REPORT 23-24 FOOD WASTE AND RESCUE IN ISRAEL

Leket Israel
The National Food Bank

המשרד להגנת הסביבה
الوزارة لحماية البيئة
Israel Ministry of Environmental Protection

MINISTRY OF HEALTH

Writing and Editing: BDO

The National Food Waste and Rescue Report has been published annually since 2015 by Leket Israel and BDO. This year, it is being released for the second time in partnership with the Ministry of Health and for the fifth time in collaboration with the Ministry of Environmental Protection.

According to estimates presented in this Report, total food loss and waste in Israel in 2023 amounted to 2.6 million tons, with an estimated value of approximately NIS 24.3 billion ($6.6 B). This represents about 38% of the country's total food production. Of this, over 1.2 million tons— valued at approximately NIS 8.6 billion ($2.3 B)—is considered rescuable and fit for consumption.

In Israel, where food expenditure is relatively high by international comparison, food waste is one of the key factors affecting the cost of living—both through excess spending on food and through the impact of loss and waste on rising food prices. In 2023, the overall effect of food loss and waste on the cost of living amounted to an added expense of NIS 10,200 ($2,764) per household in the household consumption sector.

In addition, the climate crisis and the Israeli government's commitment to reducing greenhouse gas emissions underscore the need to reduce food loss and waste and use food rescue as a policy tool for reducing greenhouse gas emissions.

Preventing food waste and rescuing surplus food are important economic and environmental tools for implementing Government Resolution 171 from July 2021, which aims to reduce the volume of landfilled waste by 71% by 2030. According to the Report's findings, 2 million tons of food waste and packaging were discarded over the past year. The environmental damage resulting from food loss is estimated at NIS 4.1 billion ($1.1 B).

The Report, based on BDO's economic model for the food sector, presents a comprehensive and detailed analysis of food loss and waste in Israel across various stages. It highlights the potential for food rescue at each stage of the food value chain, as well as the economic, environmental, and health costs associated with food loss and waste at each stage.

The Report's findings point to a high return on investment in food rescue from economic, social, health, and environmental perspectives. Every dollar invested in food rescue saves food with a direct value of $3.6. When factoring in the environmental impacts of food production, transportation, and distribution, every dollar invested in food rescue generates $4.2 for the national economy. When the health benefits of providing nutritious food to vulnerable populations

are also considered, the total economic value rises to $10.3 for every dollar invested in food rescue.

This Report includes a special, exclusive chapter dedicated to the impact of the Swords of Iron War on food loss in the agricultural sector and its effect on food security in Israel.

Food security is a fundamental element of national resilience. The war has shown that damage to the agricultural sector leads directly to reduced food security. This expanded chapter will evaluate the added cost of food loss to the national economy over the first nine months of the war, the increased healthcare costs resulting from heightened food insecurity during this period, and the potential savings made possible through food rescue efforts in Israel.

It is our hope that this Report will serve as a foundation for public discussion on food loss and waste and will be a valuable tool toward formulating national policy measures to bring about meaningful change in food loss, waste, and rescue patterns in Israel.

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Distinctive Traits of Food Production and Consumption in Israel

475 thousand Israeli households suffer from food insecurity

This year's Report features a special in-depth chapter on food loss in the agricultural sector during the Swords of Iron War and its impact on food security in Israel.

For the average household in Israel, food expenditure is approximately 19% of its total basket of consumer goods. For households in the lower two income deciles, this rate is 22%. However, food is more than just a household expense - it is a fundamental need. A balanced diet is crucial for overall public health and especially for the growth and development of infants and children. The economic impact of food insecurity and poor nutrition extends far beyond the market price of food, exceeding the costs associated with its production across the value chain.

Food insecurity is a particularly serious problem in Israel: the average rate of expenditure on food is among the highest in developed countries, and Israel has one of the highest poverty rates among countries in the OECD[1]. An analysis conducted by BDO based on data from the December 2021 National Insurance Report[2] found that 16.2% of Israeli households - approximately 475,000 Israeli households - experience food insecurity. Their food expenditure is approximately 25% lower than the normative level.

Food cultivation and manufacturing often depends on scarce, costly, and non-renewable resources: energy, water, and land. Industrial agriculture degrades water, soil, and air, harms biodiversity, and generates greenhouse gases that drive climate change[3]., Surplus food often ends up in landfills where its

[1] OECD, Poverty Rate, 2021
[2] The Extent of Poverty and Income Inequality: 2020 Administrative Data and 2021 Estimate, National Insurance Institute.
[3] Cut Waste, GROW PROFIT. *How to reduce and manage food waste, leading to increased profitability and environmental sustainability*, Background paper 2012.

decomposition releases significant quantities of methane gas, and which requires further resources for collection and disposal.

In a small and arid country like Israel, water and land are particularly precious and limited resources. Food loss and waste (FLW) degrades the environment, wastes economic resources, and exacerbates food insecurity.

This Report examines food loss and the feasibility of food recovery from economic, social, environmental, and health perspectives, based on quantifiable assessments and estimates. It includes updated data and methodological improvements drawn from insights gained in preparing and publishing the last seven reports.

Produced in collaboration with the Ministry of Health and the Ministry of Environmental Protection, this year's Report features a special in-depth chapter on **food loss in the agricultural sector during the Swords of Iron War and its impact on food security in Israel.** The findings of this Report indicate that the Swords of Iron War has exacerbated the issue of food loss due to restricted access to agricultural land and a shortage of labor, reducing the supply of fresh produce. This has contributed to rising fruit and vegetable prices and further worsened food security in Israel

Food security is a fundamental component of national resilience. The war has shown that damage to the agricultural sector directly impacts food security, thereby weakening national resilience. This expanded chapter in the Report will examine and assess the additional economic cost of food loss to the national economy during the first nine months of the war, the increased healthcare expenses resulting from the rise in food insecurity, and the potential for reducing these costs through food recovery efforts in Israel.

The State of Food Loss and Waste in Israel

2.6 million tons of food were lost and wasted in Israel in 2023

The 2023 Food Loss and Rescue Report estimates total FLW in Israel at 2.6 million tons, a figure similar to that reported in the previous year (8th Annual Food Waste and Rescue Report)[4]. This occurred despite a decline in food production and consumption in 2023 due to the war, effectively resulting in a 3% increase in the food loss rate across Israel.

The food loss and waste estimate in Israel is based on a unique value chain model for food production[5].

In 2023, food loss in Israel was estimated at approximately 2.6m tons, 38% of total domestic food production.

Agricultural production in 2023 remained comparable to previous years, totaling around 7.1m tons.

The total food loss across all stages of the value chain is **equivalent to about NIS 700** (USD $190) per month per household in Israel.

[4] The data has been rounded for reader convenience: In 2022, food waste was approximately 2.62m tons, and in 2023 it reached 2.63m tons.
[5] The value chain model does not include beverages, stimulants, sugar, honey, or confectionery.

Estimated Food Loss per Household in Israel*, 2023

Category	Agriculture	Processing & Packaging	Industry	Retail & Distribution	Institutional Consumption	Household Consumption	Total
Fruit & Vegetables	77	24	2	78	38	126	345
Grains & Legumes	2	1	2	23	36	94	158
Meat, Fish & Eggs	12	2	16	55	31	46	164
Milk & Dairy	5	1	1	5	4	18	33
Total	**96**	**28**	**21**	**161**	**109**	**285**	**700**

***** A waste of NIS 700 (USD $190) per household per month reflects the waste throughout the entire value chain, including direct household expenditure. Source: BDO estimates

About 20% of the loss, valued at around NIS 5.1 billion (USD $1.4B), occurs during production. This loss constitutes about 16% of the total value of agricultural output in Israel. The remaining 80%, valued at approximately NIS 19.3b (USD $5.2B), occurs at the production, distribution, retail and consumption stages.

The value per ton increases along the production value chain, as additional costs are invested in sorting, processing, transportation, distribution, and retail. In this Report, the value of food loss at the early production stages - agricultural cultivation, packaging, and processing - is estimated based on the wholesale price to farmers. Losses at later stages of the value chain are assessed based on the retail price of food.

To assess food loss estimates and the potential for food recovery, a comprehensive value chain model was developed for food production and consumption in Israel. The model was built using a bottom-up approach, based on an analysis of agricultural production, storage, imports, exports, industry, distribution, and consumption data for a sample of approximately 50 different

food types[6]. The data also includes processed products, converted into fresh produce equivalents.

Food Loss Rate Out of Total at Each Stage of the Value Chain, in Kilotons

		Agriculture	Processing & Packaging	Industry	Net Import minus other uses	Retail & Distribution	Consumption
Fruit & Vegetables	Waste rate	13%	5%	4%	388+	9%	21%
	Loss in kilotons	551	172	22		338	697
	Out of total amount in kilotons	4,093	3,541	619		3,709	3,371
Grains & Legumes	Loss rate	6%	4%	5%	1,275+	3%	21%
	Loss in kilotons	19	13	14		46	312
	Out of total amount in kilotons	323	304	289		1,552	1,505
Meat, Fish & Eggs	Loss rate	5%	1%	5%	+169	5%	12%
	Loss in kilotons	39	5	31		43	104
	Out of total amount in kilotons	806	767	626		899	859
Milk & Dairy	Loss rate	4%	1%	1%	8+	2%	6%
	Loss in kilotons	64	9	19		28	100
	Out of total amount in kilotons	1,707	1,644	1,605		1,682	1,653
Total	Loss rate	10%	3%	3%	1,840+	6%	16%
	Loss in kilotons	673	198	87		455	1,213

[6] Given the lack of official data, deviations or inaccuracies in these estimates may be inevitable. Additionally, annual food loss is affected by changing and random factors such as extreme weather conditions, natural disasters, pests, fluctuations in demand, etc. The data are indicative and are intended to form a basis for public discussion and further research and analysis of the issue.

	Out of total amount in kilotons	6,928	6,256	3,139		7,841	7,388
(Bottom line – Loss rate and cost in billions of NIS)		21% of the loss = NIS 5.1b				79% of the loss = NIS 19.3b	

* Source: BDO estimates. Loss percentages have been rounded to the nearest percentile for convenience.

For each type of food, the volume of inputs and outputs is estimated in terms of raw agricultural produce and loss rates at every stage of the food production, retail, and consumption value chain in Israel. The loss assessment is based, among other sources, on agricultural waste surveys conducted and updated by the Volcani Institute Agricultural Research Organization[7]. The overall food loss estimate, both for the economy as a whole and for specific food categories, is calculated by summing losses across products and stages.

The food loss data presented in this Report is based on estimates that incorporate a wide range of information sources, including collaboration with the Central Bureau of Statistics, joint work with the Ministry of Agriculture and Rural Development, data from the Ministry of Environmental Protection and the Ministry of Welfare and Social Affairs, expert interviews, findings from past research, international benchmark data, and more.

[7] Dr. Ron Porat, 2015 and 2016

Estimated Food Loss in Israel, in Kilotons per Year

Waste in Kilotons	Agriculture	Processing & Packaging	Industry *	Retail & Distribution	Consumption	Total
Fruit & Vegetables	551	172	22	338	697	1,780
Grains & Legumes	19	13	14	46	312	404
Meat, Fish & Eggs	39	5	31	43	104	222
Milk & Dairy	64	9	19	28	100	220
Total	**673**	**198**	**87**	**455**	**1,213**	**2,626**

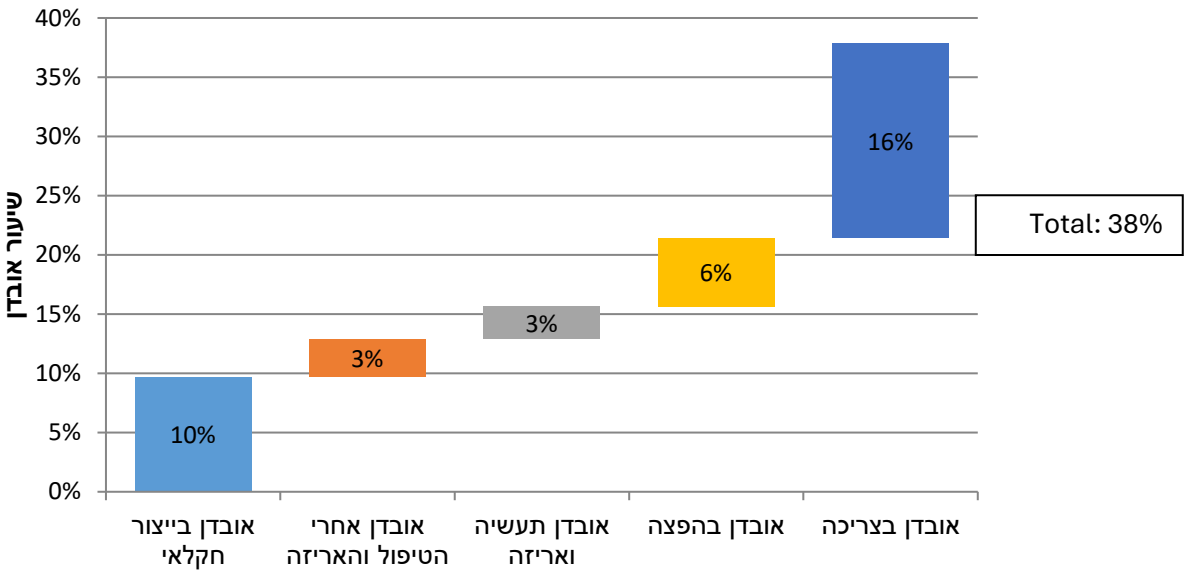
* The food loss estimate in this sector does not include food waste that is recycled primarily for animal feed.

Food loss is typically divided into two main stages of the value chain:

1. From agricultural production to the industrial stage (food loss during production).
2. From retail and distribution to final consumer waste (food waste during consumption).

There is significant variation in food loss depending on the type of food and the stage in the value chain. At each stage, loss is measured as a percentage of total production or consumption at that point. For example: 10% of agricultural production is lost at the farming stage, while 16% of food in the consumption stage (household and institutional) is wasted.

Food Loss Rates in Israel (by Sector)



[On the left: Food loss rate | Bottom, left to right: Agricultural production; After Processing & Packing; Industry & Packaging; Distribution; Consumption]

"The economic value of lost food in Israel is estimated at approximately NIS 24.3b (USD $6.6B)**, accounting for 1.3% of the national GDP."**

Fruit and vegetables are a significant contributor to food loss in Israel, accounting for a substantial portion of local agricultural output and experiencing high loss rates across the supply chain, particularly during handling, storage, and distribution stages. High loss rates of fruit and vegetables are not unique to Israel. Israel's loss rates for fruit and vegetables are similar to those in Europe. Compared to the U.S., Israel has lower loss rates at the agricultural production and consumption stages but higher losses at the intermediate stages[8].

The economic value of lost food in Israel is estimated at approximately NIS 24.3b (USD $6.6B)**, accounting for 1.3% of the national GDP.** About 6% of this loss stems from the use of natural resources such as land and water., greenhouse gas emissions and air pollution caused by the production of food

[8] "Global Food Loss and Food Waste," FAO, 2011

that is never consumed add an estimated NIS 1.6b (USD $433.6M) in costs. Waste management for discarded food and packaging contributes another NIS 900m (USD $244M). As a result, the total cost of food loss, including the depletion of natural resources, environmental damage from emissions, and waste management expenses, amounts to approximately NIS 26.8b (USD $7.2B).

Infographic Table (updated format):

NIS 18.6b (USD $5B)	Food lost from distribution to consumption
NIS 4.5b (USD $1.2B)	Food lost up to and including the industrial stage
NIS 24.3b (USD $6.6B)	Total value of lost food*
NIS 1.3b (USD $352M)	Food loss as a percentage of GDP

Source: BDO Estimates

In quantitative terms, approximately 54% of food loss occurs during production, processing, retail, and distribution—before reaching households or institutional consumers. However, in monetary terms, the consumption stage, which accounts for about 46% of the total loss, is responsible for a disproportionate 56% of the total economic value lost. This disparity highlights that while more food is lost earlier in the supply chain, the economic impact is more significant at the consumption stage.

3. Impact of the Swords of Iron War on Food Loss and Rescue in Israel's Agricultural Sector

The war underscored the importance of food rescue as a means for expanding food reserves and ensuring food security in both routine times and during crises.

The Swords of Iron War has exacerbated food loss in Israel and further threatened food security. The additional national economic cost of food loss during the first nine months[9] of the war is estimated at approximately NIS 1.6b (USD $0.4B). This includes food loss valued at NIS 1b (USD $0.3B), NIS 200m (USD $53.5M) in environmental costs resulting from food loss, and NIS 370m (USD $98.9M) in additional healthcare costs.

