

Food Loss And Waste

GCC Solutions For
A Global Challenge



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Introduction

Why Wage War On Food Loss And Waste?

Food security is an urgent matter: according to the Food and Agriculture Organization (FAO), the number of people facing chronic food deprivation reached 828 million in 2021. Unfortunately, the situation is only expected to worsen: by 2050, the world population is projected to reach 9.77 billion, placing additional pressure on global food value chains.

But, if governments and the private sector can act on the matter of food loss and waste (FLW) swiftly and smartly, there is a chance to mitigate much of the world's hunger. Food loss and waste is a key component of food security; in fact, the FAO estimates that one-third of the world's current food production is wasted or lost annually. Compellingly, experts also believe that it would be possible to eliminate world hunger by achieving zero FLW; such a feat would be truly transformative.

While it is of paramount importance, FLW remains a concept that is not very well understood. In this paper, we aim to clarify the concept of FLW, because setting clear definitions and a measurement approach are a key part of the solution.

In doing so, we look at the levels of FLW across the globe and its impact on global resources, while discussing how governments are uniquely positioned to combat the issue — thanks to an ability to accelerate change through regulation and to facilitate collaboration across sectors.

In this report, we focus on the Gulf Cooperation Council (GCC) countries, since they are particularly vulnerable to the issue of FLW because of their hot and dry climates, a strong reliance on food imports, and high levels of cultural diversity, among other things.

We will examine the GCC governments' efforts to address FLW while highlighting their successes and laying out further suggestions for progress. Food loss and waste is a complex issue that needs tailored solutions, which is why we have outlined paths to action for the GCC specifically. Strong data and measurability, effective policies and regulation, increasing efforts around education, and smart use of technology are just some of the routes to progress for the region.

Definitions

Although the topic of food loss and waste has garnered plenty of attention at an international level, there is little consensus around the exact meanings of these terms, and this can limit the ability of countries to quantify the problem. Government agencies globally tend to utilize different definitions, based on the local context and their requirements. These are generally based on the definitions set by entities such as the FAO, the United Nations Environment Programme (UNEP), the European Parliament, and the US Environmental Protection Agency (EPA) (see figure 1, right).

Figure 1
Food Loss And Waste Definitions

Organization	Definition	Comments
FAO (State of Food and Agriculture [SOFA], 2019)	<p>Food Loss Decrease in the quantity or quality of food resulting from decisions and actions by food suppliers in the chain, excluding retailers, food service providers, and consumers</p> <p>Food Waste Decrease in the quantity or quality of food resulting from decisions and actions by retailers, food services, and consumers</p>	<p>The most widely used definition across the globe</p> <p>Broad definition that contrasts the supply side aspect of loss to the demand side aspect of waste</p>
UNEP	<p>Food Loss All the human edible crop and livestock commodity quantities that, directly or indirectly, completely exit the post-harvest/slaughter production/supply chain by being discarded, incinerated or otherwise, and do not re-enter in any other utilization (such as animal feed, industrial use, etc.), up to and excluding the retail level. Losses that occur during storage, transport, and processing, also of imported quantities, are therefore all included. Losses include the commodity as a whole with its non-edible parts</p> <p>Food Waste Food and associated inedible parts removed from the human food supply chain (i.e. ending in one of the following: landfill, controlled combustion, sewer, litter/discards/refuse, co/anaerobic digestion, compost/aerobic digestion or land application) in the following sectors: manufacturing of food products (under certain circumstances); food/grocery retail; food service; and households</p>	<p>A more elaborate definition that identifies in more detail the individual components of the value chain where food loss and waste occur, starting from the post harvest stage and ending in the re-use stages</p> <p>Distinction is made between edible and inedible parts</p>
European Parliament	<p>Food Waste ‘Food waste’ is defined as all food (as defined in Article 2 of Regulations (EC) No 178/2002 of the European Parliament and of the Council) that has become waste. Waste means any substance or object which the holder discards or intends or is required to discard</p>	<p>A broad definition, identifying food loss and waste without distinction under ‘Food Waste’</p> <p>The definition is open to interpretation for member states</p>
US EPA	<p>The term ‘wasted food’ describes food that was not used for its intended purpose and is managed in a variety of ways, such as donation to feed people, creation of animal feed, composting, anaerobic digestion, or sending to landfills or combustion facilities. Examples include unsold food from retail stores; plate waste, uneaten prepared food, or kitchen trimmings from restaurants, cafeterias, and households; or by-products from food and beverage processing facilities. EPA uses the overarching term ‘wasted food’ instead of ‘food waste’ for food that was not used for its intended purpose because it conveys that a valuable resource is being wasted, whereas ‘food waste’ implies that the food no longer has value and needs to be managed as waste</p> <p>Food Waste Refers to food such as plate waste (i.e., food that has been served but not eaten), spoiled food, or peels and rinds considered inedible that is sent to feed animals, to be composted or anaerobically digested, or to be landfilled or combusted with energy recovery</p> <p>Food Loss Refers to unused product from the agricultural sector, such as unharvested crops</p> <p>Excess Food Refers to food that is recovered and donated to feed people</p>	<p>The definition is around three components, covering food waste, food loss, and coming up with a definition for excess food, which is recovered from the food waste process</p> <p>Unlike other definitions, the US EPA’s includes losses occurring at the preharvest stages.</p>

Source: FAO: Technical Platform on the Measurement and Reduction of Food Loss and Waste; UNEP: Food Waste Index Report 2021; European Parliament: Reducing Food Waste in the European Union, 2020; United States Environmental Protection Agency: Sustainable Management of Food Basics, last updated July 2022

This lack of consensus has given rise to ambiguity around certain terms, making it difficult to provide concrete answers to key questions. These include:

System Boundaries

What are the start and end points when accounting for food loss and waste — does it start at the preharvest or postharvest stage? How do we accurately distinguish between loss and waste?

Recovery And Re-use

How do we account for elements that have been removed from the supply chain, and recovered for use in alternative areas, such as fertilizer and animal feed?

Cultural Differences

How do we account for ‘cultural’ differences, where some products (animal intestines, for instance) are considered inedible in certain cultures, but not others? Should these products be classified as food loss and waste?

Inedible Vs. Edible Parts

Should inedible animal parts and food byproducts be categorized as food loss and waste?

Liquids And Drinks

How are liquids and drinks (such as water) accounted for within a framework of food loss and waste?

It is unlikely that a straightforward answer will be found to these questions, given the complexity of the topic, as well as the challenges that are unique to each country and each sector.

Thus, countries and organizations are encouraged to set their own definitions based on local contexts and desired objectives.

For example, an entity seeking to improve food security would ignore inedible parts and foods that leave the food supply chain but are recovered for alternative uses. In contrast, an entity seeking to reduce its environmental footprint would consider both edible and inedible parts. Experts worldwide have acknowledged and emphasized the importance of modular definitions, agreeing that these will vary according to purpose.¹

As such, experts have recommended that definitions be informed by the following elements:²

Material Type

Identify the kind of food that will be included in loss and waste: for example, does the definition encompass inedible parts or liquids?

