



Food and Agriculture  
Organization of the  
United Nations

# Guidelines for action on food loss and waste reduction in the Near East and North Africa



# **Guidelines for action on food loss and waste reduction in the Near East and North Africa**

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# Abbreviations and acronyms

|             |   |
|-------------|---|
| <b>CoC</b>  | Voluntary code of conduct for food loss and waste reduction |
| <b>CSO</b>  | civil society organization                                  |
| <b>FLW</b>  | food loss and waste   |
| <b>FLI</b>  | Food Loss Index   |
| <b>FWI</b>  | Food Waste Index  |
| <b>GHG</b>  | greenhouse gas emissions                                    |
| <b>NAP</b>  | National Adaptation Plan                                    |
| <b>NDC</b>  | nationally determined contribution                          |
| <b>NENA</b> | Near East and North Africa                                  |
| <b>UNEP</b> | United Nations Environment Programme                        |
| <b>SDG</b>  | Sustainable Development Goal                                |
| <b>SME</b>  | small and medium enterprises                                |

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**Introduction**

# Background

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The Voluntary Code of Conduct for Food Loss and Waste Reduction (CoC) was developed by the Food and Agriculture Organization of the United Nations at the request of its Members, in response to their recognition of the magnitude of food loss and waste (FLW) and its negative impact on the sustainability of agrifood systems and sustainable development goals (SDGs).<sup>1</sup> The CoC is an international instrument that presents a generic set of actions and guiding principles, aligned with SDGs, to effectively reduce FLW while promoting more efficient, inclusive, resilient, and sustainable agrifood systems.

The CoC is an overarching document designed to guide FLW policymaking and interventions at global level. However, in order to make it relevant and applicable to the context in a particular country or region, such as the Near East and North Africa (NENA), its constituent actions and principles require adaptation. In doing so, consideration is given to the priorities, challenges, and needs of all the relevant regional agrifood systems actors.

These guidelines for action on FLW reduction in NENA provide support to Member Countries to implement the CoC in line with their national agrifood system objectives.<sup>2</sup> It offers a basis for developing national strategies, policies, and legislation enabling FLW reduction. The actions and principles put forward herein have the ultimate goal of accelerating the region's transition to sustainable and resilient agrifood systems.

The guidelines have been informed by online consultations with policymakers and non-state actors from across the NENA region in 2022.<sup>3</sup> It was further supported by means of an in-depth literature review examining the current challenges and opportunities for reducing FLW in the region. A stakeholder feedback workshop, supplemented by a 2023 review and revision, served to finalize the document. The guidelines capture the evolving agrifood systems in the various regional contexts and the drivers influencing them. They also take into consideration the economic, social, cultural, climatic and environmental characteristics of the NENA region, as well as the diversity in the nature and types of FLW across NENA countries.

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<sup>1</sup> At its 26th Session in October 2018, the FAO Committee on Agriculture (COAG) requested that, subject to resource availability FAO take the lead, whilst working with other relevant actors, to develop codes of conduct for the reduction of food loss and food waste. Following the COAG request, FAO developed the Voluntary Code of Conduct for Food Loss and Waste Reduction (CoC). The CoC was endorsed by member states at the FAO Conference in June 2021.

<sup>2</sup> FAO member countries in NENA are: Algeria; Bahrain; Egypt; Iraq; Jordan; Kuwait; Lebanon; Libya; Mauritania; Morocco; Oman; Palestine; Qatar; Saudi Arabia; Sudan; the Syrian Arab Republic; Tunisia; United Arab Emirates; and Yemen.

<sup>3</sup> Senior officials from all NENA countries were invited, as well as representatives from the private sector, academia, technical disciplines, consumer organizations and development partners. For more information, see <https://www.fao.org/neareast/news/view/en/c/1506137/>.



# Food loss and waste and agrifood system sustainability in the Near East and North Africa region

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FLW is a manifestation of inefficiency and unsustainability within agrifood systems, with negative impacts on the economy, food security and nutrition, and the environment.<sup>4</sup> Agrifood systems in NENA countries are fragile as a result of the structural, political, demographic, and environmental challenges the region faces. This fragility is exacerbated by inefficient and unsustainable food production, distribution, and consumption patterns. FLW exacerbates the pressure on NENA countries' agrifood systems and negatively impacts their sustainability, resilience to climate and socio-economic shocks, and contribution to food and nutrition security.<sup>5</sup> In the NENA region, almost 15 percent of the food produced is lost between the post-harvest stage and the pre-retail stage in 2020 (FAO, 2023). In addition, between 75 and 163 kilograms per capita are estimated to be wasted at household levels each year (UNEP, 2021a).

The NENA region is not on track to achieve the SDGs. Vulnerability to shocks and stresses due to poverty, inequality, conflict, and climate change, among others, have contributed to rising trends in food insecurity. Over 34 percent of the NENA region's population experienced moderate or severe food insecurity in 2021. This equates to 154 million people, an increase from the 142 million people recorded in 2020. Of this figure, 54.3 million people were undernourished (FAO, IFAD, UNICEF, WFP, WHO & UNESCWA, 2023). The region's population is projected to grow by 20 percent and reach 500 million people by 2031, with about two-thirds of whom forecast to reside in urban areas (OECD/FAO, 2021). Urbanization is associated with greater demand for, and consumption of, perishable, higher-value products such as meat and dairy, as well as convenience and processed foods containing vegetable oil and sugar (OECD/FAO, 2021; FAO, 2022d).

A key feature of agrifood systems in the NENA region is the combination of **scarce water and arable land resources** that have long exceeded their capacity to sustainably feed growing populations. NENA countries are thus increasingly relying on food imports to meet food demand, and their exposure to international price and market volatility presents a major challenge. The future of agrifood systems will necessarily involve more efficient and productive management of water and land. Consequently, FLW reduction can be viewed as an opportunity. Over 360 million hectares of land and 42 km<sup>3</sup>/year of water are used to produce food that is ultimately lost or wasted in the NENA region (based on 2007 data) (FAO, 2019). Land and water-use efficiency can be improved based on the targeting of agrifood products, identification of FLW 'hotspots', and cost-benefit analysis of proposed solutions in environmental, social, and economic terms. For instance, interventions aiming to reduce

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<sup>4</sup> Agrifood systems consist of "all the elements (environment, people, inputs, processes, infrastructures, institutions, etc.) and activities that relate to the production, processing, distribution, preparation and consumption of food, and the outcomes of these activities" (HLPE, 2014).

<sup>5</sup> Sustainable agrifood systems deliver food and nutrition security for all, using practices that safeguard the environment, provide broad-based benefits to society and which are profitable throughout.

the land use associated with FLW should focus on meat and animal products, whereas addressing water use or water scarcity involves targeting primarily cereals and pulses (FAO, 2013; FAO, 2019).