The increase in food loss, driven by restricted access to agricultural areas, fires, and a shortage of labor, has reduced the supply of agricultural produce, leading to a rise in fruit and vegetable prices. Together, these factors have further deepened food insecurity. Additionally, it is likely that food loss increased across other segments of the food supply chain due to factory shutdowns, increased consumer stockpiling, transportation challenges, and other disruptions. However, these factors are not addressed in this chapter.

This chapter outlines the key processes that contributed to the worsening of food loss and food insecurity in Israel during the Swords of Iron War. The main findings are summarized below:

1. **Loss of Agricultural Produce from October 2023 – June 2024**
    - Approximately 30% of Israel's agricultural land is located in frontline combat zones in Tkuma and the northern border regions
    - The agricultural sector lost approximately 17,000 workers (foreign and Palestinian).
    - Food loss in Israel's agricultural sector increased to 20% during the first nine months of the war compared to 9% before the war[10].
    - During this period there was an additional loss of 230,000 tons of agricultural produce[11], valued at approximately NIS 1b (USD $0.3B).

[9] October 2023 to June 2024
[10] Compared to the corresponding period (October–June) in a typical year.
[11] Fruit and vegetables.

2. **Volunteer Mobilization**
   - Volunteer efforts during the war played a crucial role in harvesting produce and reducing waste, helping to mitigate food loss in the agricultural sector.
   - Over the first nine months of the war, 900,000 volunteer days[12] resulted in the harvest of approximately 54,000 tons of agricultural produce, valued at around NIS 240m (USD $64.2M).
   - Volunteer food rescue efforts reduced food loss from 23% to 20% during this period.

3. **Food Insecurity**
   - The decline in local agricultural production led to increased imports and reduced exports. Still, there was a 6% decrease in the amount of marketed agricultural produce[13] during the war. Furthermore, the conflict led to a 6% reduction in the volume of marketed agricultural produce.
   - Due to the shortage of agricultural produce, vegetable prices rose by 14% and fruit prices increased by 9%. This further aggravated food and nutrition insecurity.

4. **Environmental Impact**
   - In addition to food loss, significant resources were wasted. These include 40m kWh of electricity, 2,000 tons of fuel (enough to fuel 4,000 cars for a year), 45,000 dunams of agricultural land (approximately the size of Tel Aviv), and 25m cubic meters of water (enough to fill 7,000 Olympic swimming pools).
   - The environmental cost of food loss in the agricultural sector during this period is estimated at approximately NIS 200m (USD $53.5M) due to waste of land and water resources, greenhouse gas emissions, air pollution, and waste management costs.

[12] 1 "volunteer day" refers to a single volunteer's workday in agriculture.
[13] "Marketed agricultural produce" refers to produce sold in retail chains, markets, small shops, greengrocers, and so on; "consumed agricultural produce" refers to the agricultural produce that the Israeli population consumes/eats

5. **Health Impact**
    - Due to the worsening food insecurity, healthcare costs in Israel are projected to increase by approximately NIS 370m (USD $98.9M).

Nine months into the war, Israel's economic reality is marked by instability in the local food supply, rising food prices, worsening food insecurity, and a rise in food loss and waste. Increased imports have proven inadequate in compensating for local produce shortages, demonstrating the importance of a robust domestic agricultural sector for the State's resilience and security. Food rescue has become increasingly understood as a necessary response to food insecurity during both routine and emergency periods.

a. Loss of Agricultural Produce

i. Agricultural Produce in the Tkuma Region and the Conflict Zone along the Northern Border

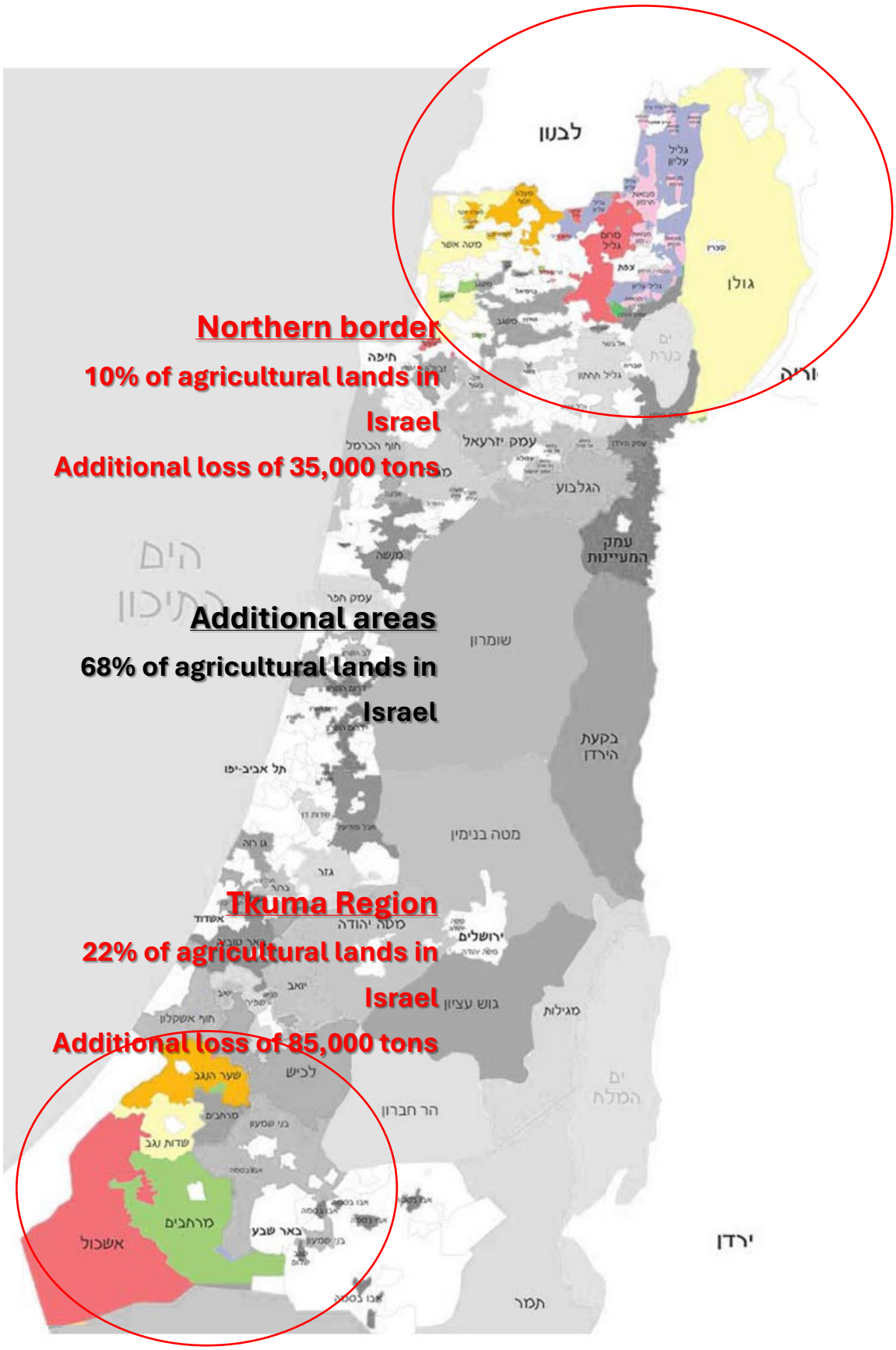
In Israel, there are over 2.5m dunams (617,762 Acres) of agricultural land used for growing vegetables, fruit, and field crops. More than 30% of Israel's agricultural areas are located in the front-line zones of the war[14], with approximately 22% in the Tkuma Region (Gaza Envelope)[15] and about 10% in the northern border areas[16], including 7% in the Galilee and 3% in the Golan Heights.

[14] According to data from the CBS, Economic Implications of the Swords of Iron War on the Agricultural Sector.
[15] The size of agricultural lands in regional councils in the Gaza Envelope, which include the Ashkelon Coast, Sha'ar HaNegev, Sdot Negev, Eshkol, and Merhavim.
[16] The size of agricultural lands in regional councils along the northern border, which include the Upper Galilee, Mevo'ot HaHermon, Mateh Asher, Ma'ale Yosef, Merom HaGalil, and the Golan Heights.

Agricultural Areas in the Front-Line Zones of the War, in Thousands of Dunams

	Tkuma Region	Percent of National Area	Northern Border			Percent of National Area	Total National Area
			Galilee	Golan Heights	Total		
Wheat and Grains	295	25%	56	22	78	7%	**1,172**
Fruit	65	10%	97	45	142	21%	**684**
Vegetables	214	30%	17	7	24	3%	**703**
Total	**574**	**22%**	**170**	**73**	**244**	**10%**	**2,559**

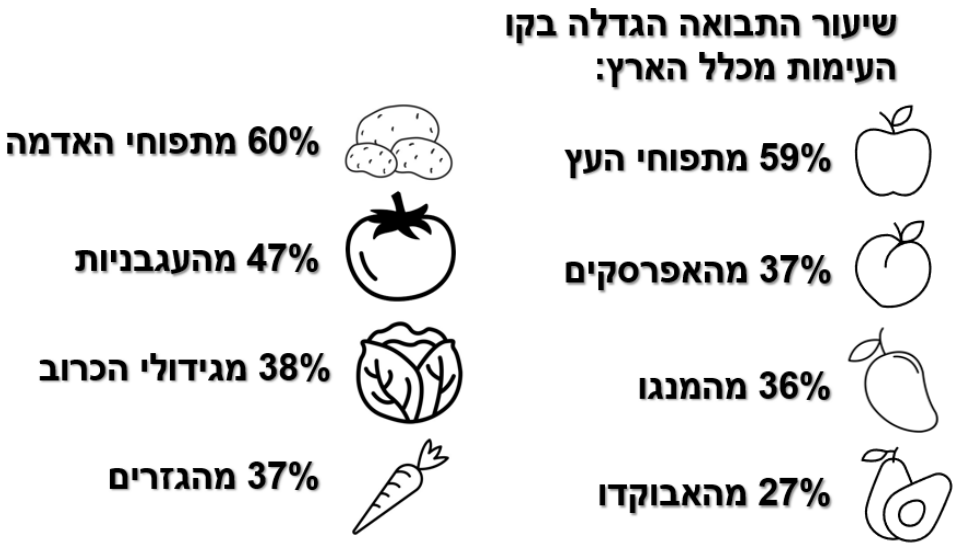
Map of Agricultural Lands in the War Zones



Approximately 60% of Israel's potato fields, 50% of its tomato fields, and 40% of its carrot and cabbage cultivation areas are located in the Tkuma Region, also known as "Israel's Breadbasket." Additionally, about 60% of Israel's apple orchards, over 35% of its peach and mango orchards, and about 27% of its avocado orchards are located in the war zone along the northern border. The northern border region is also a major hub for animal-based agricultural production; approximately 25% of broiler chickens and 25% of turkeys originate from this area, along with more than 65% of the table eggs sold in Israel.

% of Total Agricultural Produce in the Tkuma Region

% of Total Agricultural Produce in the War Zone



[Translation: top to bottom, left to right: 60% of potato crops, 47% of tomato crops, 38% of cabbage crops, 37% of carrot crops | 59% of apple crops, 37% of peach crops, 36% of mango croups, 27% of avocado crops]

Source: CBS, Economic Impacts of the Swords of Iron War on the Agricultural Sector

ii.

The heavy rocket bombardment during the Swords of Iron War ignited widespread fires across natural landscapes and agricultural lands, resulting in significant food loss. "The total burned area during the war exceeded 340,000 dunams, a 70% increase compared to an average year in Israel. At the beginning of the war extensive agricultural areas were destroyed, primarily in the Tkuma region where more than 6,300 dunams of natural woodland, open fields, and farmland were burned - 40% more than in a comparable period. As the fighting spread to the northern front, the burned area expanded, with most fires concentrated in the Golan Heights. In northern Israel, total scorched land reached nearly 200,000 dunams—a 325% increase compared to the annual average. [17].

iii. Changes in the Agricultural Workforce Resulting from the War

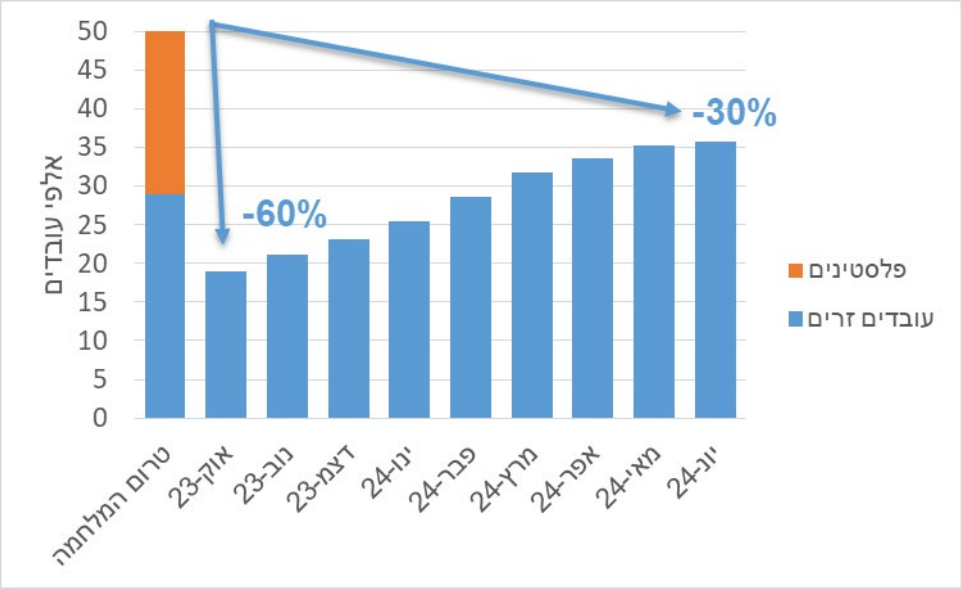
Before the war, Israel's agriculture sector employed a total of 73,100 workers of those roughly 51,000 workers, were foreign workers (primarily Thai) and Palestinians from the West Bank.[18] The onset of the war led to an immediate and substantial reduction of about 30,000 workers, representing roughly 60% of the non-Israeli workforce in the sector prior to the conflict. These numbers included approximately 10,000 foreign workers who left the country and about 20,000 Palestinian workers who were barred from entry due to increased security concerns from the West Bank.[19]. This abrupt loss of labor inflicted severe damage on the agricultural sector.

However, a recent approval to bring in 92,000 foreign workers across various sectors, including 40,000 for agriculture, aims to alleviate this shortage and support economic growth. Nine months into the war, the number of non-Israeli workers in the sector is 30% lower than pre-war levels despite a 10% increase in the number of foreign workers compared to their pre-war numbers, primarily due

[17] Israel Nature and Parks Authority Report, One Year into the War
[18] Based on data from CBS
[19] Based on data from the Ministry of Agriculture.

to the entry ban on Palestinian workers. Despite many efforts, the sector continues to struggle with production losses and manpower deficits.

Number of Foreign and Palestinian Workers in the Agriculture Sector in Israel, in Thousands



[Translation- left to right, top to bottom: Thousands of workers | Pre-war Oct. 2023 Nov. 2023 Dec. 2023 Jan. 2024 Feb. 2024 Mar. 2024 Apr. 2024 May 2024 Jun. 2024 | Palestinians/Foreign workers]

Source: BDO analysis of data from the Ministry of Agriculture

iv. Food Rescue: Volunteerism as a Means of Reducing Food Loss

Shortage of skilled agricultural labor led to significant food loss. Immediately after the outbreak of the war, tens of thousands of volunteers arrived to assist farmers and harvest the crops that had accumulated in the fields. Mass mobilization of volunteers helped to reduce the extent of food loss in the agricultural sector from 23% to 20%.

Following the outbreak of the war, the Ministry of Agriculture estimated a daily need for 11,000 volunteers and allocated NIS 50m (USD $13.7M) to support these efforts. This funding covered transportation, food, and lodging for volunteers through about 20 organizations, including Leket Israel, Brothers in Arms, the Kibbutz Movement, Kadima, Ein Prat, and others. Additional initiatives

to boost volunteerism included a collaboration between the Ministry of Agriculture and the Ministry of Education, which mobilized high school students for agricultural volunteering. The IDF Education Corps also contributed by deploying around 500 non-combat soldiers daily for agricultural work in central and southern Israel. Additionally, a partnership with the Ministry of Settlement and National Missions involved the National Service program, yeshiva students, religious girls' schools, and pre-military academies in agricultural activities. The Ministry of Environmental Protection also supported food rescue efforts during the war with a grant of NIS 1m (USD $0.3M). As the war continued, the Ministry of Agriculture introduced an additional support program in May 2024 for agricultural volunteers in rural communities, with a budget of NIS 20m (USD $5.3M)[20].