Destination

Identify the different destinations of food that are removed from the human food value chain (e.g., animal feed, controlled combustion, composting, landfill, sewer, etc.) and then decide which, if any, should be considered food loss or waste.

Boundaries

Define the system boundaries where measurement will occur across the lifecycle stages of the material (such as preharvest, production, manufacturing, retail, services, or households).

From Preservation To Plenty: How Food Loss And Waste Has Evolved

Although the development of agricultural communities dates back to around 10,000 years ago,³ the concepts of food loss and food waste are fairly new.

Humans have long experimented with techniques to preserve and prolong the shelf life of their foods. In fact, agricultural communities started to take shape when humans became more adept at curing meat, drying fruit, and smoking, fermenting, or pickling produce, as these processes enhanced their ability to survive in different climates.⁴

The rise of the Industrial Revolution in the 18th century created the first dramatic surge in the supply of accessible goods, and the commercialization of food made it more affordable and easier to come by. This unprecedented excess and access led to more waste in economically privileged countries.⁵

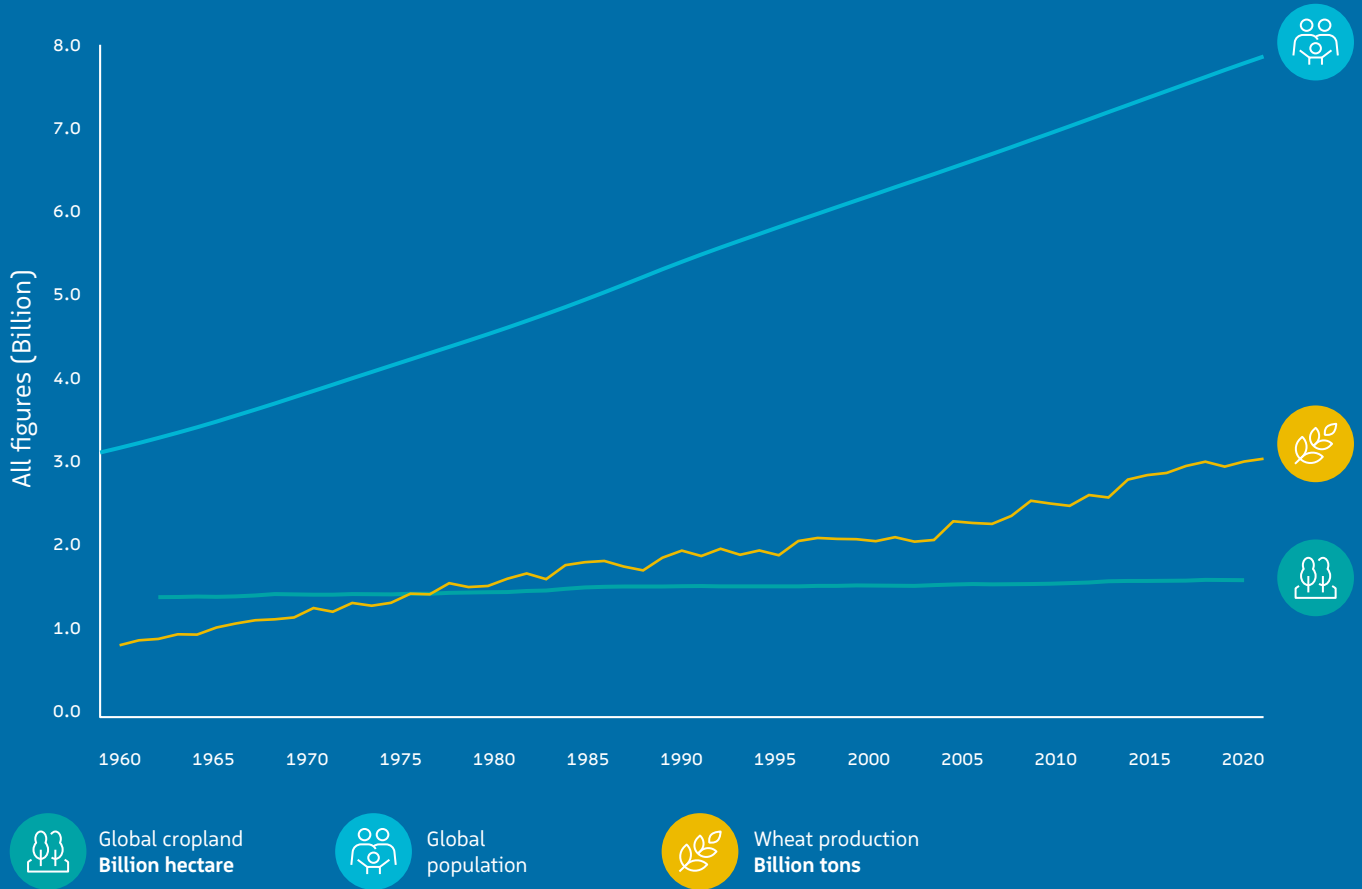
As military campaigns became commonplace throughout Europe during the 1800s, the issue of food preservation once again came to the fore. The process of food canning as a means of food storage, still in use today, was introduced during the Napoleonic Wars in answer to the army's growing need for a prolonged shelf life. The method was created by French inventor Nicolas Appert in response to Napoleon's offer of a prize of 12,000 francs to anyone able to prevent military supplies from spoiling. The method soon reached England where, in 1810, Peter Durance patented the use of metal containers for canning.⁶

The stream of innovation continued with the wars of the 20th century, when advances such as the development of pesticides and the introduction of mechanization transformed the post-World War 1 agricultural industry, and food availability increased significantly. Improved farming techniques meant that agricultural output kept pace with population growth. Overproduction soon became commonplace, leading to food waste. Conversely, with refrigerators becoming a staple feature in households in Europe and the United States, food preservation took another step forward.

The focus on food loss and waste started to shift towards the end of the 20th century, when issues around malnutrition and food security overtook food preservation as a priority. The term 'food security' became a prominent item on government agendas after the 1996 World Food Summit,⁷ especially considering the fact that the global population had doubled in size since the 1960s. It was at this point that FLW was identified as critical to food security. With this in mind, global leaders committed to minimizing food waste with their endorsement of the UN's Sustainable Development Goals (SDGs) framework in 2015; specifically, SDG 12.3⁸ which commits to halving food waste and loss by 2030.

Figure 2
Change In Global Wheat Production, Population Growth, And Land Use

All figures are indexed to the start year of the timeline



Source: Our World in Data based on World Bank, Food and Agriculture Organization of the United Nations

Towards An Accurate Measurement Paradigm

Food loss and waste is typically measured and reported in terms of weight; that is, the number of tons of food lost and/or wasted across the value chain. This number may then be converted to kg/per capita per day, or expressed as a percentage of the total food supplied; other, more elaborate methods further convert weights into caloric levels or monetary values. This is intended to present the nutritional or economic value of the products wasted and lost, which is not addressed when loss and waste are expressed merely in terms of weight.