**Climate change** is predicted to lead to lower productive capacity and higher prices for all food commodity groups produced across the NENA region by 2050 (IFPRI, 2022). Climate change exacerbates the threat to already scarce land and water resources. Climate variability and risks such as heat stress already contribute to an increase in incidences of plant pests and diseases, sand and dust storms, water scarcity, land degradation, and desertification. When compared against pre-industrial conditions, mean annual temperatures in the region have risen, and will continue to rise through this century, with pronounced differences distinguishable by sub region. Most of the region will become even drier. A 150 percent increase in drought frequency is predicted by 2070 (FAO, 2022b).

FLW is impacted by climate change, and also contributes to it. In 2019, about 17 billion tonnes of CO<sub>2</sub>eq or 31 percent of global greenhouse gas emissions (GHG) came from agrifood systems (FAO, 2021b). Around 8 to 10 percent of GHG result from FLW. The carbon footprint of FLW in the NENA region is about 200 million tonnes of CO<sub>2</sub>eq, or 500 kg CO<sub>2</sub>eq/capita (FAO, 2019). GHG accumulate throughout the value chain, from the production phase, through to processing and logistics, as well as from discarded food, and reach their highest level at the retail and consumption stages. The latest Intergovernmental Panel on Climate Change report states with high confidence that adaptation strategies that reduce food loss and waste or that support balanced diets contribute to nutrition, health, biodiversity, and other environmental benefits (IPCC, 2022).

Tackling FLW can help NENA countries cope with heightened climate variability and risks to agrifood systems, livelihoods, and food security. Food loss reduction interventions are a powerful means by which the adaptive capacity of the NENA region's predominantly small-scale family farmers and agribusinesses can be enhanced. Climate-smart agrifood processing, improved storage and energy-efficient cold chains are but a selection of approaches to reduce food loss while adapting to the impact of climate and water shocks. Reducing food waste through prevention at source, recycling and reuse can mitigate the GHG from landfill sites, build resilience by closing rural-urban disparities, and create green jobs by valorising organic waste in a circular bioeconomy.

**Economic, social, and political shocks** can be mitigated by measures to reduce FLW reduction. These can also improve resilience to shocks for agrifood system actors. The NENA region is deeply impacted by the ongoing war in Ukraine, which decreased the availability of key imported commodities, leading to rising food prices and to uncertainties in global financial markets and supply chains.<sup>6</sup> The war has compounded the effects of the global pandemic, which triggered economic downturn, and put food security, agricultural livelihoods, and incomes at risk. Conditions that impose restrictions on transport of goods and persons and which disrupt the flow of products within agrifood systems can translate into higher food losses, especially for products with the shortest shelf life such as fruit and vegetables that represent the bulk of food production in the region.

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<sup>6</sup> The war in Ukraine broke out in February 2022 and is ongoing as of time of publishing.

**Many NENA countries are facing internal conflicts and protracted crises.** Conflict negatively affects the economic capacity and functioning of agrifood value chains, and the ability of the actors involved to produce, distribute and access food. In volatile environments, resources, government spending and private investment are frequently diverted or reduced. This causes lasting effects on agrifood value chains and consequent increases in FLW. Additionally, destruction of productive assets and infrastructure reduces the capacity for storing and processing food. Conflict changes market dynamics through the displacement of communities. As communities become smaller, the number of market transactions falls and the remaining households often face rising food prices. This significantly affects economic growth as well as the resilience of individuals, households, communities, and states.

**Inclusive economic growth** – FLW generation, prevention, reduction, in addition to management have impacts for all actors in food supply chains and the overall agrifood system (Gustavsson et al., 2011; Anriquez et al, 2023). Food loss during harvest and in storage represents a loss of income for farmers and higher food prices for consumers (FAO, 2013a; Lipinski et al., 2013). FLW implies that consumers pay a higher price for food due to the inefficiencies of the food system as a whole. Viable FLW reduction activities must generate benefits or economic value-added. This is especially the case for the region's unemployed

## Box 1

### Addressing food loss and waste reduction trade-offs

FLW reduction efforts have maximum impact when aligned with national agrifood system policy objectives. However, FLW solutions that support one objective can often lead to unintended consequences or trade-offs for another. For instance, prioritizing income and employment generation through policies and investment that upgrade postharvest technologies can lead to greater GHG. In contrast, prioritizing food waste reduction downstream to reduce GHG can shrink demand and lower achievable incomes for producers. Prioritizing agrifood systems objectives can also affect FLW levels. For example, food security strategies that involve establishing strategic food reserves usually entail risk of food loss during storage, or more strict enforcement of food safety regulations can lead to higher rejection rates or discards. These trade-offs demonstrate the need for policy coherence and a holistic, inter-sectoral approach to FLW policy making that can identify, assess, and minimize their consequences.

Trade-offs can also be consequence of FLW reduction actions within value chains, with potential social, economic, and environmental impacts. For example, plastic packaging is a cost-effective solution enabling longer shelf-life, and thus reduction of losses in fresh fruit and vegetables. However, plastic packaging contributes to the burden of plastic pollution in the environment and ecosystems. Technologies to reduce FLW may exacerbate barriers to women's participation in the value chain if they do not have equal access to credit, training or other resources needed to access and use the technologies. In many cases, FLW interventions at one stage of the value chain will have impacts on the actors and activities upstream or downstream. As such, determination of the feasibility of FLW solutions involves assessing their benefits and costs across all sustainability dimensions, including potential trade-offs at the value chain level.

**Source:** Anriquez, G., Foster, W., Santos Rocha, J., Ortega, J., Smolak, J. & Jansen, S. 2023. Reducing food loss and waste in the Near East and North Africa – Producers, intermediaries, and consumers as key decision-makers. Cairo, FAO. <https://doi.org/10.4060/cc3409en>; FAO. 2019. The State of Food and Agriculture 2019-Moving forward on food loss and waste reduction. Rome, FAO. <https://www.fao.org/3/ca6030en/ca6030en.pdf>

and underemployed, youth, women, and rural poor. The NENA region is one of the most youth-populated regions in the world, with a median age of 22 (compared to 28 as the global median) and about 60 percent of its population under 25. Youth unemployment among the 15-24 age group in NENA reached an average of almost 27 percent following the COVID-19 pandemic, and over 42 percent for young women (World Bank, 2022).

**Nutrition and healthy diets** – Part of the NENA population has sufficient access to food, and often in surplus, but other population groups struggle to access quality food. More than half of the NENA region's population was unable to afford a healthy diet in 2020, equivalent to 162.7 million people (FAO, IFAD, UNICEF, WFP, WHO & UNESCWA, 2023). The percentage, as well as the number, of people unable to afford a healthy diet fell between 2017 and 2020. However, the full extent of shocks to income and purchasing power related to COVID-19 and the accompanying global economic downturn are not yet known (FAO, 2021; FAO, IFAD, UNICEF, WFP, WHO & UNESCWA, 2023). Under-nutrition, overweight, obesity, diet-related chronic diseases and micro-nutrient deficiencies coexist in the NENA region, varying widely from one country to another. FLW disproportionately affects the availability of nutrient-dense, high-value, perishable foods needed for a healthy diet.