The hundreds of thousands of volunteers who participated in food rescue efforts during the first nine months of the war helped compensate for the lack of labor. Approximately 900,000 days of volunteering, equivalent to around 3,000 daily agricultural workers, harvested about 54,000 tons of agricultural produce and rescued food valued at NIS 240m. (USD $64.2M)

Without the volunteers, the additional cost of food loss to the national economy resulting from the first nine months of the war would have been about NIS 1.6b (USD $0.4B). This includes NIS 1b (USD $0.3B) in food loss, NIS 200m (USD $53.5M) in environmental costs due to food loss, and an additional NIS 370m (USD $98.9M) in healthcare costs.

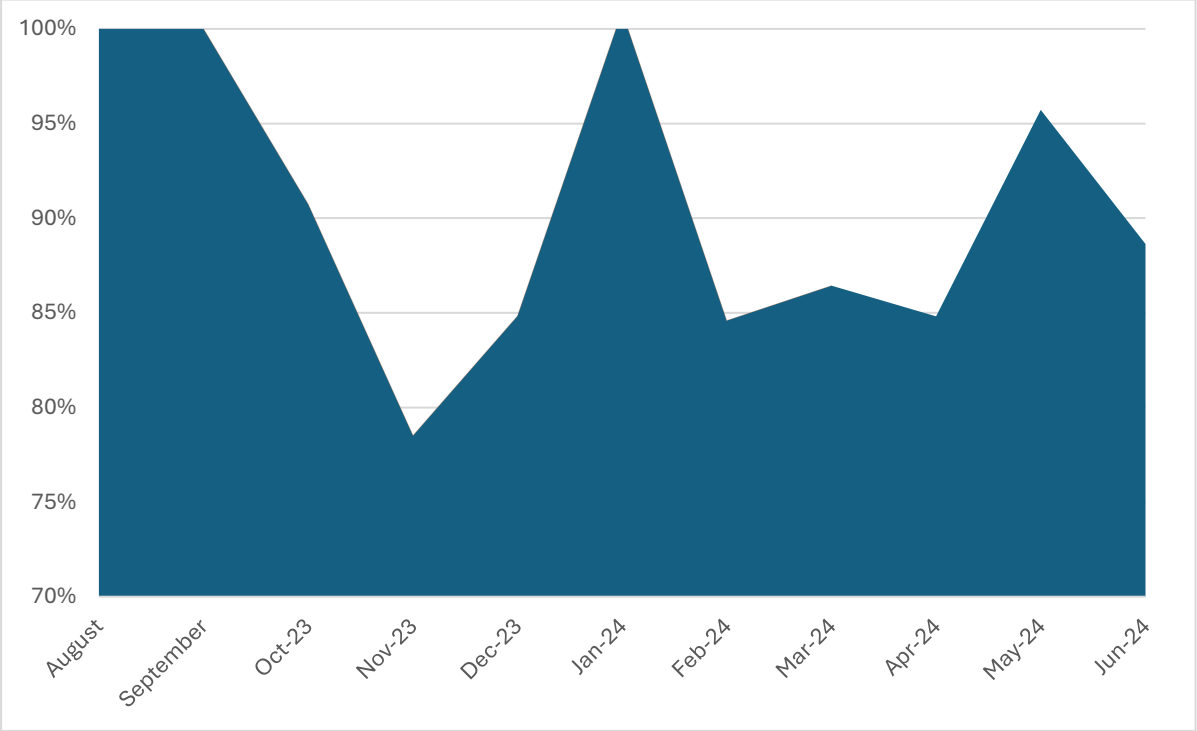
Substituting skilled labor with unskilled volunteers, however, could not prevent a reduction in agricultural production[21]. Agricultural food loss was still at 20% after volunteer efforts, compared to 9% before the war.

[20] https://www.gov.il/he/pages/supportvolunteersagriculture20million
[21] Each volunteer session was recorded separately. For example, a volunteer who participated seven times a month was recorded as having completed seven volunteer days. The total volunteer days are calculated by multiplying the number of volunteers by the number of days each one of them contributed.

v. Agricultural Produce Losses Due to the War

This Report found that food loss in Israel's agricultural sector rose to 20% in the first 9 months of Swords of Iron up from 9% before the war.

Additional Decline [22] in Agricultural Production during the War

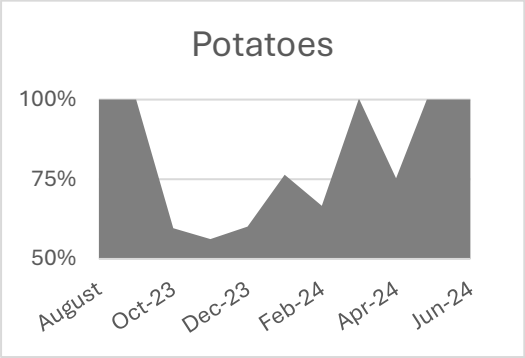


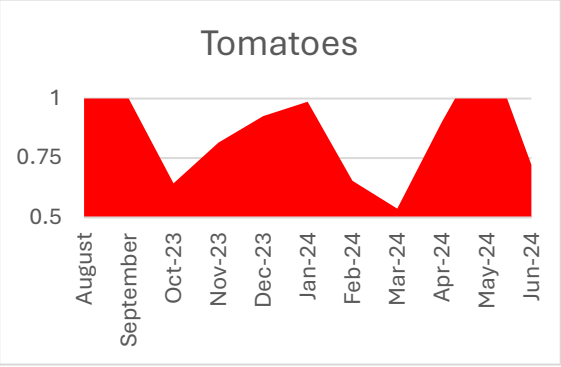
Source: BDO analysis of data from the CBS and Ministry of Agriculture

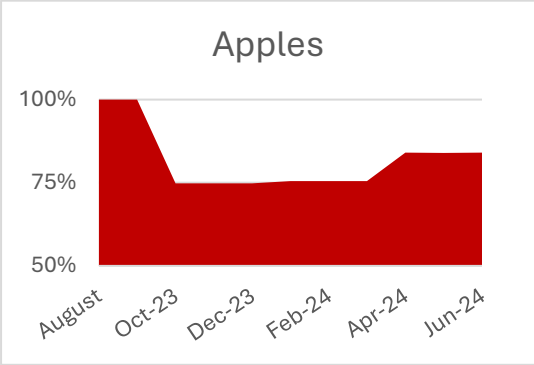
An analysis of key agricultural sectors within the Tkuma region and the northern border conflict zone shows that war-related losses in these areas significantly exceeded the average loss rate of 11%, reaching approximately 24%[23] in the first nine months of the conflict. During this period, potato losses amounted to 22%, carrot losses to about 36%, tomato losses to about 18%, and apple losses to about 22%.

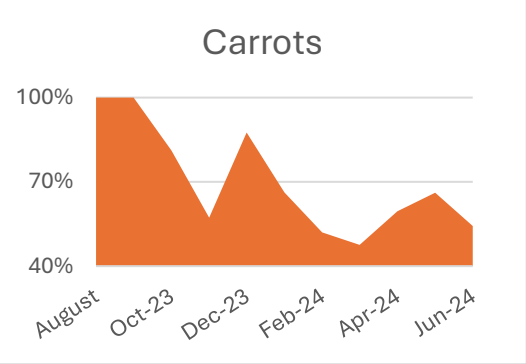
[22] Decrease in agricultural produce during and resulting from the war, in addition to the food loss rate in the agricultural sector in times of routine.
[23] BDO analysis of CBS data.

Additional decline in agricultural production during the war period – selected crops.









The first nine months of the war can be divided into three distinct periods, each impacting the extent of food loss in the agricultural sector:

1. **October–December2023:**

   This period was marked by the initial shock of the war, military closures of agricultural areas in conflict zones, and the departure of foreign workers. As a result, food loss in the agricultural sector reached approximately **24%**.

2. **January–March2024:**

   The return of foreign workers, along with the arrival of new laborers, helped revive agricultural activity in previously abandoned areas. Food rescue initiatives and government interventions, led by the Ministry of Agriculture, further supported recovery efforts. These interventions

included repurposing agricultural buildings for disrupted crop production and restoring damaged greenhouses and net houses, particularly those growing **"Israeli salad"** vegetables. As a result, food loss levels declined and stabilized at around **18%**.

3. **April – June 2024:**
   Recovery efforts continued, with a gradual increase in the foreign worker population, though their numbers remained **30% lower** than pre-war levels. However, widespread agricultural fires in northern Israel offset some of this progress. Consequently, food loss rates remained steady at **18%**.

Over the entire nine-month period, the **average food loss rate in the agricultural sector stood at approximately 20%**.

The table below shows the impact of the first nine months of the war on produce.

Impact of the War on Agricultural Production

	October-December 2023	January-March 2024	April-June 2024	Average for the period
Agricultural areas in conflict zones	**32%**	**32%**	**32%**	**32%**
Reduction in the agricultural workforce	**-59%**	**-44%**	**-37%**	**-51%**
Loss of agricultural produce resulting from the war, in kilotons	**95**	**57**	**77**	**76**
Rate of additional loss	**15%**	**9%**	**9%**	**11%**

The first nine months of the war, from October 2023 to June 2024, led to an additional loss of approximately 230,000 tons in the agricultural sector in

Israel, valued at approximately NIS 1b (USD $0.3B**).** The environmental cost of this additional food loss is estimated at about NIS 200m (USD $53.5M), resulting from loss of land and water resources, greenhouse gas emissions, air pollutants, and waste management costs.

Importantly, the prohibition on entering agricultural areas in combat zones prevents the use of these lands for future growing cycles. This could lead to a further reduction in the volume of marketed local produce and a subsequent rise in prices.

b. Food Insecurity

i. Impact of the War on the Volume of Marketed Agricultural Produce

To compensate for the shortage of agricultural produce, food imports increased while exports decreased. However, imports did not bridge the gap in local production, leading to a reduction in marketed fruit and vegetables and rising prices.

Agricultural Produce Imports during the Swords of Iron War

Israel significantly increased its imports of agricultural produce during the first nine months of the war to over 190,000 tons of fresh produce[24] - an increase of about 40 from comparable periods.

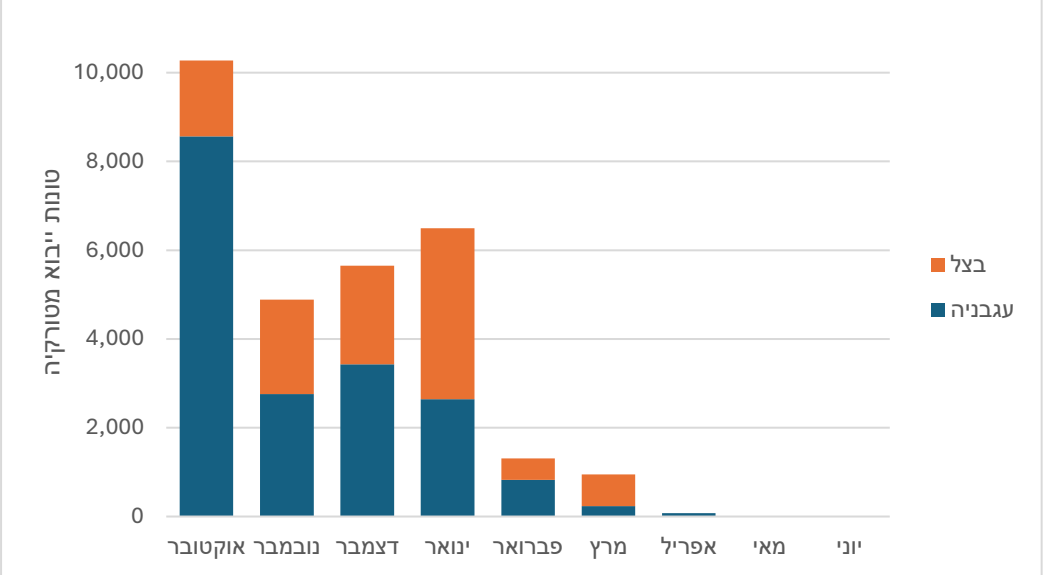
The primary produce suppliers during the war were Turkey, Jordan, the Netherlands, and Italy. By April 2024, approximately 23% of Israel's imported agricultural produce originated from Turkey, primarily onions, tomatoes,

[24] Economic Overview of Israel's Agricultural Sector, 2022

zucchini, and pears. Specifically, about 46% of imported tomatoes and 26% of imported onions came from Turkey. However, in early May 2024, Turkey announced a complete halt to trade with Israel, forcing Israel to rely on alternative import sources.

The cessation of trade with Turkey led to a further increase in the prices of imported vegetables, with tomato prices in September 2024 rising by approximately 70% compared to pre-war levels.

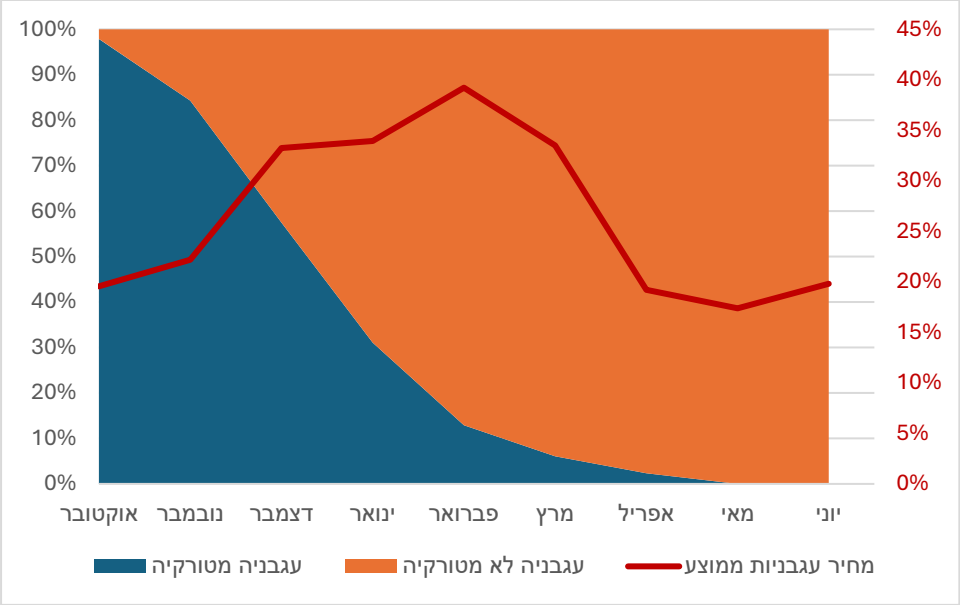
Onion and Tomato Imports from Turkey during the War, in Tons



[Translation, left to right, top to bottom: Tons Imported from Turkey | October November December January February March April May June | Onions Tomatoes]

Source: BDO analysis of data from the Ministry of Agriculture

Import Rates of Tomatoes from Turkey and Other Countries alongside Changes in Tomato Prices in Israel



[Translation, left to right, top to bottom: October November December January February March April May June | Tomatoes from Turkey Tomatoes from Other Countries Average Tomato Price]

Source: BDO analysis of data from the Ministry of Agriculture and the CBS

This analysis indicates that relying on agricultural imports, even in times of routine, poses risks to Israel's national food security. Periods of instability in local food supply, particularly during wartime, underscore the vital role of domestic Israeli agriculture in ensuring the nation's resilience.

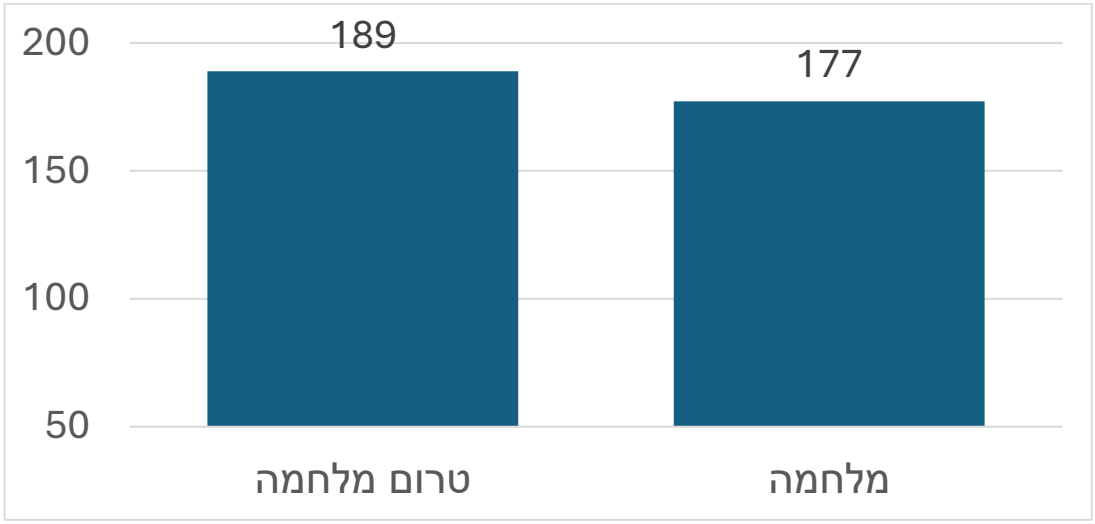
Marketed[25] and Consumed Agricultural Produce during the War

Despite the increase in import volumes and the reduction in export volumes, the amount of produce marketed and consumed in Israel during the first nine months of the war was about 6% lower compared to the same period in previous years. An analysis of market supply shows that the decrease in supply peaked in November-December 2023 at 18%.