The Food Loss and Waste Accounting and Reporting Standard (or FLW Standard) is the most comprehensive guide to quantifying and reporting food loss. This voluntary standard was developed in 2016 as a collaborative effort between representatives from multiple reputable organizations, including the World Resources Institute, Nestlé, UN FAO, the EU-Funded FUSIONS project, the Waste and Resources Action Program, and the World Business Council for Sustainable Development.⁹

The standard was developed to aid public and private entities in quantifying food loss and waste at various levels (for example, within a specific country or even company). The standard recognizes that different organizations have in place different definitions, objectives, and levels of data access.

The FLW Standard provides up to 10 ‘quantification methods’ for measuring food loss and waste, and includes requirements to ensure assumptions are reasonable. It further offers guidance around eliminating biases in sampling, assessing data quality and uncertainty risks, and scaling up data.

Figure 3
Quantification Methods

	Methods	Definition
Measurement	1. Direct weighing	Using a measuring device to determine the weight of FLW
	2. Counting	Assessing the number of items that make up FLW and using the result to determine the weight; includes using scanner data and ‘visual scales’
	3. Assessing volume	Assessing the physical space occupied by FLW and using the result to determine the weight
	4. Waste composition analysis	Physically separating FLW from other material in order to determine its weight and composition
	5. Records	Using individual pieces of data that have been written down or saved, and that are often routinely collected for reasons other than quantifying FLW (e.g., waste transfer receipts or warehouse record books)
	6. Diaries	Maintaining a daily record or log of FLW and other information
	7. Surveys	Gathering data on FLW quantities or other information (e.g., attitudes, beliefs, self-reported behaviors) from a large number of individuals or entities through a set of structured questions
Inference By Calculation	8. Mass balance	Measuring inputs (e.g., ingredients at a factory site, grain going into a silo) and outputs (e.g., products made, grain shipped to market) alongside changes in levels of stock and changes to the weight of food during processing
	9. Modeling	Using a mathematical approach based on the interaction of multiple factors that influence the generation of FLW
	10. Proxy data	Using FLW data that are outside the scope of an entity’s FLW inventory (e.g., older data, FLW data from another country or company) to infer quantities of FLW within the scope of the entity’s inventory

Source: Food Loss and Waste Accounting and Reporting Standard

The State Of Food Loss And Waste Globally, And Why It Matters





A Snapshot Of Food Loss And Waste Around The World

Food loss and waste is a global problem and poses a threat to food security in developed and developing countries alike. With more than 1.3 billion tons of food being lost and wasted every year,⁴⁰ one in nine individuals suffers from hunger.⁴¹ Population growth, changing eating habits, and inefficiencies in the food supply chain are driving the increase in FLW.

The following paragraphs outline the current state of food loss and waste around the world, highlighting key trends, and outlining some of the challenges associated with the lack of an accurate measure. This paper uses the two separate indices developed by the FAO and UNEP in 2016.

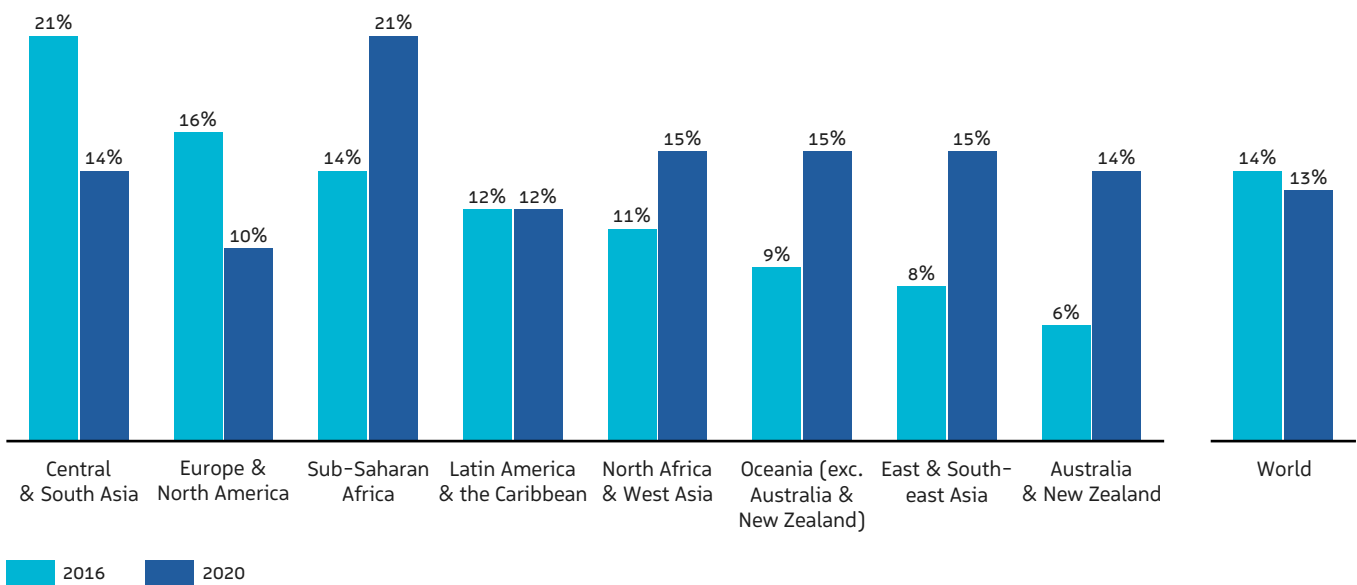
Food Loss

The Global Food Loss Index, completed by the FAO in 2019, is at present the most reliable measure of food loss around the world. The reported numbers focus on food losses that occur from production up to (though not including) the retail level, divided by the total amount produced. The losses are estimated through representative sample surveys conducted along the supply chain for select commodities across countries.