Given its many synergies with environmental sustainability, food and nutrition security, and socioeconomic development objectives, FLW reduction is an important lever for agrifood systems' sustainability. Trade-offs can arise however, between FLW reduction interventions and the capacity to deliver sustainable outcomes. These trade-offs must be recognized and managed by stakeholders when designing any FLW reduction strategy, policy, or intervention (See Box 1).

## Magnitude and drivers of food loss and waste in the Near East and North Africa region

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FLW in the NENA region occur along all food value chains, from production to consumption, with variations across countries in terms of quantity, magnitude, and causes. It is estimated that, at regional level, around one third of food in NENA is lost or wasted each year from harvest, catch, or slaughter until consumption, or around 30 percent of cereals, 55 percent of fruit and vegetables, 30 percent of roots and tubers, 20 percent of meat and dairy, and 30 percent of fish and seafood (FAO, 2011). Quantitative FLW data has not yet been systematically collected and made available in respect of NENA countries. Research is generally limited to qualitative analyses, case studies, or self-declared estimates in a few countries and value chains (see Anriquez et al. 2023 for a summary of studies). These have served to guide project interventions but fall short of representing reliable, comprehensive data needed for decision-making or exploring different aspects of FLW linked to broader environmental, social, and economic policy objectives.

The adoption of Agenda 2030 by governments, and of SDG 12 Target 12.3, “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” by 2030, reflects recognition of the need to address FLW in the context of sustainable agrifood system priorities. FAO is the custodian of the SDG indicator 12.3.1 **Food Loss Index (FLI)**, which focuses on measuring losses occurring from the production stage up until, but not including, the retail stage. The UN Environment Program (UNEP) is the custodian of indicator 12.3.2 **Food Waste Index (FWI)**, which covers the measurement of food waste at the retail and consumption levels. Both indexes, read together, are developed to support monitoring and reporting progress in respect of achieving FLW reduction in countries.

The FLI estimates that food loss between the production stage and up until the retail stage reached 14.8 percent in NENA (represented by Northern Africa and Western Asia) in 2020, an increase from 10.8 percent in 2016 (FAO, 2023). This percentage corresponds to an FLI of 106.3 in 2020, as compared to the global FLI of 101.2 (FAO, 2022c). As regards food loss by sub-region, food losses reached 15.7 percent in Northern Africa and 14.1 percent in Western Asia, reflecting a compound annual growth rate of 2 percent and 4 percent respectively between 2016 and 2020. Western Asia has the highest FLI of any sub-region at 112.5 (FAO, 2023; FAO, 2022c).

The FWI report (UNEP, 2021a) and database (UNEP, 2022) provide food waste estimates at retail, food service and household levels derived from modelling and extrapolation for all NENA countries. There is a severe shortage of accurate data points however, and for the most part estimates are provided with very low confidence. The database suggests that food waste at all three levels ranges between 119 and 170 kg per capita per year among NENA countries. Household waste accounts for over two-thirds of food waste, and household waste per capita in NENA is substantially greater than in high-income countries and in Asia, again caveated by low confidence in the estimates (UNEP, 2022).

The FLI and FWI rely on sound underlying data and require that countries develop and implement different data collection methods to measure and monitor FLW along the value chain. The high cost of producing data at national level, however, remains a challenge, and most NENA countries have not embarked on FLW measurement aligning with the framework of SDG 12.3. Although data on FLW is scarce, the estimates that do exist can help signal the problem of FLW in relation to broader agrifood system policy objectives and make the case for investing in FLW measurement.

### **Overview of the causes of food loss and waste in the Near East and North Africa.**

FLW results from a myriad of different drivers. These include: biological; microbial; chemical; biochemical; mechanical; physical; physiological; technological; logistical; organizational psychological and behavioural. Direct causes are determined by factors such as pests, disease, prevailing climate, and the availability of harvest and post-harvest technology and equipment. Indirect drivers are more systemic in nature, such as market prices (which reflect how well markets function), the quality of public services (e.g., infrastructure, information, or social services), legal framework, or culture (FAO, 2019). The importance and relevance of these drivers varies greatly according to the type of food product, the stage of the food chain, and the typology of agrifood system where they occur: rural and traditional; informal and expanding; emerging and diversifying; modernizing and formalizing; and industrial and consolidated (Marshall et al, 2021).

*Quantitative and qualitative* FLW among NENA countries are largely attributed to the following:

- poor and inadequate post-harvest transport, storage and processing capacity;
- lack of cold chain capacity, reliable power supply, good maintenance and management practices;
- inappropriate production, harvesting and handling practices;
- poor purchase, handling, food preparation and disposal practices among food service providers and consumers;
- poor organization, coordination and communication among food supply chain actors;
- inefficient marketing systems and market infrastructure, including for recovering and repurposing FLW; and,
- culture, individual perceptions, and lack of awareness.

About two-thirds of FLW across NENA is food loss, and the remaining third is food waste, although the nature and location of FLW may vary across countries (FAO, 2015). In the high-income Gulf Cooperation Council sub-region, a greater share of FLW is food waste at retail, hospitality and catering services, and consumption stages (UNEP, 2021b). In the middle-income Maghreb and Mashreq countries, most FLW occurs in the intermediary value chain stages from farm gate to retail. In the low income Least Developed Countries, most FLW is food loss near farm-level during harvest and post-harvest operations. Significant food waste takes place across the region during social events (e.g., wedding ceremonies and family gatherings) and religious occasions such as the fasting month of Ramadan (UNEP, 2021b; FAO, 2015).

