing, collecting and recycling food waste, for distribution through CSO community-level activities and all public food services (i.e. schools, cafeterias, canteens, hospitals)</p>	<p>National Platform for Combating Food Loss and Waste</p>	<p>Ministry of Agriculture and Forestry, Ministry of Environment and Urbanization, Ministry of Culture and Tourism, Ministry of National Education, Ministry of Health, NGOs, private sector</p>
<p>Action 1.9.3 Through the National FLW Platform, work with the food safety and quality agency and civil society to develop concrete action-oriented tools to be disseminated to all food supply chain actors selling directly to consumers for display at points of sale</p>	<p>National Platform for Combating Food Loss and Waste</p>	<p>Ministry of Agriculture and Forestry, Ministry of Commerce, Ministry of Environment and Urbanization, NGOs, private sector</p>

STRATEGIC GOAL 2.

FOOD RECOVERY AND REDISTRIBUTION FOR DIRECT HUMAN CONSUMPTION

TARGET 2.1 *Improve, enhance and monitor safe and nutritious food recovery and redistribution systems for direct human consumption*

SCOPE

Improve the food recovery and redistribution system.

CONTENT

Food banking in Turkey was regulated for the first time under Law 5179 (the Food Production, Consumption and Supervision Law). However, Law 5996 (the Veterinary Services, Plant Health, Food and Feed Law), which amended Law 5179, does not make reference to food banking activities. Regardless, registered and active food banks exist and official controls regarding food safety are handled by the MAF. Reviewing current legislation and making necessary improvements with the relevant stakeholders is necessary to ensure a better functioning food banking system and to facilitate other models of recovery and redistribution of safe and nutritious food for direct human consumption. Furthermore, food donation brings various challenges such as conflict of interest and unfair gain. In order to minimize the risk of abuse, food banks, as well as any other recovery and redistribution activities that accept food donations and distribute donated foods to those in need, should be monitored, controlled and recorded by the relevant public institutions. Thus, food donors should work with food banks, and other methods of recovery and redistribution that are sure to carry out their activities in an appropriate manner and ensure the sustainability of the system. Consumer protection must be ensured at all times.

ACTIONS	Responsible institution	Partners
<p>Action 2.1.1 Review current regulations on the food banking system in Turkey in the light of the participation principle and prepare guidance on the creation of a software platform, target group conformity criteria, implementation models and criteria, and food safety criteria audit mechanisms</p>	<p>Relevant public institutions and organizations</p>	<p>Ministry of Agriculture and Forestry, Ministry of Interior, Turkish Parliament (TBMM), TBB, relevant stakeholders</p>

<p>Action 2.1.2 Review current regulations to ensure the most sustainable model for the food banking system and define the necessary legal and institutional infrastructure, auditing and budget systems; draft and publish the amending regulation on the national food banking system</p>	Relevant public institutions and organizations	Presidency, TBMM, Ministry of Agriculture and Forestry, Ministry of Environment and Urbanization, related NGOs
<p>Action 2.1.3 Organize workshops with stakeholders to improve the food banking system in Turkey and define the most sustainable model</p>	Relevant public institutions and organizations	Presidency, TBMM, Ministry of Agriculture and Forestry, Ministry of Environment and Urbanization, related NGOs
<p>Action 2.1.4 Finalize the evaluation and reporting process to ensure the most suitable model of food banking and present the results to the Presidency</p>	Relevant public institutions and organizations	Presidency, TBMM Ministry of Agriculture and Forestry, related NGOs
<p>Action 2.1.5 Develop a national organizational strategy for the food banking system, with an accreditation scheme for food banking activities and defined operational principles</p>	Ministry of Interior	TBMM, related NGOs
<p>Action 2.1.6 Prepare a national software to install and coordinate the national food bank network that involves tracking, monitoring and evaluating donations, food banks and beneficiaries without violating the confidentiality of personal information</p>	Ministry of Interior	TBMM
<p>Action 2.1.7 Establish cooperation between governorships, district governors and CSOs regarding food banking activities and provide logistical and human resources support</p>	Relevant public institutions and organizations.	TBMM
<p>Action 2.1.8 Establish an organization for regular transfers of surplus food in wholesale markets to the food banking system</p>	Ministry of Trade	Ministry of Family, Labour and Social Services, Ministry of Agriculture and Forestry, Ministry of Transport and Infrastructure
<p>Action 2.1.9 Re-classifying safe-to-consume food products that are stuck in customs and left to deteriorate and redirected to the food banking system</p>	Ministry of Interior, Ministry of Commerce	TOBB, TESK, Ministry of Transport and Infrastructure, Turkish Red Crescent
<p>Action 2.1.10 Organize an award ceremony for food donors</p>	Ministry of Commerce	Ministry of Family, Labour and Social Services, Ministry of Agriculture and Forestry
<p>Action 2.1.11 Design and implement a special logo for businesses that donate food</p>	Presidency, Ministry of Interior, Ministry of Family, Labour and Social Services	Ministry of Treasury and Finance, Ministry of Family, Labour and Social Services
<p>Action 2.1.12 Invest in improving low-cost technical infrastructures with the support of private sector and CSO contributions</p>	Ministry of Interior	Presidency, Ministry of Agriculture and Forestry
<p>Action 2.1.13 Improve the technical infrastructure of food banks and ensure the long-term preservation of easily perishable foods</p>	Ministry of Family, Labour and Social Services	NGOs, private sector