There has been little variation in food loss at a global level between 2016 to 2020 (Figure 4). However, there has been substantial variation at the regional level, with most regions exhibiting increased losses. Europe, North America, and Central and South Asia stand out as exceptions, as

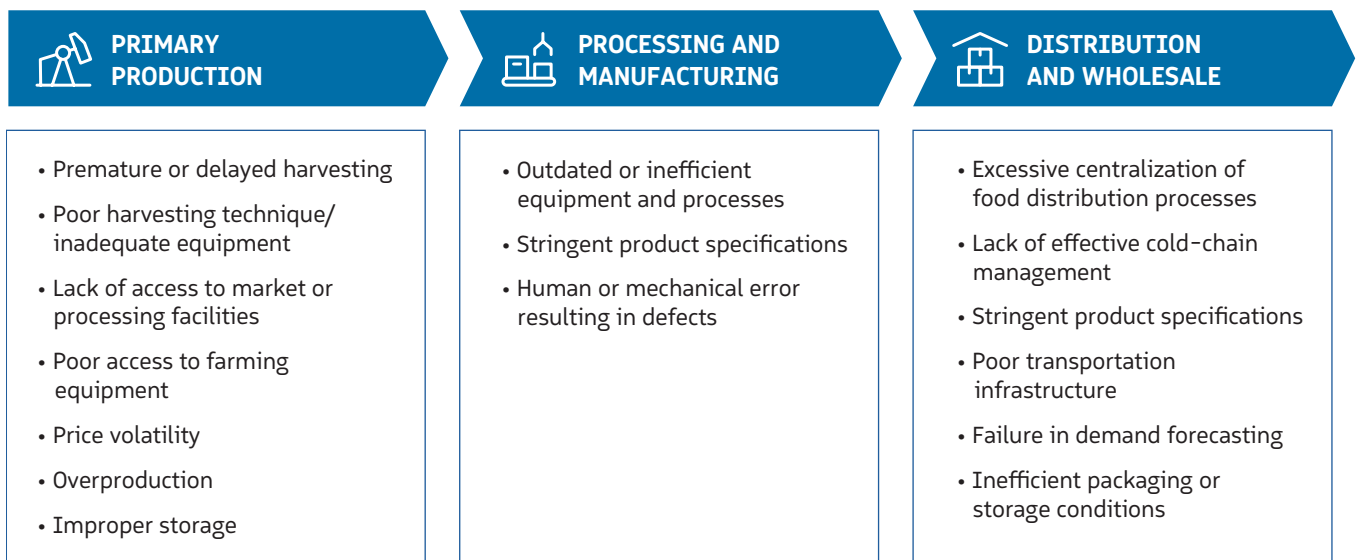
these regions have exhibited a notable decrease. As stated earlier, developing nations typically experience higher levels of losses, due to the prevalence of traditional farming practices, and lack of infrastructure. Typical drivers for losses across the value chain are detailed in Figure 5.

Figure 4
Percentage Of Food Loss (2016 Vs. 2020) (%)



Source: UN FAO: Food Loss Index 2016-2020

Figure 5
Food Loss Drivers By Stage Of Food Supply Chain



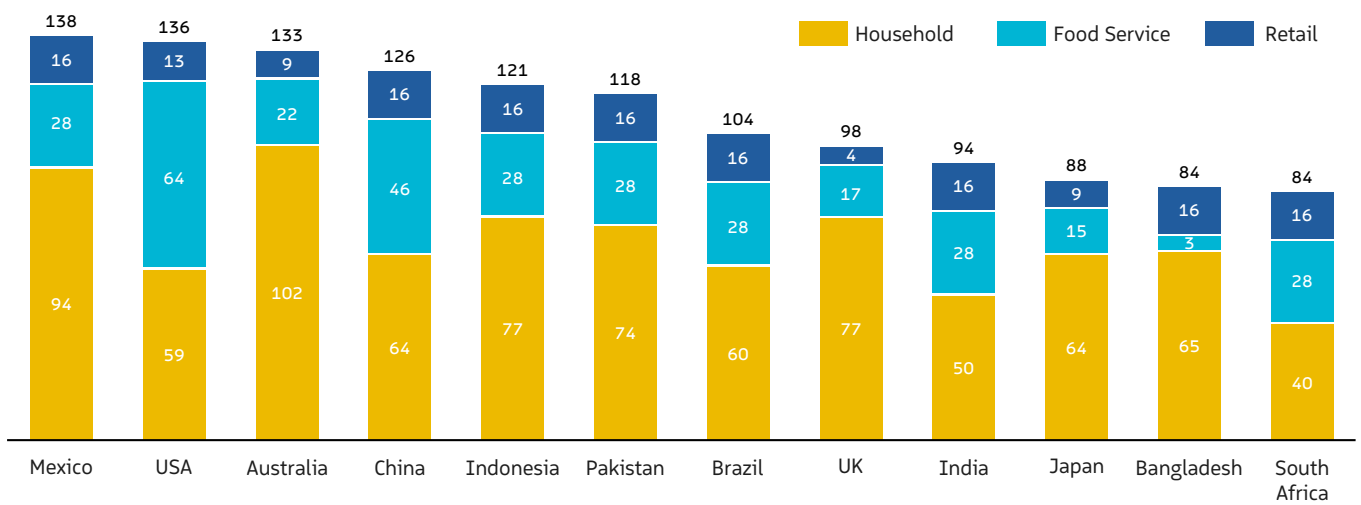
Source: Commission for Environmental Cooperation: Why and How to Measure Food Loss and Waste

Food Waste

UNEP’s first Food Waste Index Report, issued in 2021, is based on estimates of food waste around the world, collated between the years 2004 and 2021 across three sectors: household, retail, and food services. Results are reported in kg/capita/year, allowing for easy comparisons between countries.

Although the report is considered the most comprehensive collection of data pertaining to food waste at a global level to date, the data reflected in the report remains a rough estimate. Most of the source data from the 190+ countries included in the report is categorized to be of ‘low’ or ‘very low’ confidence by the UNEP.

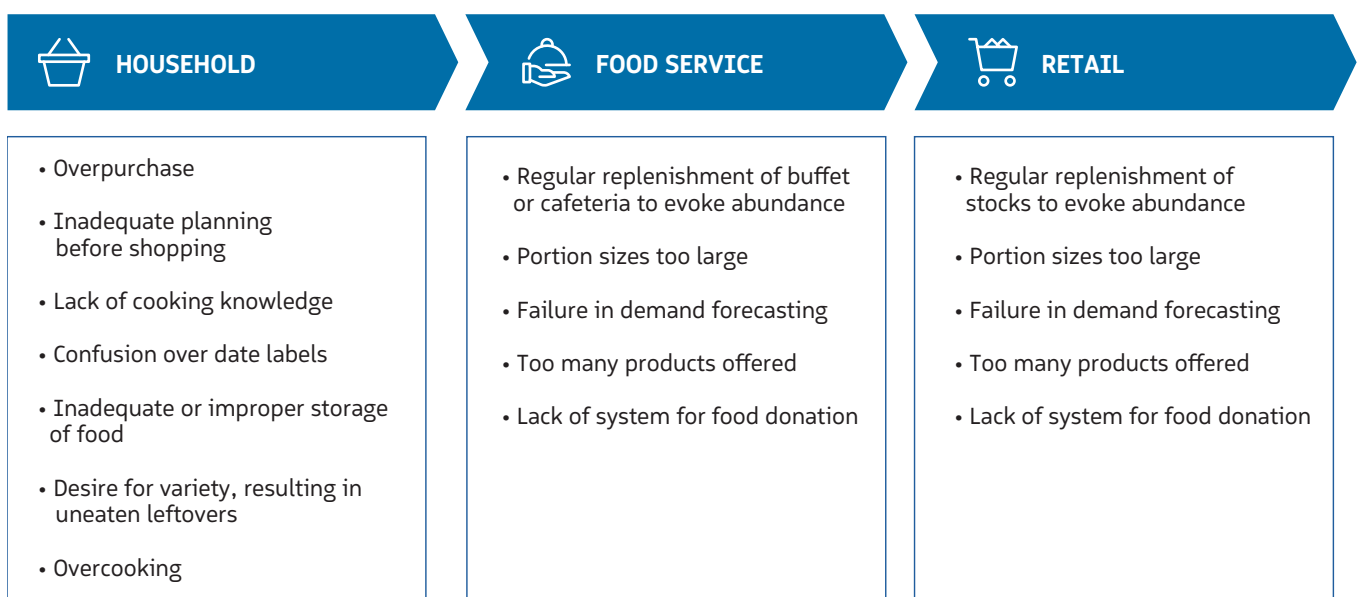
Figure 6
Food Waste (2021) (Kg/Capita/Year)