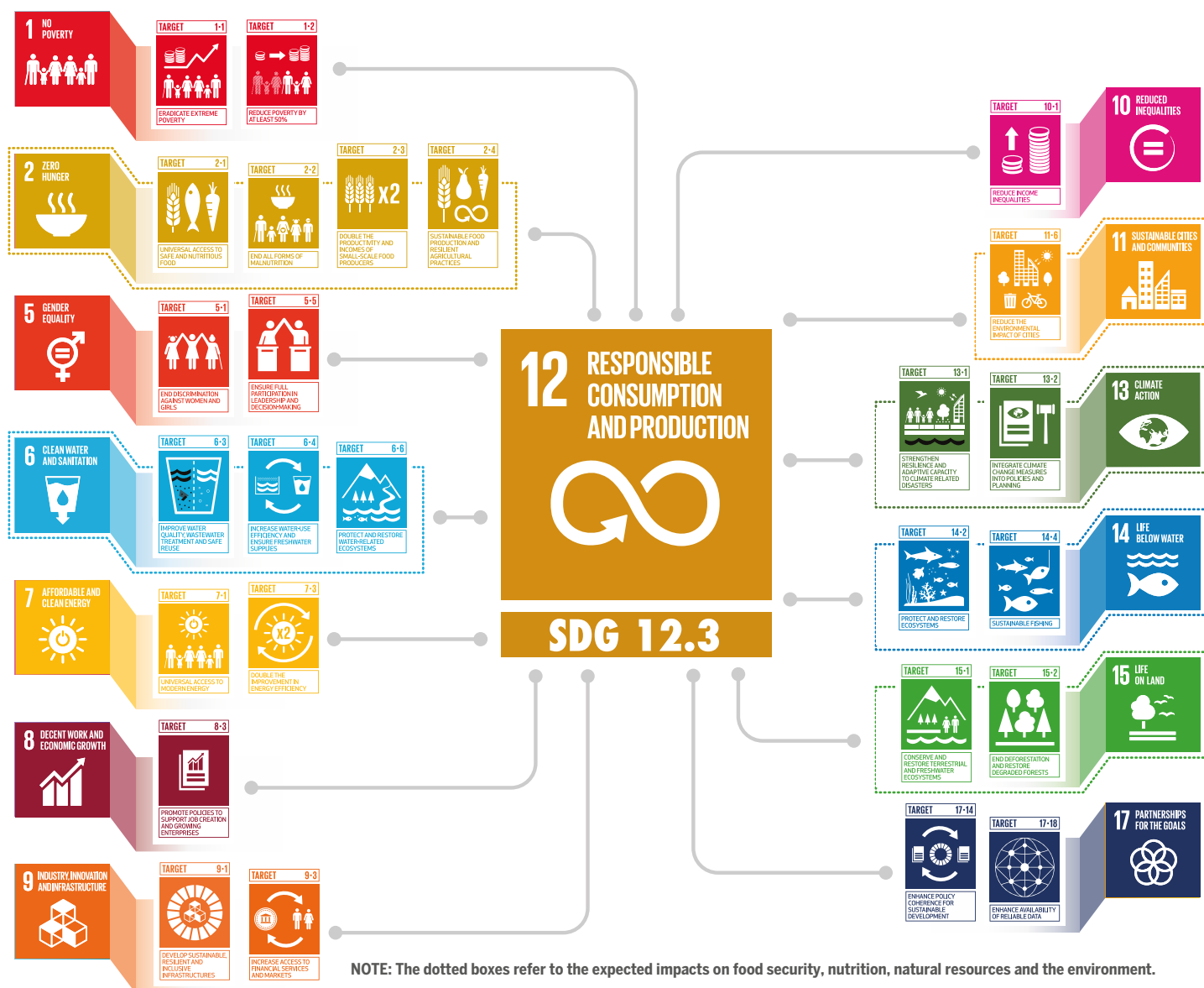
Complex socio-economic and environmental challenges combined with policy inaction have constrained progress on FLW reduction and prevention in the NENA region. FLW reduction is known to be a multi-faceted problem, but FLW reduction strategies are lacking and yet to be aligned with agrifood systems, climate, industry, health, energy, and related sector objectives, preventing a common vision and commitment and effective policies to tackle FLW. There are a multitude of solutions for FLW reduction that could positively impact the way agrifood systems operate in the NENA region, however their adaptation or adoption at scale is lagging without sufficient research, development, investment, a multi-stakeholder and multi-disciplinary engagement to ensure science and evidence inform decision-making.

## Alignment with global and regional policy processes

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There is growing momentum in global policy processes placing FLW reduction efforts at the heart of agrifood systems' sustainability. By engaging with these processes, NENA countries can align their vision and actions around the most current thinking and best practice in FLW reduction policy and strategy. It opens up possibilities for the exchange of knowledge and experience, advocacy and awareness-raising, and engagement with a broad spectrum of

**Figure 1: Food loss and waste and the Sustainable Development Goals**



**Source:** FAO. 2019. The State of Food and Agriculture 2019-Moving forward on food loss and waste reduction. Rome, FAO. <https://www.fao.org/3/ca6030en/ca6030en.pdf>

stakeholders. It can also enhance capacity development, partnerships and catalyse financial resources and investment. Regional policy coordination can amplify national efforts among NENA countries who share common agrifood system characteristics and challenges related to FLW. This can simultaneously boost intraregional efforts such as those seeking to strengthen trade, food safety regulations and transboundary pest control.

Agenda 2030 underpins all efforts around reducing FLW for more efficient, inclusive, resilient, and sustainable agrifood systems, and progress toward many SDGs can be made through improvements to food systems that reduce FLW (see Figure 1 for a mapping of FLW and the SDGs).



The landmark Paris Agreement on Climate Change provides a durable framework to guide the global effort towards tackling climate change by reducing emissions, working together to adapt to climate change, and increasing commitments to combat climate change over time. Many NENA countries are including and raising the importance of sustainable agrifood systems in their Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs), and some make specific reference to FLW.

The Food and Agriculture for Sustainable Transformation initiative (FAST) was launched in 2022 at COP27 to accelerate “climate finance contributions to transform agriculture and food systems by 2030, to support adaptation and maintain a 1.5-degree pathway whilst supporting food and economic security” (FAO, 2022a). FAST is designed as a multi-stakeholder cooperation program with deliverables focused on access to finance, knowledge and capacity, and policy support and dialogues.

The UN Food Systems Summit in 2021 raised the profile of FLW reduction as an effective intervention enabling agrifood systems transformation and progress on multiple SDGs. The dialogues held before and after the Summit, and the networks created by the national conveners can continue to be leveraged to support multi-disciplinary and multi-stakeholder engagement for FLW reduction as part of national pathways to the achievement of sustainable and equitable agrifood systems.

Two global coalitions emerged from the UN Food Systems Summit. The Urban Food Systems Coalition and the Food is Never Waste Coalition focus on global, regional, and national agendas. Both aim to facilitate the exchange of knowledge, information, and experiences. NENA countries can leverage both coalitions to encourage collaboration among national stakeholders and engage with regional partners.

At the subnational level, the Milan Urban Food Policy Pact, signed in 2015, is an international agreement on urban food policies signed by over 200 cities. Cities commit themselves to developing to better functioning food systems to grant healthy and accessible food to all, protect biodiversity, and reduce food waste. Cities across the globe are signatories, including many from the NENA region, and the Milan Urban Food Policy Pact is itself part of the Global Climate Action Agenda.



# 2

**Guidelines for action on food loss and waste reduction in Near East and North Africa countries**

# Vision

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Sustainable, resilient, and equitable agrifood systems that deliver nutrition, food security and economic prosperity for all, and which optimize the use of natural resources and reduce climate impacts.

## Guiding principles

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The CoC outlined ten guiding principles for rights-based and responsible action on FLW reduction under an overarching guiding principle that actions to reduce FLW should address sustainable development challenges and contribute to accelerating progress towards achieving the SDGs (FAO, 2022d).