<p>Action 2.1.14 Establish a national trust fund system for food banks that allows transfers of in-kind and cash donations via SMS, websites and other instruments for fundraising to the Regular Funding System, to combat food loss and waste</p>	<p>TBB</p>	<p>Ministry of Agriculture and Forestry, Ministry of Interior, Turkish Red Crescent</p>
<p>Action 2.1.15 Provide soup kitchen services in municipalities for poor people within the scope of food banking services</p>	<p>Turkish Red Crescent, TBB</p>	<p>Ministry of Agriculture and Forestry, Ministry of Interior</p>

STRATEGIC GOAL 3. CONVERTING FORMER FOODSTUFFS TO ANIMAL FEED, WITHOUT COMPETING WITH RECOVERY AND REDISTRIBUTION FOR DIRECT HUMAN CONSUMPTION

TARGET 3.1 *Converting former foodstuffs into animal feed, without competing with safe and nutritious food recovery and redistribution for direct human consumption*

SCOPE

Optimize the conversion of former foodstuffs to animal feed, without competing with safe and nutritious food recovery and redistribution for direct human consumption.

CONTENT

It is important to valorise the nutrients of foodstuffs which, for commercial reasons or due to manufacturing problems or certain defects, are no longer intended for human consumption, although they remain safe for use in animal nutrition, and do not compromise animal, plant, environmental or public health. In this context, it is important to carry out scientific studies, examine conditions and consult food supply chain actors to validate results and disseminate good practices.

ACTIONS	Responsible institution	Partners
<p>Action 3.1.1 Provide action-oriented technical and legal guidance on how former foodstuffs from national food supply chains, including those at customs, can be utilized as animal feed in line with feed regulations</p>	<p>Ministry of Agriculture and Forestry</p>	<p>Ministry of Commerce, TBB, NGOs</p>

STRATEGIC GOAL 4. RECYCLE FOOD LOSS AND WASTE

TARGET 4.1 *Collect organic waste for composting facilities, without competing with safe and nutritious food recovery and redistribution for direct human consumption*

SCOPE

Collect organic wastes and transform them into a component that is rich in humus through the use of appropriate technologies without competing with safe and nutritious food recovery and redistribution for direct human consumption.

CONTENT

The capacity for separate segregation of organic waste from foodstuffs needs to be facilitated. These wastes can be collected and converted to organic fertilizers. In this context, consumers and all food-related enterprises should be informed and trained about the organic waste categories that can be processed. Manufacturers and businesses operating in agriculture should also be encouraged to prepare their own products which are rich in humus. Efforts will be made to convert organic wastes into soil conditioning agents. In addition, R&D studies will be carried out for the use of organic wastes as soil conditioners by means of methods such as enriching degraded lands in terms of organic matter and increasing soil yield and water-holding capacity. Monitoring mechanisms should be in place to ensure that these actions do not compete with safe and nutritious food recovery and redistribution for direct human consumption.