Source: UNEP Food Waste Index Report 2021 Database

Typical drivers for waste across the three sectors are highlighted in Figure 7.

Figure 7
Food Waste Drivers By Stage Of Food Supply Chain



Source: Commission for Environmental Cooperation: Why and How to Measure Food Loss and Waste

The Situation Is Worsening

Although food loss and waste continue to gain attention, neither issue has been resolved. In fact, far from improving, the situation is worsening. According to Oliver Wyman analysis, it is estimated that the amount of food lost or wasted per capita during the last decade has been increasing. Experts warn that this trajectory is

unlikely to change; to the contrary, even though little information is available at this point, it is believed that the COVID-19 pandemic exacerbated matters, due to factors such as consumer stockpiling, unpredictability in consumer demand, and restriction on worker movements, etc.

Implications For Global Resource Security

Reducing food loss and waste eases pressure on the global food value chain, because it is possible to meet a large part of the world's food demand with the food saved. This in turn reduces the burden exerted by food production on the environment.

The burden of food loss and waste can be assessed across three dimensions: social, economic, and environmental.

Social

According to experts, it would be possible to eliminate world hunger through achieving zero food loss and waste.¹² This has the potential to create a paradigm shift on a global scale, reducing conflict, increasing life expectancy, and changing migration patterns.

Economic

According to the FAO, approximately 30% or 1.3 billion tons of food produced for human consumption around the world is either lost or wasted each year. This translates to US\$1 trillion in economic costs, around US\$700 billion in environmental costs, and around US\$900 billion in social costs (e.g. higher healthcare costs and lost productivity due to individuals being weakened by nutritional deficiency and food insecurity).¹³

Environmental

The agricultural industry inevitably exacts a heavy toll on the environment. Since food loss and waste accounts for approximately one third of agricultural activity, it follows that it has significant environmental impacts, contributing to the depletion of scarce natural resources like water and land.

The FAO has quantified the blue water footprint of food wastage (the consumption of surface and groundwater resources) at around 250 billion m³, the equivalent of 100 million olympic pools. Food loss and waste also contributes to global warming and soil and air pollution,¹⁴ as illustrated in Figure 8. The FAO estimates that FLW accounts for approximately 8% of global emissions, almost as much as global road transport emissions.¹⁵ Additionally, food wastage contributes to biodiversity loss in as much as it exacerbates other negative consequences, such as agricultural expansion into natural wildlife habitats.¹⁶

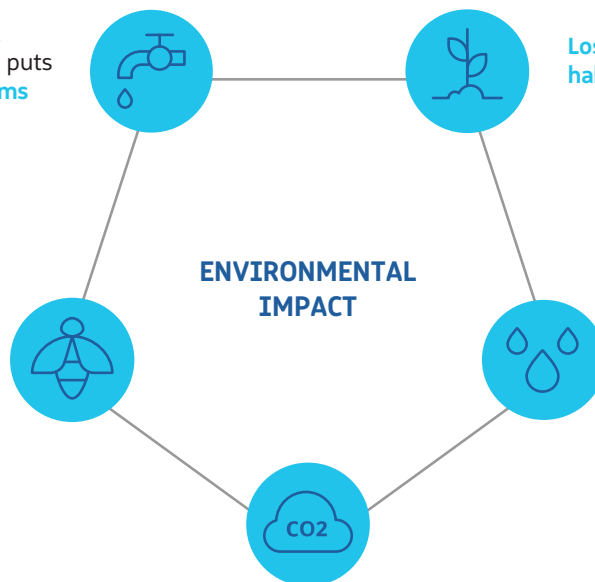
Population growth, changing dietary habits, and the increasing scarcity of resources all intensify pressures on the global food chain, adding to the urgency to reduce food loss and waste. By 2050, the world population is projected to reach 9.77 billion.¹⁷ The population of developing countries is growing faster than the population of industrial and transitioning countries. As a result, dietary habits in developing countries will shape the future of food production and consumption over the next decade. The marked shift towards high calorie diets in these countries is set to affect food

production; meat production, for example, has been projected to increase at a Compound Annual Growth Rate (CAGR) of 2.1% between 2015 and 2030. Cereals production is expected to increase by 1.3% over the same period.¹⁸ The increase in population, coupled with higher demand per capita and a larger variety in food consumption, further increase the complexity of the food value chain globally. Without effective mitigation measures in place, this will inevitably lead to an increase in food loss and waste.

Figure 8
Environmental Impact Of Food Waste And Loss

The agriculture sector is the largest consumer of water; overproduction puts additional **pressure on water systems**

Risks to biodiversity, including the impacts of pesticide use, nitrate and phosphorus eutrophication, pollinator losses and, fisheries overexploitation



Loss of livelihood and habitat due to soil erosion

Increased soil erosion due to water through nutrient loss, lower yields, biological losses, and off-site damages

Increased greenhouse gas emissions due to overproduction of food, and increased transportation capacities of surplus quantities

Source: Oliver Wyman Analysis

The Role Of Governments

The private sector's role in reducing food loss and waste is growing, but it still remains limited. Efforts in this regard are usually government-driven, with the endorsement of the UN's SDGs being one of the most important initiatives in this area. In 2015, 150 governments (including all six GCC governments) committed to the SDG framework, which includes a commitment to halving per capita global food loss and waste by 2030 (Target 12.3). Governments are well suited to address issues surrounding food loss and waste for several reasons:

1. Governments, in their unique positions, can facilitate collaboration between public and private sector stakeholders
2. Governments have the power to enact and accelerate initiatives through legislation
3. The private sector may not always have the right incentives to reduce the negative externalities caused by food loss and waste on the environment and natural resources
4. Governments have the means to influence private sector behavior (through incentives or penalizations), especially when private sector interests are not aligned with reducing FLW
5. A lack of knowledge of the issue among end consumers exacerbates waste, and governments are well positioned to increase awareness

“Governments are well suited to address issues surrounding food loss and waste”