For NENA countries, preserving scarce natural resources, protecting against climate risks, promoting peace, and doing no harm in conflict-prone and conflict-affected contexts, advancing gender equality and women's empowerment, tackling income inequalities and inclusive growth, and empowering the next generation are among the most pressing sustainable development challenges. While improvements to agrifood systems that reduce FLW can contribute to addressing these challenges, trade-offs will need to be acknowledged and managed. Critically, FLW interventions should be carefully designed and scrutinised to minimise the risk of harm to the environment, climate, society, or the economy, and to prevent compromise in their status for future generations.

## Theory of change

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FLW contributes to and results from, agrifood systems that are insufficiently sustainable, inefficient, vulnerable to climatic, environmental, socioeconomic, and political shocks and stressors, and which fail to deliver nutrition outcomes as well as decent employment and livelihoods. This is especially the case for women, youth and small-scale businesses and producers.

NENA countries are at various stages in their efforts towards reducing FLW, and while awareness of the scale and the impact of FLW is widespread, an even greater concerted effort is needed to develop a common vision and effective policies to tackle the issue. To support their efforts, FAO member countries requested the guidance on application of the best practice embodied in the CoC. Publishing Regional guidelines to implement the CoC serves

to act as a foundation for designing national FLW frameworks that encompass strategies, policies, institutions, legislation, and programmes.<sup>7</sup> National frameworks that align with the regional FLW guidelines will facilitate improved cooperation between NENA countries, as well as facilitate the interregional exchange of best practices, and south-south and triangular cooperation under the global umbrella of the CoC.

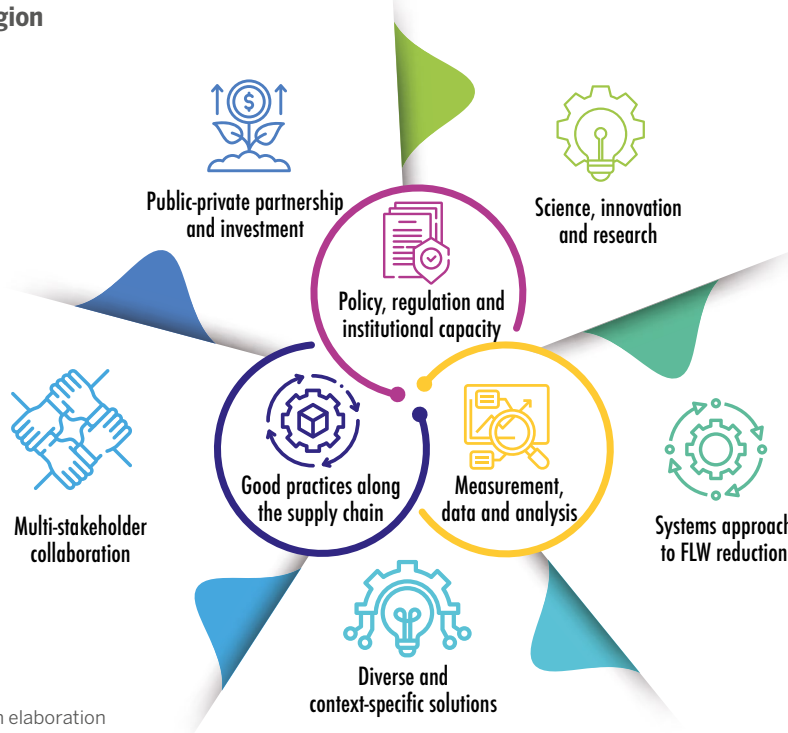
Given the diverse nature of FLW challenges within NENA, the reality of trade-offs between policy objectives, the need for their prioritization in light of scarce human and financial resources, and the diversity of stakeholders, country-led and holistic approaches are required to make FLW reduction efforts more inclusive and effective for lasting change.

The approach of these guidelines is to enable actions that respond to clearly identified needs and gaps for effective FLW reduction. These actions entail;



However, for these actions to be truly impactful or transformative, all relevant stakeholders, resources, knowledge and expertise must be mobilized, and ideally anchored within a broader sustainable agrifood system policy framework. To achieve this, a holistic framework of action (see Figure 2) is proposed with five action enablers that facilitate an integrated and participatory approach to developing policies leading to FLW reduction actions. They are contingent upon political momentum, a conducive enabling environment for private sector investment and engagement, and continuous public support for their implementation.

**Figure 2: A framework of action for food loss and waste reduction in the Near East and North Africa region**



Source: Authors' own elaboration

<sup>7</sup> Member countries in NENA requested FAO's analytical and strategic support on FLW reduction in 2012, and in 2014 endorsed a Regional Strategic Framework Reducing Food Losses and Waste in the Near East & North Africa Region. The CoC and guidelines represent the experiences gained in, and evolution of approaches to, FLW reduction in line with Agenda 2030.



### **Action enabler 1:**

## **A systems approach to food loss and waste reduction**

Adoption of a more holistic and intersectoral approach in policymaking for FLW reduction starts with understanding the broader economic and market systems, ecological systems, energy systems, social systems and health systems and their connection to agrifood systems and FLW. A systems approach to FLW reduction enables a shift from short-term solutions to a longer-term vision (sustainability) and to policies that are proactive rather than reactive.



### **Action enabler 2:**

## **Diverse and context-specific solutions to food loss and waste**

Agrifood systems in NENA operate within different environmental, socio-cultural, and economic contexts and face diverse challenges. The causes of, and solutions to, FLW are also diverse, meaning that they require context-specific technical interventions, investments, enabling policies and instruments, local and indigenous knowledge, and social and cultural awareness. FLW decisions should be taken from 'bottom-up', designed in an inclusive and participatory manner involving a variety of actors to reflect the reality of the country and the needs and priorities of various stakeholders.



### **Action enabler 3:**

## **Responsible public–private partnership and investments in food loss and waste reduction**

Sustainable investment in agriculture, agrifood systems and FLW reduction are often the cornerstone of sustainable and inclusive economic development and poverty eradication. An enabling environment for private investments in NENA requires, among other things: peace, security and stability; public investments in infrastructure and services following a value chain approach and aligned with agrifood systems strategies; greater awareness of the magnitude and consequences of FLW; and improved knowledge, skills, and capacity of stakeholders along the food supply chain in preventing FLW. Responsible investments by the government should complement measures to encourage the private sector to adequately invest in reducing FLW and adding value in the post-production chain.



#### **Action enabler 4: Multi-stakeholder collaboration for impact**

Policies to reduce FLW require the engagement of stakeholders with conflicting interests and visions across the agrifood system in NENA. In this context, multi-stakeholder processes in policymaking requires the participation of the private sector, civil society, consumers and government, supported by interactive learning, co-creation, and empowerment. This enables a comprehensive assessment of trade-offs, synergies, and the eventual impact of the actions to reduce FLW on all stakeholders. Multi-stakeholder collaboration mechanisms ensure that all stakeholders are committed, accountable, and that they contribute effectively to implementing the agreed actions for moving towards FLW reduction and achieving results at scale.