[25] Local agricultural produce minus exports, plus imports.

Average Monthly Decrease in Marketed Agricultural Produce during the War

Kilotons per Month



[Translation, left to right: Pre-War During the War]

Source: BDO analysis of data from the CBS and Ministry of Agriculture

ii. Impact of the War on Fruit and Vegetable Prices

Due to immediate and dramatic shortages, fruit and vegetable prices soared in the initial months of the war, and this trend continued as the war persisted.

As fighting intensified on the northern front, the prices of fruit grown in northern Israel, including apples and pears, also rose. Pear prices increased by 6% at the onset of the war and by approximately 9% in the second quarter of 2024. Similarly, apple prices rose by 6% at the start of the war and continued to climb, reaching an 8% increase by the second quarter of 2024.

Rate of Change in Agricultural Produce Prices

	Q4 2023 vs. Q4 2022	Q1 2024 vs. Q1 2023	**Q2 2024 vs. Q2 2023**
Potatoes	27%	40%	**30%**
Onions	42%	35%	**7%**
Carrots	26%	22%	**10%**
Granny Smith Apples	6%	9%	**8%**
Golden Delicious Apples	6%	9%	**7%**
Pears	6%	5%	**9%**

Source: BDO analysis of data from the CBS, consumer price index, and average prices of selected consumer goods and services

Food Price Indices Change Rate

	October 2023 – June 2024 **Compared to the Same Period in the Previous Year**
Vegetable Price Index	**13.7%**
Fruit Price Index	**9.2%**
Fruit and Vegetable Price Index	**10.4%**
Food Price Index Excluding Fruit and Vegetables	**3.6%**

In the last quarter of 2023, the fruit and vegetable index rose by approximately 10% compared to the same period the previous year. The vegetable price index increased by more than 14%, while the fruit price index rose by around 8%. In the first quarter of 2024, the fruit and vegetable index continued to rise, increasing by approximately 13% compared to the same period in the previous year. The

vegetable price index climbed 18%, while the fruit price index increased by 12%. The upward trend continued into the second quarter of 2024, with the vegetable price index rising by 9.5% and the fruit price index by about 8% compared to the same period in the previous year. Overall, from the beginning of the war until the end of the second quarter of 2024, the fruit and vegetable index increased by 10.4%, with the vegetable price index rising 13.7% and the fruit price index by more than 9%. For comparison, the food price index excluding fruit and vegetables rose by just 3.6% during this period compared to the previous year.

Source: BDO analysis of data from the CBS and the consumer price index, by primary and secondary consumption groups

The increase in fruit and vegetable prices during this period was three times higher than the rise in other food prices, which increased by just 3.6%. As a result, fruit and vegetable consumption has declined, negatively impacting food security.

iii. Impact of the War on Food Security and Public Health

Our assessment indicates that the decline in marketed agricultural produce, coupled with rising food prices—particularly for fruits and vegetables—has intensified food insecurity among vulnerable populations, leading to a significant increase in the number of people requiring food assistance.

consumption of fruit and vegetables dropped by around 6% during this period. This suggests that the population has reduced its intake of fruit and vegetables, likely shifting towards cheaper, less nutritious food options. the National Insurance Institute's Poverty and Inequality Report shows a positive correlation between economic status and access to healthy food[26]. It is likely that the reduction in fruit and vegetable consumption resulting from the war is

[26] National Insurance Institute Report on Poverty and Income Inequality, 2022

particularly pronounced among disadvantaged populations who are unable to cope with the rising prices and are forced to turn to less healthy options.

Additionally, we believe that stress and psychological distress may have further contributed to decreased consumption of healthy foods. However, this aspect has not been researched and is not addressed in this chapter.

According to the CBS, food expenditure in the second quarter of 2024 increased by 4.8% compared to the same period the previous year adjusting for population growth at 2%, this reflects an actual increase in per capita food expenditure of 2.8%. However, since food prices rose by more than 2.8% during this period, this indicates a decline in per capita food purchases.

In 2023, the amount of food required to bridge the gap between the actual food consumption of populations experiencing food insecurity and the normative consumption level (based on the average consumption of households in the second to fifth income deciles) was valued at approximately NIS 4.3b (USD $1.2B). The decline in overall food purchases, and particularly fruit and vegetables, during the war **widened the food consumption gap by around 9%**, increasing from NIS 4.3b (USD $1.2B) per year to NIS 4.7b (USD $1.3B) on an annualized basis during the war. **This translates into an additional 1% of Israeli households experiencing food insecurity.**

Furthermore, the decline in fruit and vegetable consumption and their replacement with nutritionally inferior food products have health implications (see Chapter 8), with estimates suggesting that healthcare costs related to food insecurity in Israel amounted to NIS 5.5b (USD $1.5B) in 2023.

The additional 1% increase in food insecurity due to the war is expected to result in an extra NIS 500m (USD $133.7M) in healthcare costs on an annualized basis, with NIS 370m (USD $98.9M) attributable to the first nine months of the war.

4. Food Waste and Food Rescue During Retail and Distribution[27]

NIS 5.6 billion (USD $1.5B) worth of food is lost and wasted during retail and distribution

445 thousand tons of food are wasted during retail and distribution

The Swords of Iron war led to a decline in domestic agricultural production and a 7% decrease in the volume of agricultural produce marketed in Israel, despite an increase in imports and a reduction in exports during the months of the war.

According to the findings of this Report, despite the decline in marketed produce, the monetary value of food waste increased due to a 4.5% rise in food prices in 2023.

Total food waste in the retail and distribution sector amounts to approximately 445,000 tons, valued at around NIS 5.6b (USD $1.5B). Of this, approximately 355,000 tons are considered rescuable food, with an estimated value of NIS 4.5b[28] (USD $1.2B). Additionally, the environmental cost of food waste in the retail and distribution sector is estimated at NIS 890m[29] (USD $241.2M).

[27] In this Report, "retail and distribution" refers to all food waste occurring from the end of production to the point of sale. This includes waste or loss of market-ready products at the manufacturing stage, wholesale losses, retailer returns to manufacturers, and losses at the retail level.
[28] The percentage of rescuable food in the retail and distribution sector is based on BDO's model for the retail segment, which relies on CBS data and information from leading retail chains.
[29] This environmental cost refers to the value of natural resources lost due to wasted food in this sector and is not reflected in the market price of the wasted food.

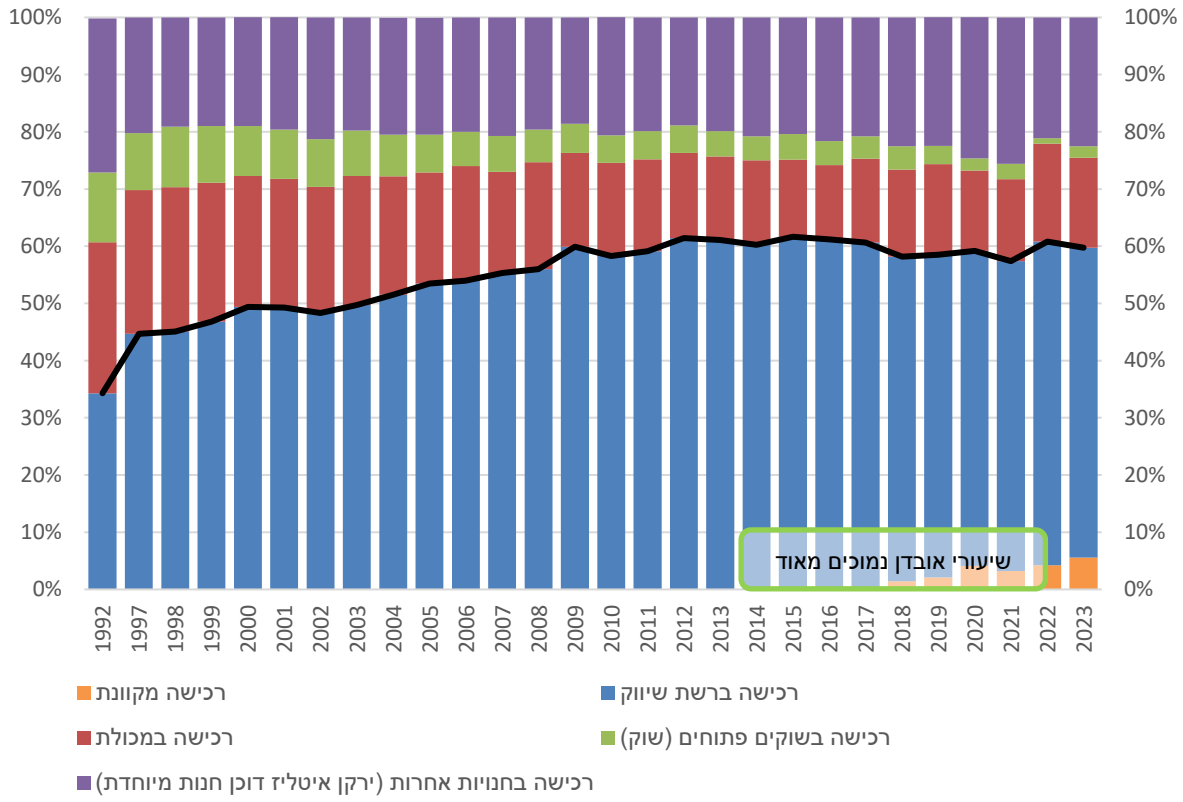
Financial Loss During Retail and Distribution

	Value of Loss (Million NIS)	Value of Loss (Million USD)	% Loss	Volume of Loss (Thousand Tons)
Bread & Baked Goods	280	75	11%	13
Grains & Legumes	515	139	2%	34
Dairy Products & Chilled Food	175	47	2%	28
Fresh Fruit and Vegetables	2,770	731.7	11%	333
Meat, Eggs, & Fish	1,850	501	5%	41
Frozen & Other Food	60	16	1%	6
Total (in Billion NIS & USD)	**5.6**	**1.5**		

The primary causes of food waste in the retail and distribution sector are expired or short-shelf-life products, aesthetic defects in packaging or the product itself, and damage incurred during distribution. Food manufacturers, distributors, and retailers have a financial incentive to minimize food waste through efficient supply chain management, proper storage conditions, and inventory planning. In recent years, food retailers' investments in advanced logistics centers, inventory management systems, online demand planning, and maintaining the cold chain during distribution have helped reduce food waste and loss in the retail and distribution sector.

At the same time, since the COVID-19 pandemic, the trend of increased consumer purchases from supermarket chains and online platforms, both of which have relatively low waste rates, has continued. As a result, food waste and loss in this sector has slightly decreased this year.

Consumer Shift toward Shopping Venues with Lower Food Waste Rates



[Translation – top to bottom, left to right: Online Purchases |Grocery Store Purchases |

Other Store Purchases (Greengrocer, Butcher, Specialty Shop) | Supermarket Chain Purchases | Open Market Purchases]

Additionally, online retail can have environmental benefits by reducing individual travel to stores, as deliveries consolidate multiple orders into a single trip. A 2014 study by the University of Washington[30] found that with optimized delivery routes and distribution, shipments could potentially reduce carbon emissions from consumer travel for shopping by up to 80%.

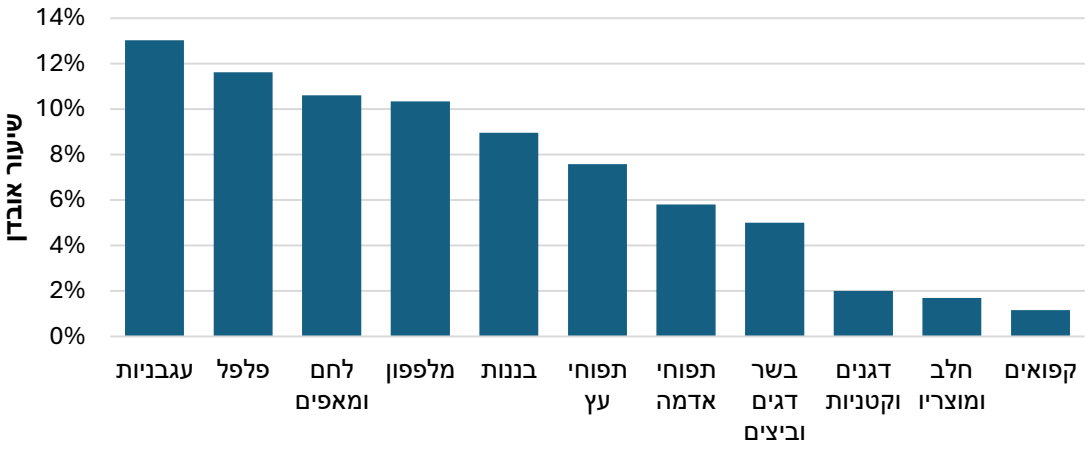
Nevertheless, food surpluses in the retail and distribution sector are inevitable to some extent, even with optimal distribution and marketing planning. Retailers must ensure a wide, diverse, and consistently available food supply, as consumers have little tolerance for stock shortages of desired products. As the

[30] http://depts.washington.edu/sctlctr/sites/default/files/research_pub_files/PacTrans-Changing+Retail_Business_Models.pdf

potential waste from out-of-stock items far exceeds the cost of generating surpluses, food surpluses are an inherent part of the retail sales process. Moreover, return agreements between distributors, retailers, and manufacturers that allow unsold goods to be returned to manufacturers at no cost[31] can diminish this incentive.

Naturally, the waste rate is higher for fresh products and those with a short shelf life, such as fruit, vegetables, bread, and pastries.

Rate of Waste in the Retail and Distribution Sector for Selected Foods



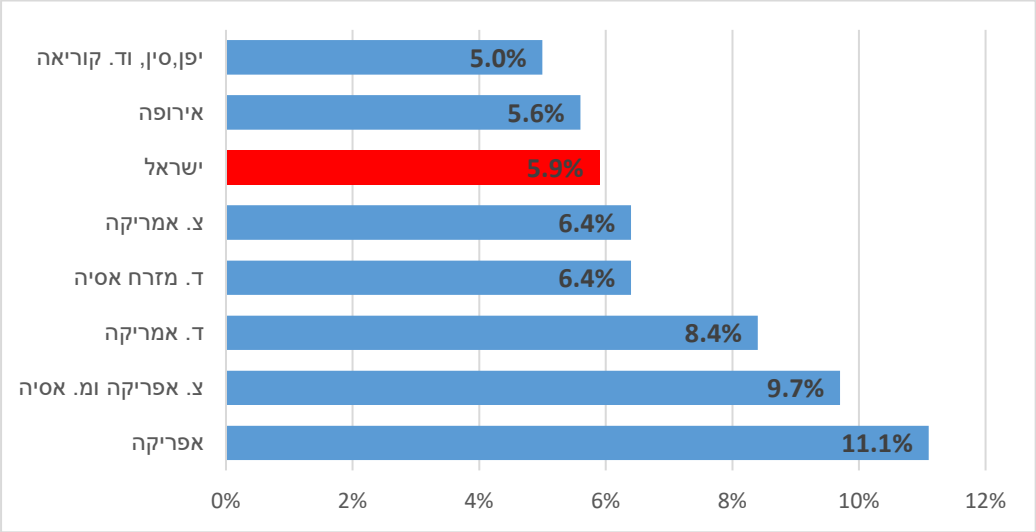
[Translation - left to right: Waste Rate | Tomatoes | Peppers | Bread & Pastries | Cucumbers | Bananas | Apples | Potatoes | Meat, Fish & Eggs | Grains & Legumes | Milk & Dairy | Frozen Foods]

Compared to global standards, the food waste rate in Israel's retail and distribution sector is similar to that of developed countries, despite a higher potential for waste due to Israel's extreme heat conditions. This indicates that inventory management in Israel's retail and distribution sector is maintained at relatively high standards. In contrast, food loss rates in developing countries in

[31] These agreements allow the return of a specified percentage of unsold goods.

distribution and retail are generally higher, primarily due to inadequate distribution, storage, and marketing conditions.

Loss rates in the retail and distribution segment for selected food categories.