The GCC: Challenges, Opportunities, And Pathways





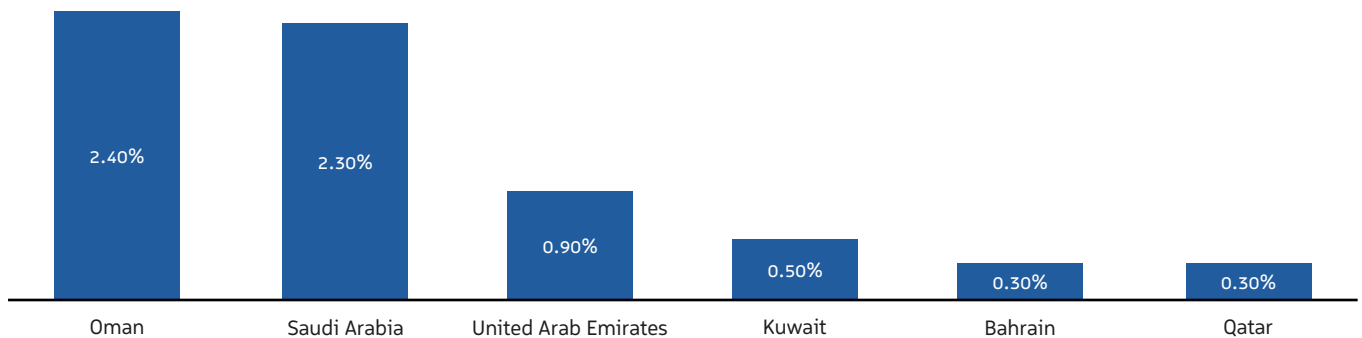
The unique environmental, economic, and social dynamics that characterize the GCC make it especially vulnerable to FLW, posing additional challenges to the management of the issue in the region.

Adverse Climate Conditions: The Gulf's hot, arid climate and low precipitation pose an agricultural challenge. These conditions also make it difficult to store and transport perishable goods without refrigeration.

Low Agriculture Production: The scarcity of water resources within the GCC means that agricultural sectors in the region's countries are relatively small: in all cases, agriculture's contribution to the Gross Domestic Product (GDP) is below 2.5% (Figure 9), although these numbers increase to 4% if only non-oil GDP is included.

It is not uncommon for agricultural contribution to GDP to be at low levels in developed countries, because many of these economies are largely industrialized. However, GCC countries have little self-sufficiency in terms of key crops like grains, fruits, and vegetables. But a relatively small agriculture sector often translates into a low level of food loss on the crop production side of the value chain, compared to waste.

Figure 9
Agriculture GDP As % Of GDP (2019)



Source: Oliver Wyman Analysis

High Reliance On Food Imports: All GCC countries rely heavily on food imports and have accumulated large trade deficits for food and agricultural products (Figure 10). General estimates indicate that these countries currently import more than 80% of their food requirements.

A Resounding Culture Of Hospitality: Generosity and hospitality are a hallmark of GCC cultures. However, this often translates into waste. GCC households are known for serving large amounts of food, particularly when hosting guests. Lavish displays of food are also the norm during events such as weddings or parties, as a symbol of the host's generosity. In fact, food demand skyrockets

during Ramadan, as iftars are organized for friends and relatives.¹⁹ Furthermore, GCC countries have experienced economic prosperity and growing wealth since the oil boom. Affluent countries are, in general, associated with higher levels of waste because of the perception of abundance.

High Cultural Diversity: The populations of GCC countries typically include a large number of expatriates, accounting for as much as 40-90% of the total populations across the region.²⁰ This results in an enormous diversity in food demand. Catering for different tastes has spurred the development of a highly complex food chain.

Figure 10
Key Socio-Economic And Environmental Indicators For All Six GCC Countries

	Population ⁱ (Million, 2021)	GDP ⁱⁱ (Billion USD, 2021)	GDP per Capita ⁱⁱⁱ (USD, 2021)	Agriculture Land ^{iv} (% of Total Land, 2018)	Temperature Range ^v (Degrees Celsius, 2021)	Water Scarcity Index Rank ^{vi}	Food Waste ^{vii} (Kg, per person)
Bahrain	1.748	38.87	22,237	0.113	13.27-44.72	12/202	171
Kuwait	4.329	106	24,486	0.085	3.00-50.78	2/202	121
Oman	5.223	85.87	16,441	0.047	13.89-41.67	16/202	134
Qatar	2.931	179.6	61,276	0.056	14.44-41.11	6/202	134
KSA	35.34	833.5	23,585	0.807	4.44-43.30	4/202	105
UAE	9.991	358.9	35,922	0.046	12.22-43.89	3/202	134

Source: (i) World Bank, (ii) World Bank, (iii) NA - Calculated, (iv) CIA Factbook, (v) Weather Spark, (vi) FAO, (vii) Food Waste Index

Food Loss And Waste In The GCC

Food loss and waste is regarded with varying levels of concern across different GCC countries. The issue is on the national agenda for the United Arab Emirates (UAE), Qatar, and Saudi Arabia (KSA). Each of these countries has conducted important research on the topic, leading to the implementation of initiatives to tackle both loss and waste. Conversely, the issue has received less attention in Kuwait, Oman, and Bahrain.

Saudi Arabia

As part of its national food security strategy, Saudi Arabia aims to halve food loss and waste by 2030, in line with its commitment to the UN's SDG goals. The custodian of the strategy, the Saudi Arabia Grain Organization (SAGO) has introduced a number of initiatives to address the FLW problem, starting with a comprehensive Kingdom-wide baseline study launched in 2019. The study, which is the most comprehensive in the GCC, used a sample size exceeding 50,000 people, covering each of Saudi Arabia's 13 regions. Leveraging the FAO's methodologies, the study examined 19 different commodities. Results showed that food loss in the Kingdom is estimated at 79kg per person per year, while waste stands at 105kg per person per year. These numbers equal around 33% of total food both produced in and imported to the country each year.²¹ SAGO has also worked to enable cooperation between the private sector, cooperatives, and not-for-profit organizations to implement food bank drives. Other notable initiatives include the National Program to Reduce Food Loss and Waste, which aims to raise awareness on the topic across the country, as well as increasing private-sector participation. With regards to losses, the country has invested significantly in improving its agricultural supply chain to limit food loss, and there is scope to further modernize cultivation. Cold storage and distribution are other areas where there is room for improvement. Saudi Arabia's food processing facilities, on the other hand, are well developed in terms of efficiency, and fare well in comparison to rivaling global players.





United Arab Emirates

The UAE has developed an ambitious food security strategy, which is intended to position it as the leading nation on the Global Food Security Index (GFSI) by 2051. The GFSI is a widely used, globally referenced tool, developed by the Economist Impact Organization, part of the Economist Group. The strategy comprises five programs, one of which is dedicated to reducing food loss and waste, in line with the UN SDG 12.3 of halving food loss and waste by 2030.