#### **Action enabler 5: Science, innovation, and research**

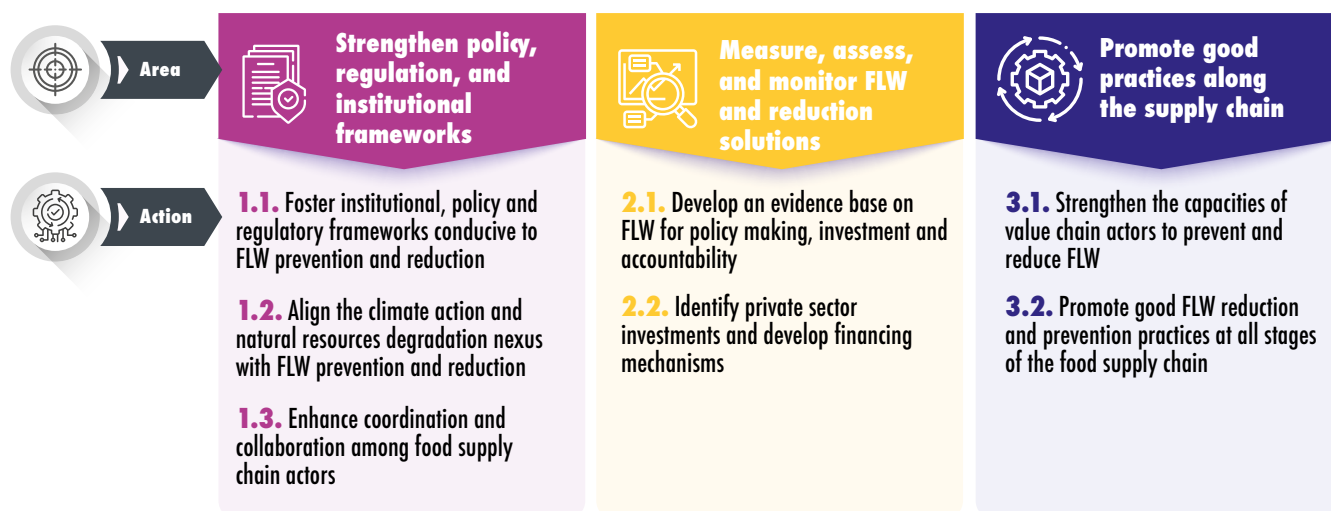
Robust research agendas, complemented by mechanisms to enable science-policy interaction, can enable innovations in agrifood systems that will be scalable, sustainable solutions to FLW. Innovations in this context can include policy, governance, technology and social innovations, as well as innovations in markets, finance, and business models, at different levels of development between and within NENA countries, between urban and rural areas, and along the food supply chain. Research and academia are key collaborators; they accelerate the flow of new ideas, play an important role within information-sharing networks, help adapt innovations produced elsewhere to local circumstances, and have the capacity to generate new knowledge and evidence.

## **Action areas**

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Three interrelated action areas respond to the challenges and opportunities for FLW reduction that were expressed by stakeholders in the consultative process preceding the development of these guidelines. Each action area proposes key actions and results and/or outputs that, together with the five action enablers, can be adopted as elements of a national FLW framework. Food loss and food waste are not treated separately, except where actions apply exclusively to one or the other.

Figure 3: Action areas



Source: Authors' own elaboration



## Action area 1:

### Strengthen policy, regulation, and institutional frameworks

Meaningful and effective action towards achieving FLW reduction requires a set of coordinated government policies across the agrifood system that facilitate coordination among stakeholders. The policies enable responsible investment, and support and incentivize upgrades and good practices that prevent FLW from happening in the first place, in accordance with the food material hierarchy, while simultaneously promoting FLW management measures that support the transition to a circular bioeconomy.<sup>8</sup> Effective and holistic FLW policy frameworks are lacking in most NENA countries, yet they are fundamental in making transformative changes in agrifood systems and reducing FLW at scale. Policy, regulatory and institutional frameworks should:

- Provide the **guiding frameworks** for FLW prevention, reduction, and management. Examples include national FLW strategies and plans, and coordination mechanisms between national and local government, food supply chain actors, and among all stakeholder groups, including research and academia, parliamentarians, producers, and industry associations;
- Employ policy tools to **directly address** FLW along the supply chain. Examples include: food labelling and packaging regulations; waste management regulations; recovery and redistribution of safe food; public awareness and education campaigns; taxes and fiscal incentives for food business operators; and public procurement;

<sup>8</sup> Preventing FLW is the priority, followed by: recovery and redistribution of safe and nutritious food to feed people; diverting safe FLW to animal feed; recycling by rendering, composting or anaerobic digestion; generating energy, and as a last resort, incineration or landfill. Repurposing FLW seeks to guide how unavoidable FLW, inedible parts and byproducts of the food supply chain could be reused and/or recycled, while ensuring all safety requirements are met.

- Employ policy tools to **indirectly address** FLW and promote more efficient supply chains. Examples include: regulatory frameworks for inclusive market-oriented institutional arrangements (i.e., producer organizations, or contract farming); as well as policies governing market infrastructure, trade, logistics, and enabling the business environment.

In some cases, strengthening the framework may require the examination of existing national and sub-national legislation and policies related to FLW, to identify ambiguities, gaps in coverage and to address policy barriers.

### **1.1 Foster institutional, policy and regulatory frameworks conducive to food loss and waste prevention and reduction**

This can be achieved by:

- A high-level national commission, agency or mechanism tasked with overseeing the engagement, policy coherence and accountability of sectors involved in combatting/mitigating FLW;
- An operational multi-sectoral national strategy or action plan to prevent and reduce FLW, with national targets and indicators;
- Policies and legislation that directly address or integrate FLW prevention, reduction and repurposing, and implementation of same by responsible agencies.

### **1.2. Align the climate action and natural resources degradation nexus with food loss and waste prevention and reduction**

This could be achieved using:

- A coherent vision and plan for sustainable protection of land, water, natural resources, and sustainable agrifood systems;
- Targets and strategies for FLW reduction included in national climate strategies (NDCs, NAPs, etc.). Direct measures could address, for example, post-harvest loss reduction, food preservation technologies, improving markets and sustainable agribusiness, as well as indirect measures such as repurposing organic waste and pest and disease management;

- Policies, programmes, and services that promote science, innovation and the adoption of climate-smart technologies and practices, as well as the use of renewable and green energy sources along supply chains;
- Business cases for climate finance strategies, in particular for post-harvest handling (cooling, storage, processing, and marketing) and repurposing technologies and infrastructure.