[Translation – top to bottom: Japan, China, & South Korea | Europe | Israel | North America | Southeast Asia | South America | North Africa & West Asia | Africa]

Food waste in the retail and distribution sector stems from three main factors:

1. Short Shelf Life

Many food products expire before they are sold, making some waste inevitable. Products cannot be donated once they are expired. Effective inventory management strategies, including price reductions for nearing-expiry products and donations, can mitigate waste. Such inventory management is feasible, as consumption patterns can be statistically estimated against available stock, allowing surpluses to be redirected for donation at an earlier stage, well before expiration.

2. Aesthetic Defects in Products and Packaging

Aesthetic imperfections reduce a product's market value, but in most cases do not affect its nutritional quality. The waste of such food represents a market failure, as the product's market price is low despite retaining its full nutritional value.

3. Damaged Food

A relatively small portion of food waste comes from damage incurred during the distribution process, which can occur at various stages of retail and distribution. This includes broken eggs, spilled products, dropped or bruised fruit and vegetables, and leftover cuts from butcheries and delicatessens. Such food is not salvageable, but its volume is relatively low, as significant efforts are already being made to minimize this type of waste. However, this food can still be repurposed for non-human consumption, such as animal feed or industrial uses.

Retailers must maintain a diverse and abundant inventory, as consumers expect consistent availability of products. This necessity leads to unavoidable surpluses. However, when retailers choose to discard surplus food instead of salvaging it, it represents a market failure.

Waste from the retail and distribution sector has a high economic cost as it includes all the investment made thus far in food cultivation, production, packaging, and transportation. This food is ready for marketing and consumption but is wasted before reaching the final consumer. The vast majority of food waste at this stage is salvageable. Out of NIS 5.6b (USD $1.5B) in food waste, approximately NIS 4.5b (USD $1.2B) worth of food could potentially be rescued.

This amount represents approximately 360,000 tons of rescuable wasted food, including about 270,000 tons of fruit and vegetables. Rescuing wasted food in the retail sector could help bridge 50% of the food rescue needed to close the nutritional gap for those living in food insecurity in Israel (see Chapter 7). Additionally, it could save the economy an estimated NIS 2.8b (USD $758M) per year in excess healthcare costs (see Chapter 8).

Efforts to Reduce Food Waste During Retail and Distribution

Retailers, distributors, and manufacturers already make efforts to reduce waste and rescue surplus food due to economic incentives. This is done through:

- **Discounts on surplus products** with short shelf life or minor defects.
- **Food donations** via partnerships with food rescue organizations or direct store-level initiatives. Products with packaging or aesthetic defects detected at the factory that are still safe and suitable for consumption are sold through various secondary markets.
- **Improved logistics and inventory management**, including cold chain maintenance and advanced demand forecasting systems.

5. Food Waste and Rescue in the Institutional Consumption Sector

235 thousand tons of food were lost and wasted in the institutional sector in 2023.

4% increase in food waste in the institutional sector in 2023 compared to 2022.

Under normal conditions, approximately 20% of food consumption in Israel takes place in institutional dining settings, including meals in workplace and factory kitchens, security force bases (military, police, and prison services), hotels, event halls, restaurants, schools, hospitals, and more[32]. According to the 8th Annual Food Waste and Rescue Report[33], an average of over 2m people in Israel dined outside the home daily, consuming an average of 1.1 meals per day, totaling approximately 725m meals per year and 790,000 tons of food. The annual expenditure on food purchased and consumed outside the home is estimated at NIS 15b (USD $4B).

This sector, which serves large groups of diners in centralized locations, presents a significant opportunity for reducing food waste and increasing food rescue efforts.

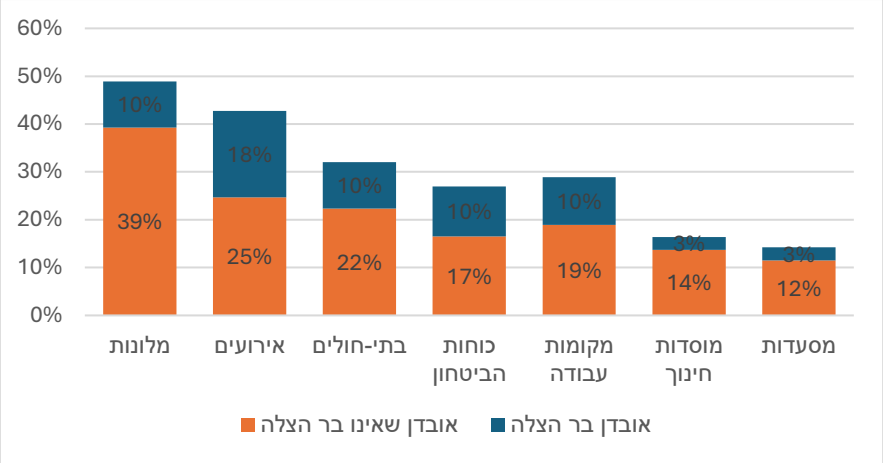
In the last quarter of 2023, the war led to significant and conflicting shifts in institutional catering trends. The events industry saw an 80% decline in activity, hotel occupancy rates dropped, and the operations of educational institutions and restaurants decreased as well[34]. However, hospital bed occupancy rose significantly, along with increased activity in the security forces.

[32] The model factored in the average meal weight for each sector based on its specific characteristics.
[33] The BDO model for food waste in the institutional sector is based on data from the CBS, the National Restaurant Association, the Association of Owners of Hall and Event Venues in Israel, the Catering Association in Israel, and the Israeli security forces.
[34] The decline in the number of tourists was greater than the increase in the number of Israelis in hotels (evacuees).

Total food waste in the institutional sector amounted to 235,000 tons, reflecting a 4% increase compared to 2022. The financial cost of this waste is approximately NIS 3.8b (USD $1B) per year, in addition to an environmental cost of around NIS 262m[35](USD $71M).

"Approximately 77,000 tons of food can be rescued from the institutional sector annually, with a total value of around NIS 1.2b (USD $325M), equivalent to about 67m meals per year, on average."

Rate of Food Waste by Sector in Institutional Consumption



[Translation, left to right, top to bottom: Hotels | Event Halls | Hospitals | Security Forces | Workplaces | Educational Settings | Restaurants | Non-Rescuable Waste | Rescuable Waste]

[35] This environmental cost refers to the value of natural resources lost due to wasted food in this sector and is not reflected in the market price of the wasted food.

Summary of Estimated Food Waste in Institutional Settings

	Relevant Population*	Meals Served (yearly)	Food Consumed (yearly)	Annual Waste	Rate of Waste	Rescuable Waste
	Thousand People	*Million Meals*	*Thousand Tons*	*Thousand Tons*	*Percent*	*Thousand Tons*
Event Halls	98	39	106	45	43%	19
Hotels	56	33	49	24	49%	5
Hospitals	215	104	83	27	32%	8
Security Forces	253	153	174	47	27%	18
Workplaces	430	116	203	59	29%	20
Educational Institutions	423	76	38	6	16%	1
Restaurants	488	202	151	22	14%	4
Total	**1,962**	**724**	**804**	**229**	**29%**	**76**

* This figure was estimated according to the number of working days relevant for each category and distinguishes between the various populations within each category.

In recent years, most institutional kitchens have transitioned to external catering companies with high expertise in the field, striving for maximum economic efficiency while minimizing waste. In additions, the COVID-19 pandemic prompted changes in serving methods among some caterers, further contributing to food waste reduction.

Still, institutional catering cannot rely solely on statistical averages when planning food supply. Providers must ensure sufficient food availability even on days that deviate from the norm. This means catering companies must maintain a safety margin to manage fluctuations in demand.

The analysis in this Report generally shows that the greater the uncertainty regarding the number of diners, the higher the food waste. For example, in open military bases or workplaces with alternative dining options, food waste tends to be higher compared to prisons or schools, where the number of diners is more predictable. Additionally, a wider variety of menu options increases food waste due to uncertainty about diner preferences. As a result, food waste is higher in event halls and hotels, where a broad selection of dishes is offered, compared to workplaces, the military, and the police force.

The presentation style of food and the identity of the payer also influence waste; in restaurants where food is prepared to order, the waste rate is low compared to buffet-style service where food must be prepared in advance. In other words, when the consumer pays for actual consumption, the level of waste is lower compared to all-inclusive consumption methods.

The total value of rescuable food in the institutional sector in 2023 is estimated at NIS 1.2b (USD $325M). The increase compared to 2022 is attributed to a combination of population growth, a rise in employment, increased security force activity during the war, and higher hospital occupancy rates. However, this increase was partially offset by a sharp decline in events in the last quarter of 2023, as well as reduced activity in restaurants and cafés, lower hotel occupancy, and decreased operations in educational institutions during this period.

About one-third of wasted institutional meals are rescuable[36], meaning that approximately 77,000 tons of food can be rescued annually with a total value of around NIS 1.2b (USD $325M), equivalent to about 67m meals per year on average.

Approximately 35% of salvageable food waste occurred at events, where an estimated 19,000 tons of food, worth around NIS 413m (USD $11.9M), could have been saved in 2023. A significant amount of food can also be rescued from security force bases, hotels, and workplaces, with potential savings ranging from NIS 110m (USD $29.8M) to NIS 230m (USD $62.3M) in each of these settings. Food worth NIS 69m (USD $18.7M) could be rescued from hospitals. In restaurants, there is a significant amount of potentially salvageable food, worth approximately NIS 150m (USD $40.6M) per year. However, because of the physical distances between restaurants and lack of critical mass at each, the feasibility of actually salvaging food from restaurants is generally low.

[36] The BDO model for food waste in the institutional sector is based on data from the CBS, the National Restaurant Association, the Association of Owners of Hall and Event Venues in Israel, the Catering Association in Israel, and the Israeli security forces.

Annual Summary: Rescuable Food Waste in Institutional Consumption, in Terms of Food Cost

	Meals per Year	Market Size	Total Waste in NIS	Salvageable Waste in NIS
	Million Meals	**Million NIS**	**Million NIS**	**Million NIS**
Events Halls	39	2,285	977	413
Hotels	33	1,417	576	113
Hospitals	104	710	227	69
Security Forces	153	1,515	455	169
Workplaces	116	2,359	682	236
Educational Settings	76	631	103	17
Restaurants	202	5,559	791	151
Total	**724**	**14,476** (USD $3.7B)	**3,811** (USD $1B)	**1,167** (USD $316M)

The high yield of food that could be rescued in the institutional consumption sector stems from the relatively high value of the meals and the relatively low logistical costs of collecting food from large kitchens, which tend to be concentrated in city centers and industrial areas. The 76,000 tons of food that could potentially be rescued annually from the institutional sector constitute approximately 12% of the food needed to close the nutritional gap for those living in food insecurity in Israel (see Chapter 7). Moreover, rescuing this food could potentially save the economy approximately NIS 700m (USD $189.7M) per year in excess healthcare costs (see Chapter 8).

6. Food Waste and Rescue at the Household Consumption Level

NIS 9.8 billion (USD $2.7B) worth of food wasted via household consumption in 2023

NIS 4,200 (USD $1,138) worth of food wasted each year per household in Israel

Amid the Swords of Iron War, the last quarter of 2023 saw a decline in institutional consumption in restaurants, event halls, and educational institutions, alongside a rise in household consumption, which led to a corresponding increase in household food waste.

In 2023, food waste in Israeli households totaled approximately 960,000 tons[37], valued at NIS 9.8b (USD $2.7B). Beyond this direct cost, the environmental cost of household food waste is estimated at NIS 1b[38] (USD $271M).

"Food waste in households stems from a combination of consumer habits and a culture of excess, as well as how food is stored and kept fresh."

An average household in Israel throws away about 14% of the food it purchases. This means that in 2023, the average Israeli family threw away about NIS 4,200 (USD $1,138) worth of food (equivalent to the amount spent on food in six weeks). On a monthly basis, **household food waste** results in a financial loss of NIS 350 (USD $95) per household. Of this, NIS 155 (USD $42) comes from

[37] Based on the BDO value chain model, using weighted data from the CBS for 2022, a national waste composition survey conducted by the Israel Ministry of Environmental Protection for 2012-2013, a survey conducted by Geocartography in January 2019, and a research article by Ayalon, O., Elimelech, E. and Art, E. (2018). "What gets measured gets managed: A new method of measuring household food waste," *Waste Management 76*, 68-81.

[38] The market value of the food waste does not include the environmental cost of the natural resources wasted on unconsumed food during this stage.

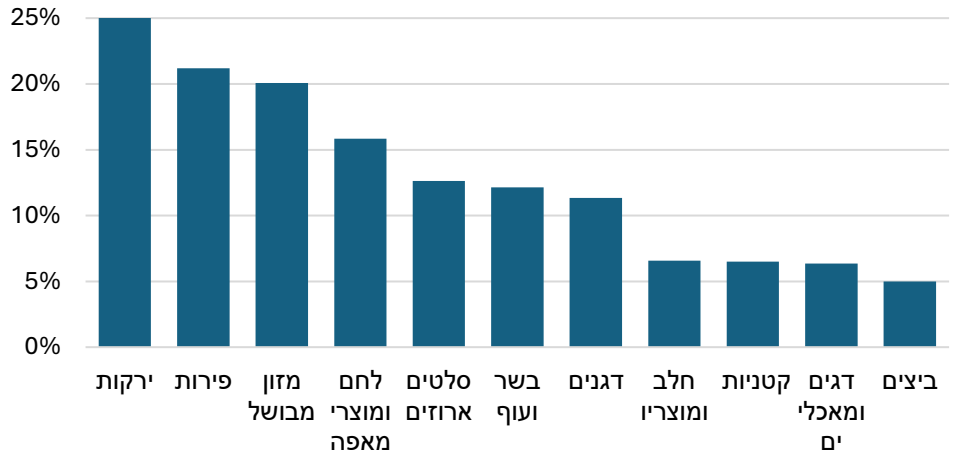
wasted fruit and vegetables, NIS 116 (USD $31) from wasted grains and legumes, NIS 57 (USD $15) from wasted meat, eggs, and fish, and NIS 22 (USD $6) from wasted dairy products.

Household Food Waste, NIS per Month

	Food Expenditure NIS per Month	Food Expenditure USD per Month	Food Waste NIS per Month	Food Waste USD per Month	Waste Rate
Fruit & Vegetables	670	182	155	42	23%
Grains & Legumes	835	226	115	31	14%
Meat, Eggs, & Fish	730	198	60	16	8%
Milk & Dairy	340	92	20	5	7%
Total	**2,575**	**698**	**350**	**94**	**14%**

Food Waste Rate in Household Consumption

for Selected Products as a Share of Total Consumption



[Translation, left to right: Vegetables | Fruit | Cooked Food | Bread & Pastries | Packaged Salads | Meat & Poultry | Grains | Milk & Dairy | Legumes | Fish & Seafood | Eggs]

Source: BDO estimates

Primary Causes of Household Food Waste: Over-Preparation of Food and Expired Products

Household food waste stems from a combination of consumer habits and a culture of excess, as well as how food is stored and kept fresh. The total annual value of household food waste is approximately NIS 9.8b (USD $2.7B).

The primary causes of household food waste are[39]:

Overbuying – Buying more food than needed leads to high levels of waste.

Preparing more food than needed - Cooking or preparing excess food results in waste. This behavior is influenced by psychological factors such as social norms, emotional attachment, lack of planning alongside lure of bulk deals and promotional marketing strategies.

Expiration – Food waste due to expiration is often exacerbated by misunderstandings and misuses of food preservation strategies. Consumers frequently discard food based on "best before," "sell by," or "use by" dates without fully understanding their implications, leading to unnecessary waste when food is still edible past the labeled date. The underutilization of freezing as a preservation method also contributes to waste, as it can effectively extend the shelf life of perishable items if used properly. Furthermore, inadequate storage practices accelerate spoilage, highlighting the need for better education on food handling and preservation techniques.

"In Israel, where food expenses are relatively high by international standards[40], food waste significantly affects the cost of living."

[39] Findings from the Geocartography survey conducted in March 2021 by Leket Israel and BDO.
[40] 2022 Global Food Security Index, The Economist

Other contributing factors to household food waste include damaged or spilled food and improper cooking or preparation.