There are no official values for food loss and waste in the country. However, the Food Waste Index²² states that food waste stands at 134kg per person per year. Historically, policies touching on FLW were framed under broader environmental plans, such as the UAE's Green Agenda 2030, which provides a framework for sustainable production and consumption, or the UAE green business toolkit, which provides a set of guidelines designed to help Small and Medium-sized Enterprises (SMEs) 'green' their value chains. Recently however, the government has introduced more targeted initiatives, including 'Ne'ma', the National Food Loss and Waste Initiative. This collaboration between the Ministry of Climate Change and Environment, the Emirates Foundation, and the Abu Dhabi Crown Prince Court, aims to align shared action across the whole value chain by key national stakeholders across the government, private sector, non-governmental organizations (NGOs), and communities. This initiative includes plans to conduct a national baseline study as a first step to identify the magnitude of the challenge. This will be followed by the implementation of measures and policy actions.²³

Qatar

Qatar has developed a food security strategy that tackles food loss and waste, and it has also committed to the UN SDG 12.3. The country has plans to launch a comprehensive and integrated program to address the topic, starting with a national baseline study. This marks a shift towards a more holistic approach to managing the problem, which has historically been addressed through awareness campaigns and a reliance on the private sector to introduce innovative solutions. Qatar's preliminary estimate for food waste currently stands at 134kg per capita per year, with no data on loss available.²⁴

Kuwait

According to the Food Waste Index, food waste in Kuwait stands at approximately 121kg per person per year.²⁵ Again, there is no data for loss available. The Kuwaiti government has not yet enacted any substantial policy measures to address the matter, although NGOs and the private sector are incrementally stepping up their involvement. For example, ReFood, an organization founded in 2014, collects products nearing expiry from supermarkets and redistributes them to food insecure families. ReFood's footprint among major grocers and food retailers has increased significantly since it first started operations. Food Bank for Food and Relief (an initiative launched by a local GCC bank) is another key project, distributing surplus cooked meals from restaurants, hotels, and home banquets to food insecure and food insufficient families in Kuwait. At present, the project focuses on packaged materials only.

Bahrain

The Kingdom of Bahrain wastes an estimated 171kg of food per person per year, according to the Food Waste Index.²⁶ There is no data related to food loss available. The Ministry of Municipalities Affairs and Agriculture has not yet introduced specific plans to tackle the issue, which is generally addressed as part of the broader topic of waste management. However, a non-profit food bank, the Conserving Bounties Society (CBS), has been established to implement reduction measures and raise awareness around food security.²⁷

Oman

Food waste in Oman stands at an estimated 134kg of food per person per year, according to the Food Waste Index.²⁸ As with many other GCC countries, no data pertaining to food loss is available. 'Be'ah, Oman's environmental services and waste management company operating under the nation's sovereign wealth fund, explores creative solutions to the country's food waste problem. Besides launching awareness campaigns to dissuade food waste, Be'ah also plans to improve its management of wasted food by directing it towards sustainable energy creation initiatives.

For example, plans are afoot to establish a biogas plant that will produce electricity out of organic food waste from households. In this way, waste can be kept out of landfill, where it would contribute to environmental degradation, and instead be used to add value as a key element in recycling initiatives.

Key Challenges Facing The GCC

The GCC's challenges regarding food loss and waste mirror those experienced globally, and include:

Inadequate Data To Support Policymaking

The quality of country-level data on food loss and waste is currently flawed in terms of availability and accuracy (Saudi Arabia is a notable exception here, with the country achieving substantial progress in this area since 2019, see page 23). Overall, there is a need to quantify food loss and waste across the supply chain. There is also a need for a better assessment of the economic, social, and environmental impacts of FLW at national and local levels. Available estimates are not consistent across countries, and are often incomplete, limiting the effectiveness of policy-making and planning, and hindering the ability to monitor progress.

Lack Of Effective Policies And Regulations

Aside from national strategies with broad direction and/or general reduction targets, there are no specific policies or regulations in place to manage food loss and waste in the region. Furthermore, existing policies, regulations, and standards could, in some cases, have a negative impact on food loss and waste. For instance, if not carefully designed, subsidized agricultural production may lead to a surplus of certain products (depending on market changes). This, in turn, may exacerbate loss and waste. Rigorous standards for food safety and quality are another factor that may worsen FLW: for example, due to stringent regulations around expiry dates, many GCC countries destroy large quantities of products that have been imported, or are already in the market.

Limited Awareness And Education

Limited awareness and signaling about the true value of food products results in consumers buying more than what is needed. Current efforts to raise awareness are limited to adhoc or short-term campaigns with no impact measurement mechanisms or continuity.

Limitations In Technical Capacity

Insufficient technical capacities hinder efforts to reduce food loss and waste across different components of the supply chain. The lack of cold storage, transportation, handling, and primary processing facilities all lead to increased produce loss. Meanwhile, a lack of reuse or recovery options means that it is cheaper and easier to dump food than reprocess it, leading to increased food waste.

A Way Forward For The GCC

Based on our review of expert literature and best practices, as well as our understanding of the current situation across GCC countries, we recommend five key steps governments can adopt to tackle the issue:

1. Establish Clear Definitions And A Measurement Approach That Relies On Standardized Data Collection

GCC countries need to standardize food loss and waste data collection processes. This will make it possible to remove the ambiguity around definitions of terms related to food loss and waste, while also laying the foundation for the development of a coherent system of measurement methodologies. At present, no such methodologies are in place; consequently, GCC countries rely on high-level estimates to gauge the scope of the problem. A standardized approach to data collection would improve both the accuracy and reliability of these estimates. It would consequently provide a clearer understanding of both the causes and the magnitude of food waste and loss across the value chain. Such knowledge would in turn allow decisionmakers to set realistic national targets, monitor progress, identify and deploy corrective action, and assess policy impact.

2. Conduct Systematic Awareness Campaigns Across All Stakeholders Within The Value Chain

Public awareness campaigns play a crucial role in encouraging consumers to take action against food waste. However, these campaigns must be accompanied by impact measurement efforts in order to evaluate their success. Without clear benchmarks and continuous assessments, it is impossible to determine their effectiveness. Any awareness campaign should involve input from multiple stakeholders, who should themselves have access to quantifiable impact metrics and success cases. This will help to motivate participants, and enable analysis of setbacks and failures. Campaigns should also target

players across the value chain, including farmers, processors, distributors, and policymakers. Done well, these will catalyze a change in attitude towards food waste.

3. Adopt An Integrated And Collaborative Approach

Food loss and waste is a multi-level, multi-sectoral issue. Therefore, comprehensive and effective solutions can come about only through collaboration between stakeholders in both the public and private sectors, as well as civil society. Improvement measures must be crafted around existing pain points and should be introduced in a coordinated fashion. The current mode of implementation illustrates the importance of such an approach, as the shortcomings of existing initiatives may be attributed to the scattered nature of measures introduced throughout the GCC, along with both the lack of collaboration and interdependence between stakeholders. Many GCC countries, including the KSA, UAE, and Qatar, have acknowledged this pitfall, and aim to correct it through the development of an integrated program.