### **1.3. Enhance coordination and collaboration among food supply chain actors**

This can be achieved by:

- National multi-stakeholder, multi-disciplinary platforms and initiatives that facilitate policy and programme development on FLW, including monitoring and evaluation, and accountability mechanisms;
- Voluntary agreements (i.e., pledges, campaigns) aiming for FLW reduction and repurposing among food supply chain stakeholders, through public-private partnerships (PPP) or other relevant structures. Imposition of obligations for food chain stakeholders identified (e.g., businesses should have a FLW prevention plan and measure its impact and report outcomes);
- Collaborative working groups to share lessons learned and best practices, participation in demonstration projects, and develop solutions to collective challenges.



## Action area 2:

### Measure, assess, and monitor food loss and waste and reduction solutions

Monitoring FLW levels is key for policy development and accountability. It requires the availability, quality, quantity, coverage, and management of multi-sectoral data and information related to FLW. This entails identifying the loss and waste 'hotspots', estimating the extent of FLW, ascertaining its causes, and quantifying the costs and benefits of FLW reduction to justify allocating resources to FLW reduction measures. Data and information scarcity is a major barrier for policymakers, agrifood system actors, innovators, and investors acting in a concerted manner. The business case is not clear, even though investments are known to be required in the following areas: market infrastructure; cold chains; food conditioning and processing infrastructure; recovery and redistribution of surplus food; and valorisation of non-edible parts, by-products and material that leaves the food supply chain as FLW. Using sound data and information to build the business case can facilitate the granting of sustainable finance for FLW reduction. Analysis of FLW reduction measures should consider potential 'winners' and 'losers' in the whole food system, focusing on whether women, small-scale producers, young people, and consumers gain from FLW reduction.

#### 2.1. Develop an evidence base on food loss and waste for policy making, investment and accountability

These could include:

- Protocols, surveys, and assessments to measure the magnitude of FLW and report on SDG indicator 12.3.1a,<sup>9</sup> the FLI, SDG indicator 12.3.1b, the FWI;
- Protocols, surveys, and assessments to measure the environmental, economic, and nutritional impacts of FLW along the food supply chain;
- National database for FLW (and linked to FAO Food Loss and Waste Database) with information on loss hotspots, levels, and causes in priority food supply chains;
- Collaboration mechanism with statistical offices (to harmonize the reporting of data), the private sector (along food chains, traders, etc.), organizations (to be able to collect detailed information about specific commodities and supply chains) and academics (to guarantee independent and transparent processes);
- Information on the magnitude and value of FLW incorporated into relevant national accounting frameworks such as Food Balance Sheets and agricultural gross domestic product (GDP) accounts;
- Evidence generated on FLW is available in emergent conflicts, pandemics, and natural disaster contexts where disruptions in the agrifood systems can lead to substantial levels of FLW;
- Sound cost–benefit analysis, assessment of impacts and scenario analysis for FLW reduction measures.

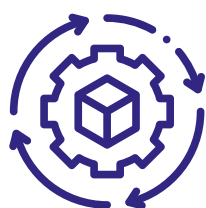
<sup>9</sup> Countries are encouraged to use the annual questionnaire prepared by FAO to populate their report on the FLI, available at [https://www.fao.org/fileadmin/user\\_upload/faoweb/statistics/questionnaires/FAO\\_SDGLoss\\_QUEST\\_2019.xlsx](https://www.fao.org/fileadmin/user_upload/faoweb/statistics/questionnaires/FAO_SDGLoss_QUEST_2019.xlsx)



## 2.2. Identify private sector investments and develop financing mechanisms

This could be achieved by:

- Feasibility studies to make the business case for private sector investments that would target postharvest technologies and infrastructure, climate-smart logistics, marketing infrastructure, and waste valorisation and repurposing;
- Innovative financing mechanisms that have been designed and tested, such as sustainability-linked bond issues and loans, blended financing models, insurance and de-risking products, and FLW-linked adaptation finance;
- Greater awareness among banks, private companies, foundations, impact investors, venture capitalists, private equity firms, and institutional investors as regards the business case for investing in FLW solutions.



## Action area 3:

### Promote good practices along the supply chain

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Training and capacity development play a central role in FLW reduction in NENA. The needs as identified span all stages and all actors involved in the food supply chain. All are required to implement the good practices that address the direct causes of FLW outlined in Articles 5.3 to 5.8 in the CoC. Stakeholders repeatedly identify weak technological, managerial, and business capacities as causes of FLW and constraints to reduction. Improved practices need to be encouraged, and a mix of incentives provision and capacity-building is needed to ensure their adoption. The national FLW strategy can promote good FLW reduction and prevention practices at specific stages of the food supply chain, ensuring that in all cases, the needs of family farmers, small-scale producers and processors, producer organizations, small and medium enterprises (SMEs) and vulnerable and marginalized groups are taken into consideration. At consumer level, greater understanding of behaviours in respect of food waste and prevention is needed to inform food waste education. Ultimately, ensuring capacities are developed across the entire food supply chain will facilitate coordination and use of improvements across the chain.

### 3.1 Strengthen the capacities of value chain actors to prevent and reduce food loss and waste

This can be achieved through enabling the following:

- Mapping and needs assessments of national-level organizations capable of providing training and science-based education to food supply chain stakeholders;
- Institutional capacities to support training and science-based education on FLW reduction integrated into extension and advisory services, academic or industry programmes, university curricula, field schools and vocational training centres;
- Food loss prevention curricula and guidelines for food producers, handlers, processors, distributors and marketers,

and food waste prevention guidelines on food recovery and redistribution;

- Awareness and behavioural change among consumers with improved understanding of the origins of redistributed food, while allaying any concerns, stigmas, or cultural concerns;
- Capacity-development programmes that are context-specific, using typical and appropriate media, building on local and traditional knowledge and practices, and address constraints facing women, family farmers, small-scale producers and processors and other vulnerable groups in accessing such programmes.

### **3.2. Promote good food loss and waste reduction and prevention practices at all stages of the food supply chain**

This could involve:

- Targeted fiscal instruments to increase the availability of, access to, and adoption of already proven sustainable practices and technologies that reduce FLW;
- Voluntary agreements among food supply chain stakeholders that promote coordinated FLW reduction actions;
- Public food procurement mechanisms that integrate FLW reduction strategies and measures;
- Establishment of, or strengthening of institutions overseeing food recovery and redistribution,
- Studies of consumer behaviour and relationships between awareness, knowledge, values and perceptions, current practices and tools, and willingness to reduce waste for different groups defined by socio-economic and cultural background.

# 3

**Good practice for national  
food loss and waste  
strategies**

These guidelines call for an operational, multisectoral national FLW reduction strategy that addresses the underlying drivers of FLW and which sets clear targets and an action plan to reduce FLW for the short, medium and long-terms. The experiences garnered by individual countries, FAO, and partners in developing national FLW strategies, and embodied in the CoC, offer lessons and good practices for a successful participatory process towards national FLW strategies and plans.

Governments should lead in facilitating the development of a national strategy and action plan, and from the outset, envisage a participatory process that maximizes the ownership and engagement of all relevant actors (see Box 2).