International Comparison of Household Food Waste Rates

[Translation of text on 4 graphs, left to right, top to bottom, each title and then within each graph:

Grains & Legumes | Grain & Legume Waste Rate | United States | Europe | Japan, China, & South Korea | Israel | North Africa & West Asia | South America | Southeast Asia | Africa

Fruit and Vegetables | Fruit & Vegetable Waste Rate | United States | Israel | Europe | Japan, China, & South Korea | North Africa & West Asia | South America | Southeast Asia | Africa

Milk & Dairy | Milk & Dairy Waste Rate | United States | Israel | Europe | Japan, China, & South Korea | South America | North Africa & West Asia | Southeast Asia | Africa

Meat, Eggs, & Fish | Meat, Eggs, & Fish Waste Rate | United States | Europe | Israel | Japan, China, & South Korea | North Africa & West Asia | South America | Southeast Asia | Africa]

Annual Household Food Waste, 2023

	Waste (Million NIS)	Waste Rate	Waste (Thousand Tons)
Meat, Eggs, & Fish	1,600	8%	55
Fruit & Vegetables	4,300	23%	644
Grains & Legumes	3,300	14%	171
Milk & Dairy	600	7%	88
Total (Million NIS)	**9,800**		

Household food waste is a global issue, and Israel's waste rates are in line with other developed countries. As in other Western nations, fruit and vegetables have the highest waste rates. In Israel, 23% of purchased fruit and vegetables are discarded, compared to 28% in the United States and 19% in Europe. This relatively high waste rate is primarily due to these products' short shelf life and a failure to store them optimally.

For meat, fish, and dairy products, the waste rate is lower, standing at approximately 8%. This is partly due to their longer shelf life through freezing as well as the higher cost per weight unit, which creates a stronger economic incentive to reduce waste. The waste rate for these products is similar to Europe but lower than in the United States.

For grains and legumes, the waste rate is around 14%. This results from a combination of short-shelf-life products such as bread and pastries, alongside relatively long-lasting grains and dry legumes.

NIS 10,200 (USD $2,764)– The total economic impact of food waste on the cost of living[41] per household per year

In Israel, where food expenditure is relatively high compared to other countries[42], food waste significantly affects the cost of living. This includes excess expenditure on food and the effect of loss and waste on food prices throughout the value chain. Overall, including national environmental and healthcare costs, food loss and waste from households drives up the cost of living by NIS 10,200 (USD $2,764) per household per year.

Food Waste: Impact on the Cost of Living

	Annual Cost per Household, NIS	Impact on Food Prices
Value of food thrown away at home	4,200 (USD $1,167)	
Healthcare costs due to not utilizing food to its potential	1,885 (USD $524)	
Waste Disposal and Landfilling Costs	215 (USD $60)	
Impact of Greenhouse Gas Emissions and Air Pollution	235 (USD $65)	
Increase in Retail Prices Due to Food Waste in Supermarkets	1,935 (USD $538)	**6%**
Increase in Wholesale Prices Due to Waste in Agriculture and Industry	1,740 (USD $483)	**6%**
Total	**10,200** (USD $2,833)	**12%**

Cost of Living – Excess Household Spending: On average, the direct monthly expense of food that gets wasted in the household is NIS 350 (USD $95) per

[41] Cost of living, including taxes and external costs.
[42] 2018 Global Food Security Index, The Economist

household, amounting to an annual loss of NIS 4,200 (USD $1,138) per household. Additionally, the cost of waste collection and landfilling comes out of consumers' pockets through municipal taxes and fees, adding another NIS 215 (USD $58) per household per year for the disposal of excess food waste.

Cost of Living – Rising Food Prices: Beyond the direct financial loss from purchasing food that goes uneaten, food waste throughout the entire supply chain also drives higher food prices. Food prices reflect all production and distribution costs, including cultivation, manufacturing, packaging, transportation, and marketing. As a result, retail food prices incorporate food waste from the retail sector, and wholesale prices reflect waste from agriculture and industry. Ultimately, the cumulative cost of food waste across the supply chain is passed on to consumers, leading to an additional annual cost of NIS 3,675 (USD $996) per household, driven by an estimated 12% increase in food prices.

Cost of Living – National Healthcare Costs: Food insecurity is a known risk factor for chronic and mental health conditions, increasing national healthcare costs. The additional healthcare expenses resulting from food insecurity are estimated at NIS 5.5b (USD $1.5B) for the Israeli economy in 2023, translating to NIS 1,885 (USD $511) per household (see Chapter 8). Food that is not rescued indirectly affects this cost.

Cost of Living – Environmental Impact of Greenhouse Gas Emissions and Air Pollution:

Food loss and waste have significant environmental impacts that indirectly raise the cost of living. Air pollution from food waste contributes to health and environmental damage, with its economic burden primarily reflected in higher healthcare costs. To account for these effects, external costs are assessed in terms of the monetary value of lost social welfare due to pollution. In 2023, these environmental costs were estimated at approximately **NIS 1.6 billion** (USD $433.6M) for the Israeli economy, equivalent to **NIS 235 per household** (USD $64) (see Chapter 10).

Beyond the direct impact of food waste on the cost of living, additional indirect costs stem from waste removal and transportation, fossil fuel combustion, and environmental damage caused by greenhouse gas emissions. Other effects, such as traffic congestion and soil pollution, further exacerbate the issue but are not included in the environmental cost estimates in this report (see Chapter 10).

When organic waste decomposes in landfills, it releases **methane gas**, a potent greenhouse gas with a **Global Warming Potential (GWP) 84 times higher than carbon dioxide over 20 years** and **28 times higher over 100 years**.

According to the 8th Annual Food Waste and Rescue Report, 980,000 tons of household food waste were sent to landfills, leading to an additional 310,000 waste collection truck trips per year. These contribute to air pollution, traffic congestion, noise disturbances, and accidents. As a result, beyond the NIS 9.8b (USD $2.7B) in household food waste and the NIS 600m (USD $162.6M) spent on household food waste disposal, additional external costs arise from the wider impact of traffic congestion and environmental degradation.

7. Food Loss and Waste: How Much Food Can Be Rescued?

“The value of rescuable food loss and waste is estimated at NIS 8.6b (USD $2.3M). As food moves through the value chain and resources are invested in cultivation, production, packaging, and transportation, its waste value increases.”

Approximately 2.6m tons of food per year, 38% of the food produced in Israel, is lost and wasted across the stages of production, distribution, retail, and consumption. This translates to a direct economic loss of NIS 24.3b (USD $6.6B), equivalent to 1.3% of the national GDP. However, the price consumers pay does not fully reflect the external costs associated with its production (externalities). When factoring in the cost of greenhouse gas emissions and air pollution resulting from food loss and waste, the total cost of food loss and waste amounts to approximately NIS 26.8b (USD $7.3B).

Approximately 50% (by volume) of food lost and wasted is rescuable for consumption. It is important to note that classifying food as rescuable does not imply economic viability for rescue efforts; rather, it indicates that the food is safe to eat and can technically be redirected for human consumption. The estimate of rescuable food is based on a food value chain model that analyzes different food types and waste stages to classify waste as either rescuable (fit for consumption) or non-rescuable.

Across all stages of the food value chain, the underlying issue is the lack of economic viability for food producers - farmers, manufacturers, retailers, and others - to invest additional resources in the subsequent stages of production or distribution.

The estimated value of rescuable food waste is NIS 8.6b (USD $2.3b). As food moves through the value chain and resources are invested in cultivation, production, packaging, and transportation, its value increases. Although there

are different approaches to the subject of food waste at the home consumption stage, in this Report, food wasted in the home is not considered to be rescuable. The table below shows that the highest-value food waste occurs in the retail and distribution sector, where market-ready food is discarded before reaching consumers.

Value of Rescuable Food Waste along the Value Chain

	Value of Rescuable Food Waste
Agriculture	2,135
Sorting & Packaging	490
Industry	300
Retail & Distribution	4,520
Institutional	1,190
Total	**8,635**

* These figures have been rounded for presentation. Source: BDO estimates

According to the estimates presented in this Report, 50% of the wasted food is salvageable and, given economic viability and appropriate resources, could be used to feed populations experiencing food insecurity. Food insecurity poses a risk factor for chronic and mental illness at the individual level and leads to increased healthcare expenditures at the national level. Rescuing even 20% of the food that is lost or wasted in Israel would eliminate the nutritional gap for people living with food insecurity (see Chapter 7). Food insecurity results in some NIS 5.5b (USD $1.5B) per year in excess healthcare costs (see Chapter 8). Additionally, rescuing 50% of food loss and waste would save about 200m cubic meters of water, over 650m kWh of energy, 40,000 tons of fuel, and extensive land resources.

Estimated Amount of Rescuable Food in Israel across the Value Chain, Kilotons

	Total Consumption	Total Local Production	Waste	Rescuable Waste	Waste Rate
Fruit	1,420	1,725	590	195	34%
Vegetables	1,590	1,640	935	600	57%
Potatoes & Starches	360	600	235	160	39%
Grains & Legumes*	1,505	325	405	801	27%
Meat, Fish, & Eggs	855	805	220	75	28%
Milk & Dairy	1,655	1,705	220	65	13%
Total	**7,385**	**6,800**	**2,605**	**1,175**	**38%**

* Grain and legume waste was calculated based on consumption, as most grains are not produced in Israel. Source: BDO Estimates

Although there are different approaches to the subject of food loss or waste at the home consumption stage, in this Report, food lost or wasted in the home is not considered to be rescuable. Western culture is characterized by consumerism and a culture of excess, where consumers derive value or enjoyment not only from consuming food but also from having variety, choice, and even surplus.

However, as food production relies on natural resources and has environmental impacts, the price consumers pay does not fully reflect the external costs associated with its production.

Therefore, reducing food waste is not only economically justified but also warrants efforts to raise awareness, such as government-led educational campaigns. These initiatives, already implemented in several countries, aim to highlight the hidden costs of uneaten food, including financial waste for consumers and environmental damage.

Rescuable Food	Non-Rescuable Food (Unfit for Human Consumption)
✓ Edible agricultural produce that was not harvested	✗ Contaminated food
✓ Agricultural produce with aesthetic imperfections	✗ Food damaged by natural hazards that is unfit for consumption
✓ Unsold agricultural produce from wholesale markets	✗ Spoiled food
✓ Unsold food surplus from supermarkets and stores	✗ Byproducts from food preparation (peels, seeds, skins, fat)
✓ Surplus prepared food from the catering industry, institutional kitchens, and restaurants	✗ Food that has left the kitchen to the dining area and/or was served but not eaten
✓ Packaged food with damaged packaging or cosmetic defects	
✓ Food nearing its expiration date that is unlikely to be sold	

8. Food Insecurity Worldwide and in Israel

"20% of the rescuable food wasted in Israel would eliminate the country's food consumption gap"

8.1. Food Insecurity Worldwide

Food insecurity in Israel is among the most severe in the OECD

According to the World Health Organization (WHO) and the United Nations, whose definitions are also used by Israel's National Insurance Institute, food security is achieved when the following four criteria are met:

a. Food availability –there must be a stable and sufficient food supply at the national level, enabling regular access to safe and nutritious food in sufficient quantity and quality to support proper growth, development, and a healthy, active lifestyle.
b. Food access – Households must have the financial and physical means to obtain enough food to meet their dietary needs.
c. Food utilization – At the individual level, this includes proper nutrition, dietary diversity, and safe food consumption, supported by access to sanitation, clean water, and awareness of proper food use.
d. Stability– Must exist at all levels over time.

Food security is not only about preventing hunger but also about ensuring food quality. The right to food is not measured solely in caloric intake but also in nutritional value. **Economic access to a healthy food basket - one that provides essential nutrients for physical, mental, and cognitive well-being - is a fundamental requirement for achieving food security.**

The State of Food Security and Nutrition in the World, published in 2022 by the UN Food and Agriculture Organization (FAO) in collaboration with the WHO, presents

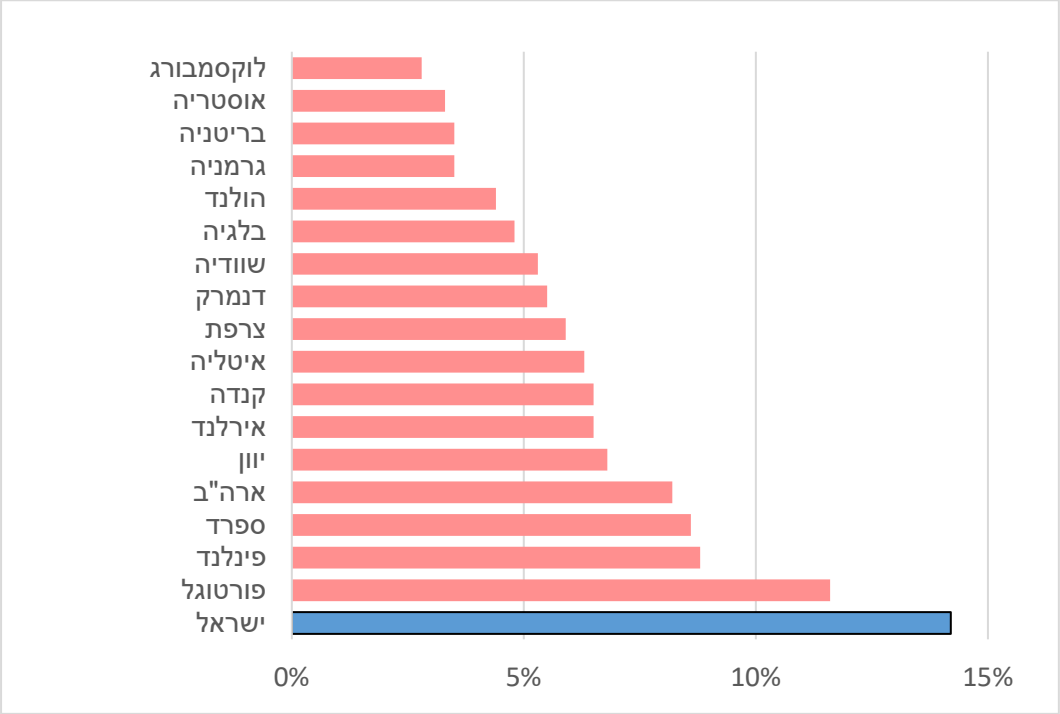
estimates of food insecurity rates in countries around the world. The report's findings include indicators showing that food security around the world has deteriorated since 2020.

Long-term effects of the COVID-19 pandemic, disruptions in global supply chains, the economic impact of the Russia-Ukraine war (particularly on grain production), and extreme climate events have all contributed to rising food prices. As a result, more people worldwide are unable to afford a healthy diet.

Data from the FAO shows that food insecurity in Israel is among the most severe in the OECD.

Food Insecurity Rate

Israel, Canada, the United States, and EU-15 Countries, 2019-2021 Average



[Translation, top to bottom: Luxemburg | Austria | United Kingdom | Germany | Netherlands | Belgium | Sweden | Denmark | France | Italy | Canada | Ireland | Greece | United States | Spain | Finland | Portugal | Israel]

Source: FAO

8.2. Food Insecurity in Israel

According to BDO's analysis of Israel's National Insurance Institute Report, published in December 2021, 16.2% of households in Israel experienced food insecurity in 2021. Of these, 8.2% faced severe food insecurity, while 8% experienced moderate or mild food insecurity. The report also indicates that for three consecutive years, Israel has ranked as the second highest in poverty rates and fifth in terms of income inequality among OECD countries.

Israel's Ranking in Inequality and Food Security Indices 2021

	Israel	OECD Average	Israel's OECD Ranking
Inequality (GINI Index[43])	0.37	0.32	5
Poverty Rate[44]	21%	11%	2
Food Security Index[45]	75	76	23
% expenditure on food out of private consumption	18%	14%	7

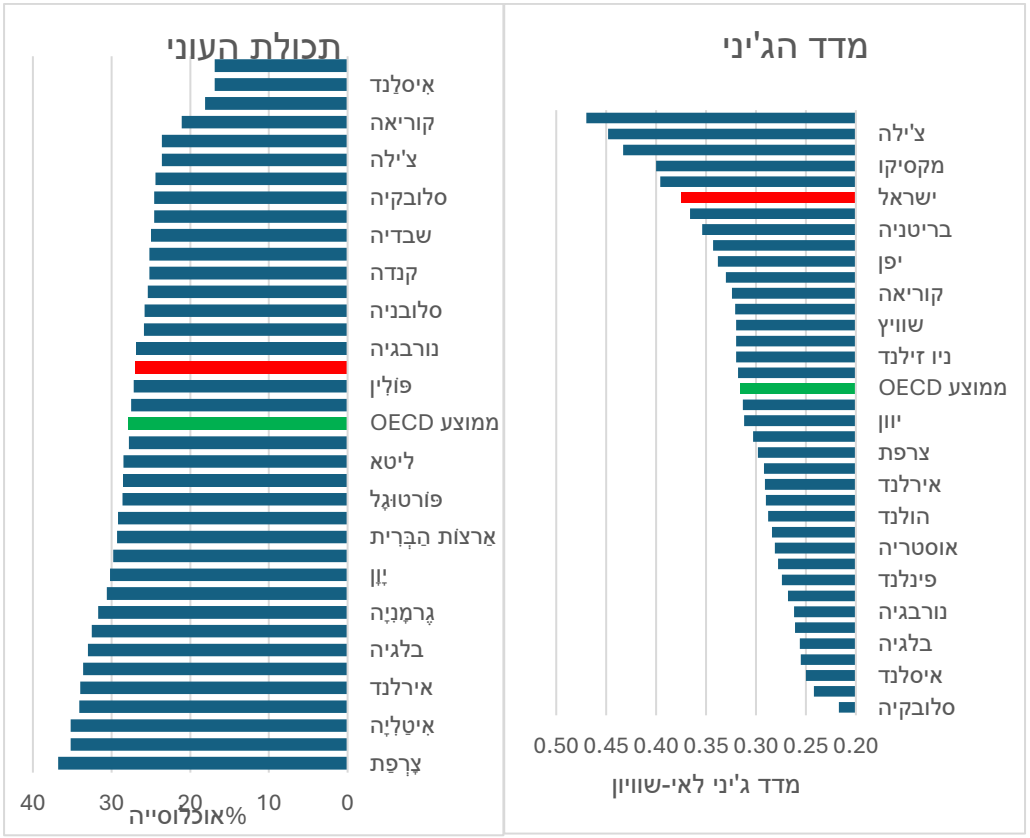
Source: OECD. Stat, Israel – Inequality and Poverty Rate – BDO analysis based on the National Insurance Institute's 2021 estimates, and the Global Food Security Index.