ACTIONS	Responsible institution	Partners
Action 4.1.1 Establish an inventory of food waste from sites where zero waste certificates are awarded, within the scope of Zero Waste Regulation, by means of a zero-waste information system	Ministry of Environment and Urbanization	Ministry of Agriculture and Forestry, TBB
Action 4.1.2 Provide action-oriented technical and legal guidance on defining, transporting and managing measures related to the assessment of food waste in accordance with the objectives of the Zero Waste Project	Ministry of Environment and Urbanization, local authorities	Ministry of Agriculture and Forestry, TBB, NGOs

Action 4.1.3 Collect organic waste for conversion into organic fertilizers in designated centres	TBB, waste producers	Ministry of Agriculture and Forestry, Ministry of Environment and Urbanization, TBB, NGOs
Action 4.1.4 Encourage manufacturers and business operating in agriculture to prepare their own humus-rich products and prepare and disseminate good practice guides	Ministry of Agriculture and Forestry	Ministry of Environment and Urbanization, TBB, universities, NGOs
Action 4.1.5 Determine the methodology and standards for the use of the products obtained from composting plants as soil conditioners in degraded land	Ministry of Agriculture and Forestry	Ministry of Environment and Urbanization, universities, TBB
Action 4.1.6 Support R&D studies on collecting organic waste for transformation by appropriate technologies into components rich in humus	Ministry of Agriculture and Forestry	Ministry of Environment and Urbanization, universities, TBB

TARGET 4.2 *Energy recovery from organic food waste, without competing with safe and nutritious food recovery and redistribution for direct human consumption*

SCOPE

Recover the energy from food waste.

CONTENT

Food waste represents a significant fraction of municipal solid waste. Proper management and recycling of huge volumes of food waste are required to reduce its environmental burden and to minimize risks to human health. Prevention and reduction measures of all food waste streams ensures that Target 4.2 is reached. Collaboration with waste management efforts at national level will be ensured.

ACTIONS	Responsible institution	Partners
Action 4.2.1. Through the National FLW Platform, identify and disseminate local solutions on recovering energy from food waste, without competing with safe and nutritious food recovery and redistribution for direct human consumption	Ministry of Energy	Ministry of Agriculture and Forestry Ministry of Environment and Urbanization, TBB



5 Conclusion

The negative impact of food loss and waste in the world is evident. In a world where natural resources are limited and the population is expected to increase, taking national and global measures to reduce food loss and waste represents a responsibility towards future generations.

Prevention of food loss will be one of the most important agenda items in the coming years due to the increasing impact of climate change. Therefore, the development of applicable, effective and holistic strategies for institutions and organizations, as well as businesses and consumers, from local to national level, will be critical.

Innovative and coherent policies are vital to ensure the sustainability of the food system. In order to reach the targets of SDG 12.3, it is essential to reduce national food loss and halve food waste. In order to achieve this goal, all stakeholders must cooperate in a planned manner.

It is necessary to increase awareness of this issue among every segment of society, and provide evidence-based information and capacity development tools for all food systems actors to enable prevention and reduction of food loss and waste.

We would like to express our gratitude to all stakeholders who will carry forward this collaboration and the proposed solutions and multi-actor proposals in this document to prevent and reduce food loss and waste.



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REFERENCES

Dubbeling, M., Bucatariu, C., Santini, G., Vogt, C. and Eisenbeiß, K. 2016. City region food systems and food waste management. *Linking urban and rural areas for sustainable and resilient development*. Eschborn: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

HLPE, 2014. *Food losses and waste in the context of sustainable food systems*. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome 2014.

FAO. 2019. *The State of Food and Agriculture 2019. Moving forward on food loss and waste reduction*. Rome. www.fao.org/3/ca6030en/ca6030en.pdf

FAO, 2020. *Food loss and waste*. Retrieved from <http://www.fao.org/food-loss-and-food-waste/flw-data>

Nielsen, 2019. *Gıda Kaybı Ve Etiket Okuma Algı Araştırma Raporu*. İstanbul: Nielsen.

Republic of Turkey Ministry of Trade, 2018. *Türkiye İsrâf Raporu*. Ankara.

5996 *Law on Veterinary Services Plant Health Food and Feed*. (n.d.). Retrieved September 20, 2020, from <http://www.lawsturkey.com/law/5996-law-on-veterinary-services-plant-health-food-and-feed>