The initiative to pursue strategic action to reduce FLW can emerge from a number of government entities. These will usually be the ministries responsible for agriculture, industry, the environment, or food safety, but could also, for example, include municipalities tackling sustainable consumption and food waste, or initiatives spearheaded by country leaders. Ideally, FLW action would be anchored within the broader agrifood system policy framework, enabling FLW efforts to contribute to agrifood system objectives, and to promote policy coherence and the identification and management of trade-offs.

The relevant national authorities will be tasked, or establish a high-level national mechanism, commission, or agency to coordinate efforts and lead in engagement, policy coordination and accountability as regards developing and implementing the national FLW strategy. Given the complex, multisectoral and multi-disciplinary nature of FLW, this mechanism should have convening power across ministries and entities, the authority and responsibility to implement and coordinate actions, to monitor and report on implementation, and the appropriate institutional capacity. The mechanism should also align the national government's efforts with sub-regional and regional strategies on FLW reduction, as well as international frameworks on food security and nutrition and agrifood systems.

The high-level mechanism will convene an inception workshop for all relevant actors to raise awareness and start a process of engagement and eventual accountability involving all relevant stakeholders to jointly

## Box 2

### Stakeholders in food loss and waste reduction at national level

The CoC and these guidelines provide guidance for different stakeholder groups engaged in reducing FLW. These include, but are not limited to:

- **National, subnational, local and municipal governmental authorities, and parliamentarians; (ministries responsible for aspects of FLW include the Ministries of Agriculture, Health, Social Affairs, Environment, Trade and Industry, as well as food safety authorities;**
- **Private companies and representative organizations, from food producers, processors and distributors, food service providers, retailers, and wholesalers, to suppliers of equipment and technology, food industry associations, development partners, and financial institutions;**
- **Individual consumers and consumer protection organizations, as well as civil society organizations (CSOs) such as food banks and community food and nutrition organizations;**
- **Research, academic, and training institutions**

Source: Authors' own elaboration

prioritize actions and ensure that FLW reduction efforts align with existing national agrifood system policy and strategy. The outcome will evidence a sense of the scale of FLW, relevant 'hotspots', the mapping of key stakeholders, and agreement on the steps toward a strategy.

The next step involves undertaking a **FLW situation analysis**, examining priority food value chains and commodities to assess levels of FLW, identify 'hotspots', as well as drivers, causes and impacts. This can range from a rapid appraisal or a more complex process involving the collection and thorough analysis of data and information. The analysis should cover the status of agrifood systems, including their environmental, socioeconomic, and cultural dimensions, the context and multiple drivers leading to FLW in-country, and the critical points or 'hotspots' along selected supply chains where level of FLW are highest, and their underlying causes. The result will feed into a baseline against which to monitor FLW reduction.

The **FLW analysis findings will be validated** among key stakeholders, whereupon a shortlist of key problems and their underlying drivers will be presented. This will identify and prioritize actionable solutions that are feasible and sustainable. This opens a process of co-development and prioritization of potential sustainable solutions, and additionally sets out **pathways for partnerships** and accountability, and the buy-in and engagement of stakeholders.

**Developing the national strategy** in a participatory process with key stakeholders involves reaching consensus as to its constituent elements and operationalization, namely:

- **Setting time-bound targets**, ideally aligned with SDG Target 12.3 or other existing national agrifood system policy and strategy. These targets should also link to targets that co-benefit from reducing FLW, such as food security and nutrition, environmental sustainability, GHG reduction or other frameworks;
- **Agreeing a vision and roadmap** for achieving the targets. Put another way, outlining the set of strategic actions and interventions that address the underlying drivers of FLW and form the strategy;
- **Defining the roles and responsibilities** of agencies and levels of government (national, subnational, local, including in urban areas) that can most successfully deliver the services and actions required to effectively reduce FLW as set out in the strategy. Specifying the expected role of the private sector, CSOs, or other non-state actors, and promoting voluntary agreements with concrete commitments to contribute to national FLW targets;
- **Specifying resource needs** and developing an investment and/or resource allocation plan, including (adequate) resources to be allocated by governments and the suitability of mobilizing resources from various sources. Responsible agencies should ensure that sufficient human, physical and financial capacity exist to engage in effective implementation, data collection and monitoring of FLW actions.
- **Create an accountability framework**, led by the high-level mechanism tasked with coordination of the FLW strategy, to monitor and assess impact, outcomes, and milestones, and update or revise the plan at reasonable intervals.

As the FLW strategy moves into implementation, regular communication to stakeholders about the progress of implementation, lessons learned, and emerging strategic directions will help keep everyone accountable and committed to strategic FLW actions. The responsibility of the high-level coordination mechanism, partnerships, coalitions, as well as regional and international mechanisms can be leveraged to support continuous advocacy and awareness efforts.

### Box 3

#### Sample outline of a national food loss and waste strategy

- **Introduction, preamble and overview of FLW reduction strategy in relation to national agrifood policy framework**
- **Situation and hotspot analysis for FL and/or FW in selected value chains**
- **Vision and overall objective**
- **Target, timeframe, and milestones**
- **Guiding principles**
- **Framework of action, its theory of change, key strategic action areas, activities, and outputs**
- **Roles and responsibilities**
- **Resources needs (or investment plan matrix)**
- **Monitoring mechanism**

Source: Authors' own elaboration

## High-level coordination mechanism to support implementation

A high-level national commission, agency or mechanism represented by multiple sectors, stakeholders and disciplines should lead the process of engagement, ensuring policy coherence and accountability that are necessary constituent elements in implementing the national FLW strategy. This mechanism should have a mandate within the broader sustainable agrifood system policy framework and a responsibility for the theory of change to effectively reduce FLW.

The scope of this mechanism can include:

- Vertical and horizontal coordination among relevant government entities, businesses, research, CSOs and consumer groups, at local and national levels;
- Generating awareness and transferring knowledge and innovation across stakeholder groups as regards actions to reduce FLW and increase outreach efforts and education campaigns;
- Communicating information on legislation enabling support for FLW reduction;
- Providing guidance on FLW measurement, reduction, and management;
- Establishing a monitoring and reporting mechanism to track progress towards agreed FLW targets, and for evaluating outcomes and impacts of interventions to reduce FLW;
- Defining accountability measures for public and private partnerships to effectively reduce FLW.

# Implementation of the guidelines for action on food loss and waste in the Near East and North Africa

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The Guidelines for action on food loss and waste reduction in the Near East and North Africa have been developed in alignment with the principles of the CoC for countries which plan to adapt the CoC to their context. The processes of monitoring and reporting on their implementation remain the same as for the CoC and the achievements will be reported to the Committee of Agriculture (COAG) at FAO corporate level.

Where any country expresses an interest in, or intention to, implement the guidelines, the knowledge and expertise of FAO, working with other partners at regional and global level will be leveraged to provide full technical and policy support for development of strategies, action plans and interventions to reduce FLW.

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