According to OECD data, which measures poverty rates after taxes and transfers (based on a poverty line set at 50% of median disposable income), Israel has the highest poverty rate among OECD countries, though its rate is similar to that of the United States.

[43] The Gini Index measures economic inequality based on income distribution. It ranges from 0–1, with higher values indicating greater income inequality.
[44] Percentage of the population below the poverty line.
[45] A lower ranking on the index indicates a lower rate of food insecurity within the country's population.

The data also indicates that Israel ranks among the countries with the highest income inequality, as measured by the Gini Index, placing fifth after the Czech Republic, Mexico, Turkey, and the United States.

Global Income Inequality (the Gini Index)



[Translation, top to bottom: The Gini Index |

Chile | Mexico | Israel | United Kingdom | Japan | Korea | Switzerland | New Zealand | OECD Average | Greece | France | Ireland | Netherlands | Austria | Finland | Norway | Belgium | Iceland | Slovakia | Gini Inequality Index]

Global Poverty Rates

[Translation, top to bottom: Poverty Rates |

Iceland | Korea | Chile | Slovakia | Sweden | Canada | Slovenia | Norway | Poland | OECD Average | Lithuania | Portugal | United States | Greece | Germany | Belgium | Ireland | Italy | France | % of the population]

Source: BDO analysis based on National Insurance Institute 2022 data and OECD Statistics.

Income inequality is one of the central challenges facing the Israeli economy and food insecurity is one of its main consequences.

According to The Economist's 2022 Global Food Security Index, Israel ranks 24th in food security among OECD countries, a drop of 12 places from the previous year. Additionally, Israel ranks sixth highest in food expenditure as a share of private consumption, among OECD countries.

In our assessment, Israel's high rate of food insecurity stems from two main factors: the significant share of food expenditure within private consumption and the absence of a national policy to address food insecurity, such as the food stamp program implemented in the United States.

In Israel, food expenditure accounts for approximately 18% of private consumption, one of the highest rates in the OECD. This means that a household spending a total of around NIS 20,000 (USD $5,450) per month on various consumer goods would spend about NIS 3,600 (USD $980) on food[46]. Households facing food insecurity tend to allocate an even higher share of their total spending to food. Therefore, food rescue and redistribution policies targeting disadvantaged populations serve as an effective welfare strategy in Israel. Beyond economic relief, such policies also offer health benefits. Focusing food rescue efforts on fruit and vegetables ensures food-insecure populations have access to nutritious food, providing them with adequate nutrition essential for physical, mental, and cognitive functioning.

[46] Private consumption expenditure on food, beverages, and tobacco, including meals outside the home, CBS, 2021.

To assess the effectiveness of food rescue as a policy tool for enhancing food security in Israel, this Report relied on the methodology developed by Chernichovsky and Regev[47], which defines normative food expenditure as an expenditure that remains constant even when a household's income increases.

To examine the level of normative expenditure (the average consumption of households in the second through fifth income deciles) on food[48], the per capita food expenditure of the lower percentiles was compared to the normative expenditure, which stands at approximately NIS 990 (USD $270) per month. The analysis in this chapter indicates that in terms of standardized per capita consumption, food expenditure in the two lowest percentiles is about half the normative level.

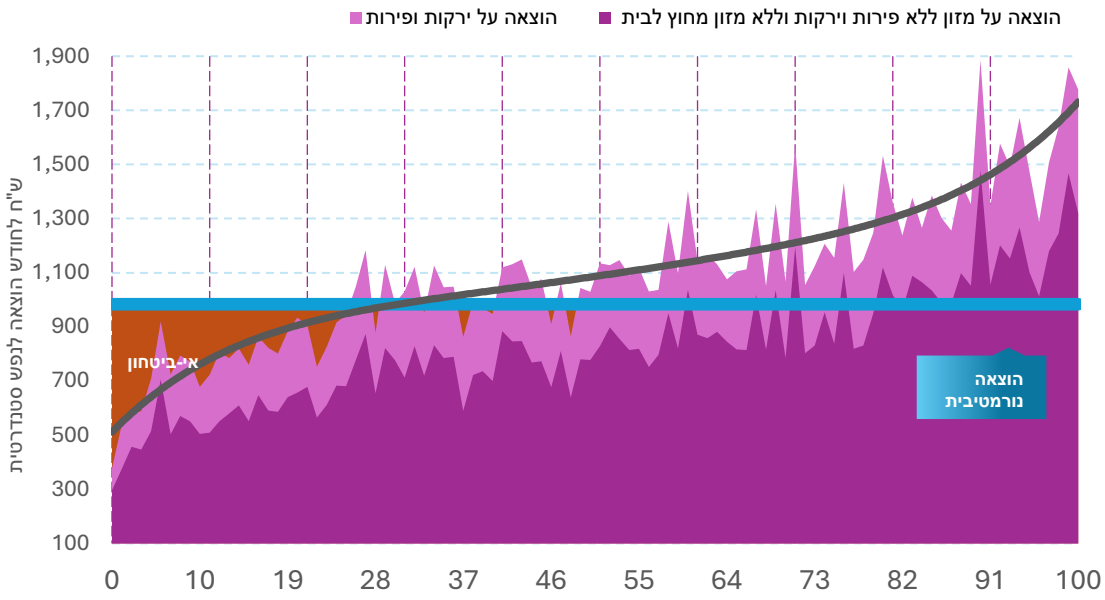
Per Capita Food Expenditure in Israel Relative to the Normative Expenditure for Food Security, by Income Percentiles

Source: BDO analysis based on CBS data[49]

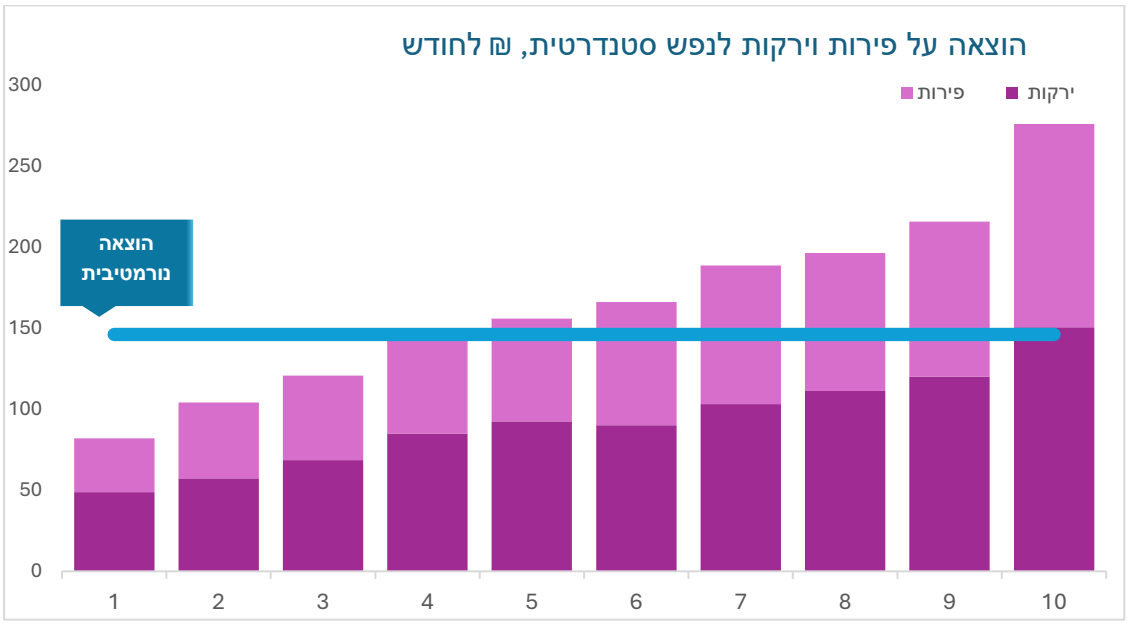
Additionally, the analysis shows that the normative monthly expenditure on fruit and vegetables in Israel stands at NIS 146 (USD $40) per capita, which is higher than the expenditure on fruit and vegetables among the lowest four income deciles in terms of per capita consumption.

Per Capita Expenditure on Fruit and Vegetables (NIS per Month), by Income Deciles

[47] Chernichovsky, D., & Regev, E. (2014). Patterns of expenditure on food in Israel. Taub Center for Social Policy Studies in Israel.
[48] Not including meals eaten outside the home, alcohol, or soft drinks.
[49] Household Expenditure Survey, CBS, 2021



[Translation, right to left: Expenditure on food excluding fruit, vegetables and food outside the home | Expenditure on fruit and vegetables | NIS per month standard per capita expenditure | Normative expenditure]



[Second graph – translation, top to bottom, right to left: Standard Per Capita Expenditure on Fruit and Vegetables | Fruit | Vegetables | Normative expenditure]

Source: BDO analysis based on CBS data.

9. The Effect of Food Rescue on Food Security and Healthcare Costs in Israel

9.1 Healthy Nutrition, Food Security, and Health

The cost of a healthy diet can be up to five times higher than average OECD prices[50], and many cannot afford it.

According to the WHO, a healthy diet consists of vegetables, fruit, legumes, unprocessed grains, less than 5 grams of salt per day, minimal added sugars, and unsaturated over saturated fats. The WHO highlights that modern lifestyle changes, increased urbanization, and the rise in processed food production have led to higher consumption of high-calorie foods with added sugars and salt, while fruit and vegetable intake has declined[51]. Israel's national dietary guidelines, issued by the Ministry of Health[52], are based on the Mediterranean diet, which prioritizes a diverse range of raw, plant-based foods, including vegetables, fruit, legumes, whole grains, olive oil, nuts, and seeds, along with moderate consumption of animal-based foods such as eggs, poultry, and fish. At the same time, the Ministry of Health advises reducing the intake of ultra-processed foods, which undergo industrial processing and often contain extracted food components or additives. Despite their availability and convenience, diets high in ultra-processed foods have been linked to obesity, chronic diseases, an increased risk of cancer, disruptions to the gut microbiome, and other health concerns[53]. In contrast, adhering to the national dietary guidelines offers significant health, environmental, social, and economic benefits, as illustrated in the "food rainbow" model.

Historically, public policy aimed at combating food insecurity has focused on ensuring sufficient caloric availability rather than the quality of nutrition[53]. This

[50] FAO
[51] Healthy diet (who.int)
[52] The Dietary Guidelines
[53] The Ministry of Health website

approach prioritized adequate daily calorie intake without considering the quality, composition, or nutritional value of the food consumed.

On a global scale, this policy has been successful in reducing the percentage of people suffering from undernutrition, from 12.3% in 2005 to 9.8% in 2021. Thanks to this strategy, most of the world's population can now access the basic caloric intake they require.

However, according to the WHO and the FAO, despite its success in lowering global malnutrition rates, this policy has not promoted healthy nutrition. In fact, in some cases, it has been counterproductive, by shaping food systems in a way that has made **the cost of a healthy food basket up to five times[54] higher than that of a basic food basket**. The latter, which consists of non-perishable or year-round available foods with a high calorie-to-cost ratio, provides the necessary daily caloric intake but lacks the variety and quantity of essential nutrients needed for proper nutrition.

In other words, global policy has focused on ensuring adequate daily caloric intake rather than providing a diverse and nutritious diet. Fruit and vegetables are a crucial component of a healthy diet, as they contain essential nutrients necessary for human health. **Food variety is just as important as quantity.** A diet rich in vegetables and fruit can help lower blood pressure, reduce the risk of heart disease and stroke, prevent certain types of cancer, lower the risk of eye and digestive disorders, and positively affect blood sugar levels[55].

A healthy diet also plays a key role in preventing non-communicable diseases (NCDs) such as diabetes, hypertension, heart disease, kidney disease, and depression. NCDs are the leading cause of death worldwide, accounting for 74% of all fatalities - a total of 41m deaths annually, including 17m individuals under the age of 70[56].

[54] Food security and nutrition in the world 2022, FAO
[55] Harvard T.H. Chan School of Public Health
[56] *Noncommunicable Diseases Fact Sheet*. (2022) World Health Organization.

Households experiencing food insecurity often rely on unhealthy food products. As a result, populations suffering from food insecurity face a higher risk of health issues such as fatigue, exhaustion, cardiovascular diseases, hypertension, osteoporosis, anemia, birth defects and preterm birth, and obesity[57].

Additionally, food insecurity contributes to a gradual decline in mental health, leading to psychological distress, depression, anxiety, lack of medical care for children, reduced overall well-being, and cognitive impairment affecting learning abilities, memory, and critical thinking. Poor nutrition during critical developmental periods, whether in utero or early childhood, can cause developmental delays, increasing the likelihood of academic difficulties, low achievement due to lack of concentration in school, and early dropout rates. Compared to children growing up in food-secure families, these children may suffer from low psychosocial functioning and exhibit symptoms such as aggression, hyperactivity, or apathy[58].

The White House, in its Biden-Harris Administration National Strategy on Hunger, Nutrition, and Health, highlights **food insecurity** as a risk factor for chronic and mental illness, lower academic achievement, reduced earning potential, and economic hardship. On a national scale, it **contributes to higher healthcare costs and decreased economic productivity**. As a result, the strategy calls for a shift from merely addressing hunger to actively combating food insecurity and poor nutrition. It emphasizes that **economic access to a healthy food basket - which provides the proper nutrition essential for physical, mental, and cognitive well-being - is fundamental to achieving food security.**

Today, the high cost of food relative to disposable income is a major barrier to maintaining a healthy diet in both wealthy and poor countries. As a result, rescuing and redistributing nutritious food to food-insecure populations, who

[57] Dahl & Olson, 1999; Desrochers, 2015; Niral et al., 2003; Tzaba, 2008
[58] Barajas 2007; Carter, Krus, Blakely, & Collings, 2011; Drennen, et al., 2019; Loopstra, et al., 2015; Muldoon, Duff, Fielden, & Anema, 2013; Pettoello-Mantovani et al., 2018; Rose-Jacobs et al., 2008

often do not purchase or consume enough of it, helps ensure adequate nutrition. This, in turn, improves public health and reduces national healthcare costs.

9.2 The Healthcare Costs of Food Insecurity

While a healthy diet rich in fruit and vegetables can be expensive, costing up to five times more than a basic food basket, an unhealthy diet can be even more costly. Research and forecasts from around the world indicate that poor nutrition and food insecurity are linked to increased healthcare expenses

A study conducted in the United Kingdom found that approximately 46% of the National Health Service (NHS) expenditures are associated with poor nutrition, lack of physical activity, smoking, alcohol consumption, and obesity-related issues[59]. Out of the NHS's £43b in total expenditures, around £6b is attributed to diseases resulting from poor nutrition, including metabolic and endocrine disorders, cancer, and cardiovascular diseases - a higher cost than that associated with any other risk factor examined in the study[59].

A 15-year Australian follow-up study found that healthcare costs were lower for women who regularly consumed fruit and vegetables compared to those who did not. Additionally, the study estimated that subsidizing fruit and vegetables while increasing taxes on unhealthy food could generate an annual savings of AUD $3.4b for the Australian healthcare system - equivalent to approximately 2% of the country's total healthcare expenditures.