4. Develop Legislative Instruments To Support The Reduction Of Food Loss And Waste

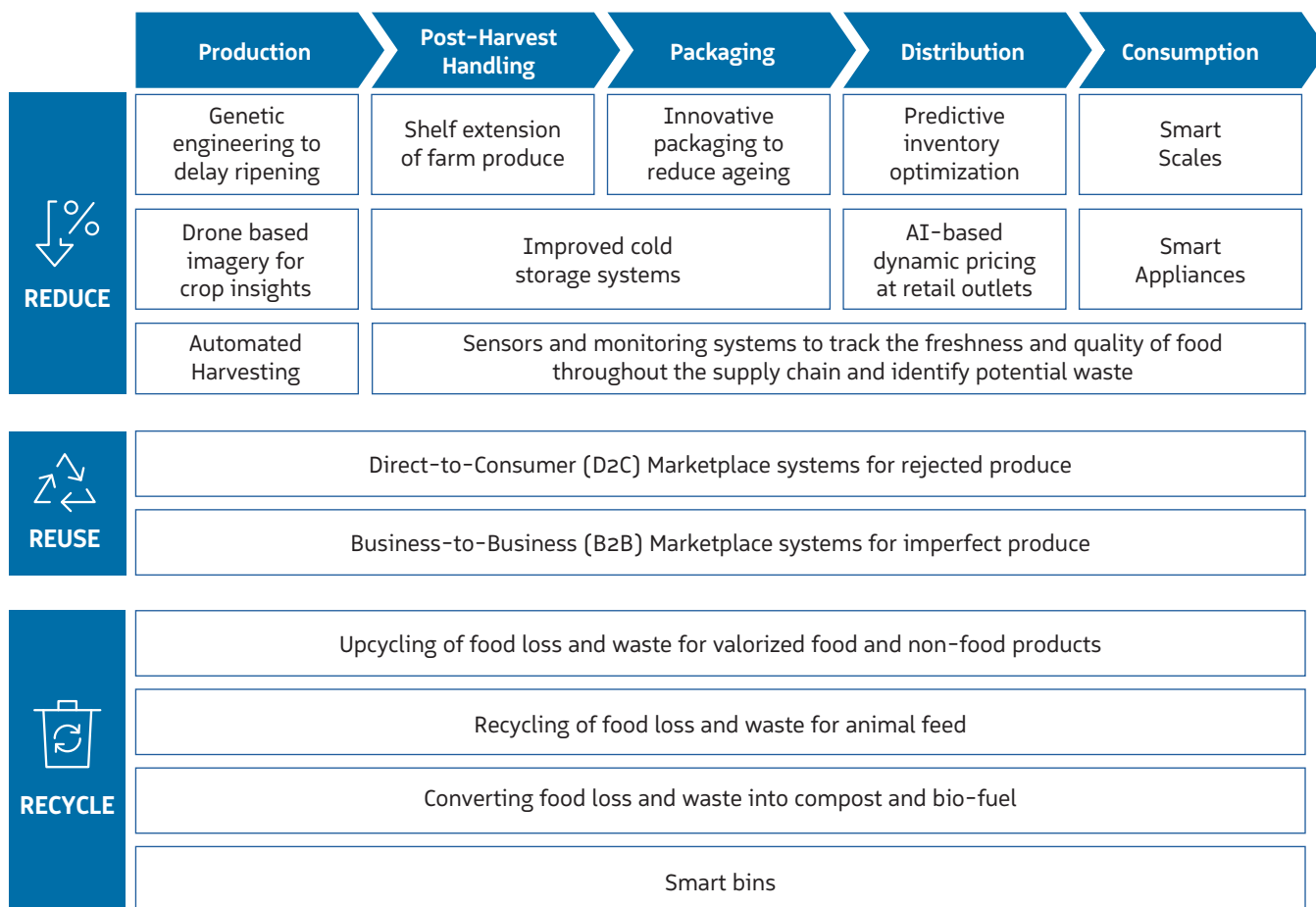
Before new legislation can be developed, it is important to review the current legislation. This makes it possible to determine how current legislation inhibits the adoption of good practice. It also helps identify the changes required to integrate these practices or, at the very least, provide greater flexibility or incentives to reach FLW reduction goals.

Governments have access to several legislative and regulatory instruments that may help to address the problem. Examples include:

- Requiring food businesses to minimize waste and donate excess food to charities and food banks
- Creating financial and non-financial incentives for businesses and individuals to reduce food waste
- Developing standards and labels for food products to help consumers understand the environmental impact of their food choices
- Establishing food loss and waste reduction targets for businesses and industries, with penalties for those that fail to meet these targets

These are just a few examples of the types of legislations that can be adopted to reduce food loss and waste. The specific approaches will depend on each country's local context, and the goals and priorities of each government.

Figure 11
Example Food Loss and Waste Reduction Technologies



Source: Oliver Wyman Analysis

5. Invest And Support Investment In Technology And Innovation

Technology and innovation have the potential to significantly reduce food loss and waste. There is currently little incentive for private sector stakeholders in the GCC to invest in these technologies, as it is easy and inexpensive to dispose of food. Thus, apart from the establishment of a small number of startups aiming to address this issue, as well as international companies striving to promote their own solutions, little progress has been made. Governments can change this by investing in these technologies themselves, or encouraging the private sector to finance their adoption — a move that would have the added benefit of ultimately helping companies become more sustainable. With the right ecosystem in place, the private sector can drive innovation by identifying commercially viable solutions to reduce food loss and waste across the value chain.



Conclusion

We have moved from an era of preservation and self-sufficiency to a highly globalized time of plenty in which much of the world expects instant access to a plethora of foods. This has made the food value chain more complex and harder to manage.

One consequence of this is food loss and waste, which poses a significant challenge to food security, both globally and at the GCC level.

The first steps must be building coherent measurement systems based on the requirements of the local context as well as agreed-upon definitions, so that the true magnitude of the problem can be ascertained. Only then can effective and efficient paths forward be mapped out.

As we have detailed in this report, the situation is unfortunately worsening globally, but governments are uniquely positioned to spearhead solutions, while also encouraging the private sector to follow suit. In the GCC, governments have responded to the issue with varying degrees of urgency, and initiatives are steadily gaining traction. Furthermore, these public sector interventions are increasingly supported by input from the private sector and civil society.

Once definitions and measurements are established in the GCC, legislative instruments must be employed, technology must be harnessed, and awareness campaigns invoked so that stakeholders across the value chain understand the risks of inaction.

Food loss and waste has social, environmental, and economic impacts — and so working collaboratively to find and implement solutions now is paramount to the security, prosperity, and equity of our world's future.





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