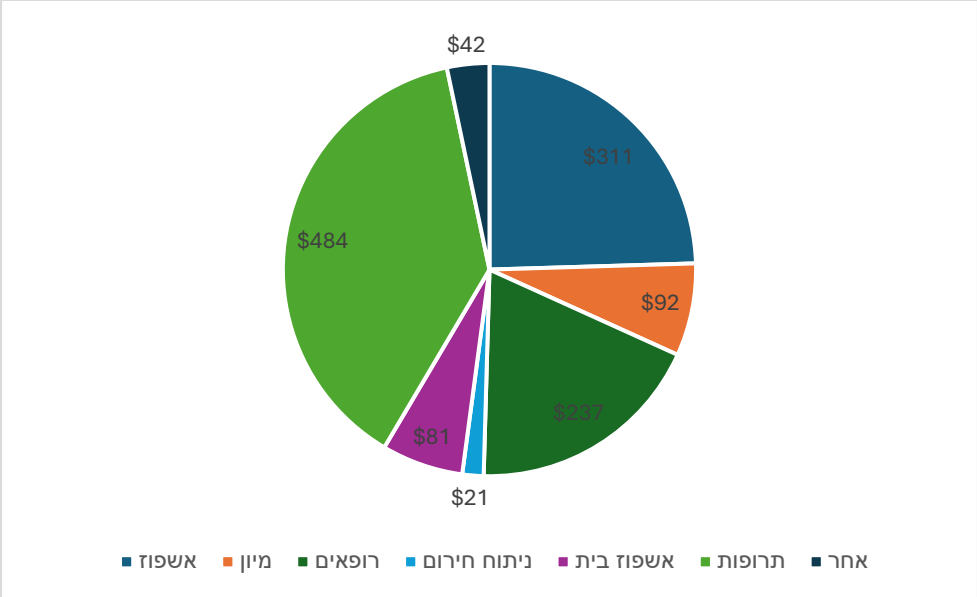
A 2016 American study[60] reviewed research published between 2005 and 2015, comparing disease prevalence among food-secure and food-insecure populations. The findings indicated that food insecurity was associated with 4% of arthritis cases, 6% of diabetes cases, 15% of dental health issues, 13% of reported vitamin deficiencies, 7% of obesity cases, 11% of mental health

[59] The economic burden of ill health due to diet, physical inactivity, smoking, alcohol and obesity in the UK
[60] "Hunger Report", *Bread For the World*, 2016

disorders, 30% of depression cases among adults, and 34% of children receiving prescription medications.

A 2015 Canadian study published in *The Canadian Medical Association Journal*[61] examined the link between food insecurity and healthcare costs and found that the more severe the food insecurity, the higher the healthcare expenditures. On average, the additional annual healthcare cost for an adult living with food insecurity was $1,266[62]. The three primary cost drivers were hospitalizations, prescription medications, and physician services.

Annual Per Capita Additional Healthcare Costs Due to Food Insecurity in Ontario, Canada, $ per Year



[Graph – translation, left to right: Hospitalization | Emergency Room | Doctors | Emergency Surgery | Hospital-at-Home | Medication | Other

Source: Tarasuk, V., Cheng, J., De Oliveira, C., Dachner, N., Gundersen, C., Kurdyak, P. (2015). Association between household food insecurity and annual health care costs. *Cmaj*, 187(14), E429-E436

[61] Association between household food insecurity and annual health care costs
[62] 2012 prices in 2023 terms; Tarasuk, V., Cheng, J., De Oliveira, C., Dachner, N., Gundersen, C., Kurdyak, P. (2015). *Association between household food insecurity and annual health care costs*. Cmaj, 187(14), E429-E436

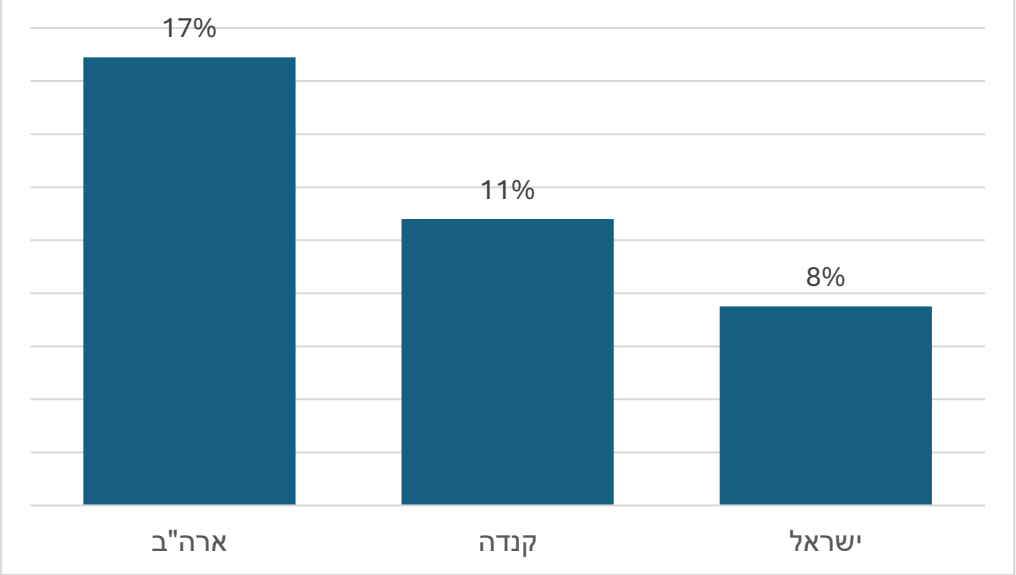
Similar to the Canadian study, a 2019 American study found that the annual healthcare costs for adults (ages 18 and older) living in food-insecure households were approximately $2,100[63] higher per person compared to those living in food-secure households. In this study, researchers examined the link between household food insecurity levels and healthcare expenditures using data from the National Health Interview Survey (NHIS) and the Medical Expenditure Panel Survey (MEPS). They also estimated the additional healthcare costs associated with food insecurity across different states and regions in the United States[64]. Examining the relationship between food security and healthcare costs, as illustrated by studies in Canada and the U.S., is crucial for understanding the dynamics in Israel, as it can reveal how addressing food insecurity might lead to significant reductions in healthcare expenditures, ultimately improving public health outcomes and economic efficiency in the healthcare system.

To estimate the additional healthcare costs associated with food insecurity in Israel, data from Canada and the United States were analyzed and compared to Israel's healthcare system. The findings indicate that Canada is the most relevant comparison in terms of healthcare expenditures, as both countries have similar levels of public healthcare spending and comparable healthcare expenditures as a percentage of GDP. In contrast, the United States has significantly lower public healthcare spending than both Israel and Canada, while its total healthcare expenditure as a percentage of GDP is substantially higher. As a result, the United States is not a suitable reference point for assessing Israel's healthcare costs.

Healthcare expenditure as a percentage of GDP, per adjusted capita, is approximately 8% in Israel, 11% in Canada, and 17% in the United States.

[63] 2019 prices in 2023 terms.
[64] BDO Analysis of Berkowitz, S., Basu, S., Gundersen, C., Seligman, H. (2019). State-level and county-level estimates of health care costs associated with food insecurity. *American Center for Disease Control*. 16, E90

Healthcare Expenditure as a Percentage of the National GDP



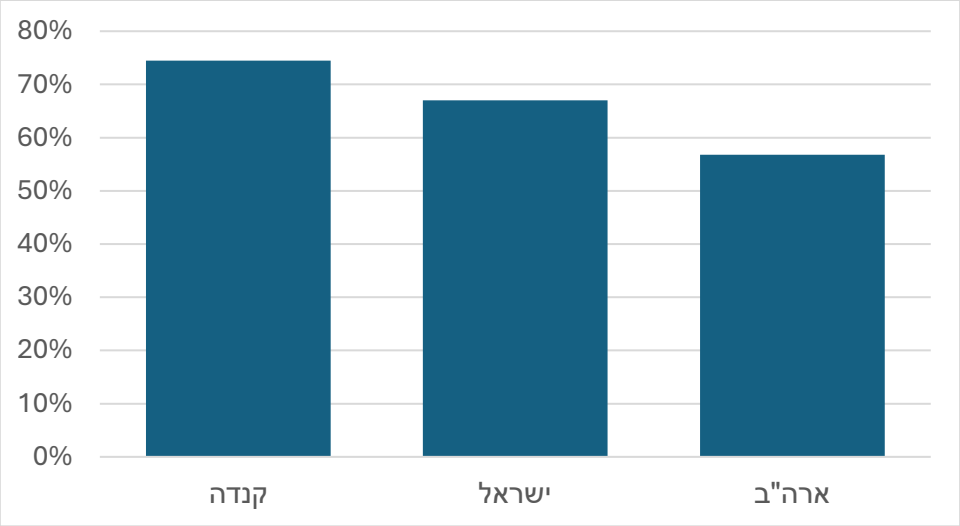
[Translation, left to right: United States | Canada | Israel]

Source: BDO analysis based on OECD data.

Additionally, government spending as a share of total healthcare expenditure is similar in Israel and Canada, at approximately 70%, whereas in the United States it is only around 55%[65].

[65] According to World Bank data.

Public Healthcare Expenditure as a Percentage of Total Healthcare Spending

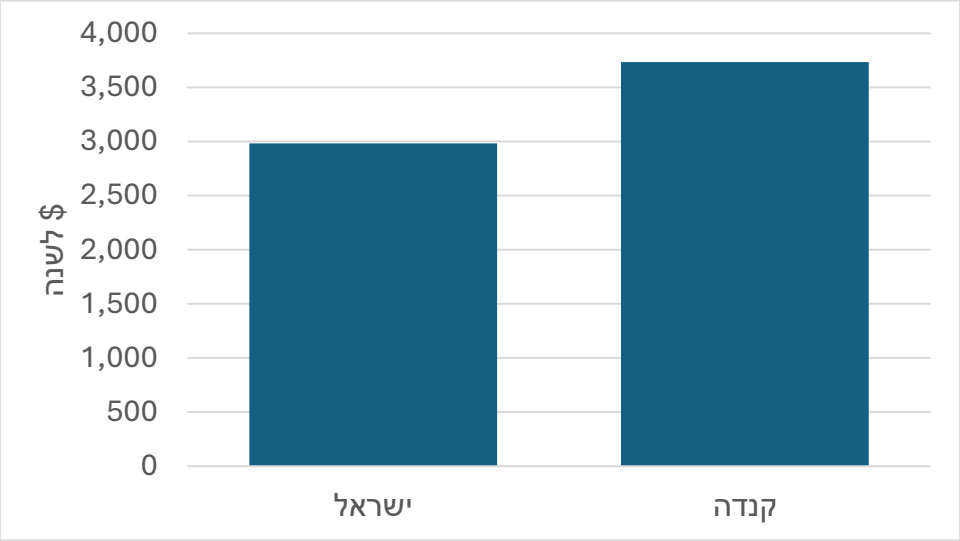


[Translation, left to right: Canada | Israel | United States]

Source: BDO analysis based on data from the CBS and the World Bank

Per capita healthcare spending in Canada is about 20% higher than in Israel[66].

Per Capita Healthcare Expenditure in Canada and Israel (Dollars per Year)



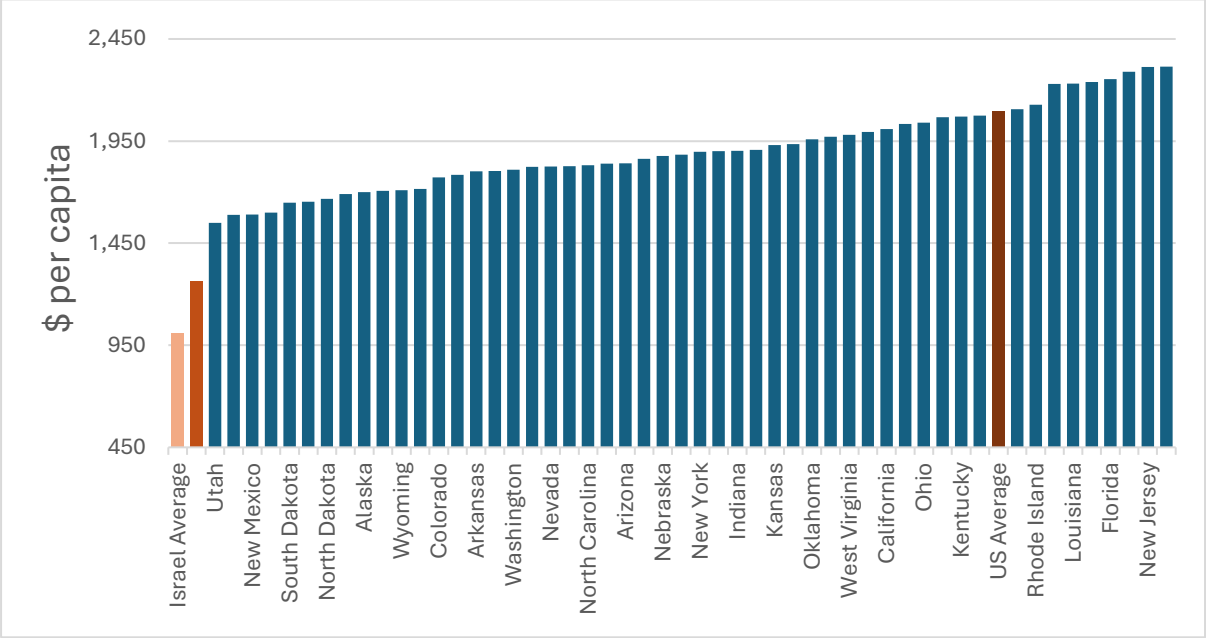
[66] According to World Bank data, adjusted for capitation using the Ministry of Health's capitation factors.

[Translation, left to right: Dollars per year | Israel | Canada]

Source: BDO analysis based on World Bank data, adjusted for capitation.

To reflect this difference, the annual additional per capita healthcare cost of $1,266 for food-insecure individuals found in the Canadian study requires a downward adjustment of approximately 20% for an Israeli equivalent. After this adjustment, the estimated annual additional healthcare cost per food-insecure individual in Israel is approximately $1,010.

Annual Additional Per Capita Healthcare Costs Due to Food Insecurity in Canada, U.S. States, and Israel (Dollars per Year per Capita)



Source: BDO analysis based on State-Level and County-Level Estimates of Health Care Costs Associated with Food Insecurity and Association between Household Food Insecurity and Annual Health Care Costs.

United States – 2019 prices in 2023 terms, Canada – 2012 prices in 2023 terms.

In 2016, Bread for the World, an American anti-hunger organization, assessed the indirect impacts of food insecurity, including lost workdays due to illness among food-insecure individuals, lost workdays for family members who need to care for them, special education costs for food-insecure children in public elementary and high schools, and dropout-related costs. These indirect costs were estimated at $24b, representing a 16% increase over the direct costs associated with food insecurity estimated in the study[67].

Additional indirect effects of food insecurity, as outlined in a report by the Second Harvest North Central Food Bank, include poor cognitive and physical development in children with iron deficiencies, an increased risk of birth defects, and the onset or worsening of mental illnesses, including an elevated risk of suicide due to hunger and poor nutrition[68].

This chapter focuses specifically on the direct impacts of food insecurity on healthcare costs in Israel for 2023 and does not address additional indirect economic costs associated with food insecurity. As such, the direct healthcare cost estimate for food insecurity in Israel presented in this chapter is an underestimate, serving as a baseline for future evaluations of the total economic impact of food insecurity in Israel.

9.3 Estimating the Healthcare Cost of Food Insecurity in Israel

NIS 5.5 billion (USD $1.5B) The annual additional healthcare cost of food insecurity in Israel

Data from the FAO indicates that food insecurity in Israel is among the most severe in the OECD. While Israel's poverty rate is high but comparable to that of the United States, its food insecurity rate is 1.7 times higher.

[67] "Hunger Report", *Bread For the World,* 2016, Appendix 2

[68] "Cost/Benefit Hunger Impact Study" *Second Harvest North Central Food Bank* and *Hunger Free Minnesota,* 2010

This means that the burden on Israel's healthcare system as a result of food insecurity is greater than in any other country in the OECD

In Israel, where per capita healthcare spending is about 20% lower than in Canada, the annual additional healthcare cost of food insecurity per person is approximately $1,010, equivalent to about NIS 3,700 per year.

According to the analysis presented in this Report, approximately 1.5m people[69] in Israel live with food insecurity. As a result, the **total excess healthcare cost of food insecurity in Israel is estimated at NIS 5.5b (USD $1.5B) per year, representing approximately 5% of national healthcare expenditures[70].**

	Food Insecurity
Number of people experiencing food insecurity in Israel (Million standardized individuals)	1.5
Additional annual healthcare cost per person (Thousand NIS)	3.7
Total annual national healthcare cost increase (Billion NIS)	**5.5**

Rescuing nutritious food and supplying it to food-insecure populations who rarely purchase or consume healthy food can improve their overall nutrition and health while reducing national healthcare expenses.

[69] Standard person
[70] Based on CBS data, National Healthcare Expenditure, 2021

10. Environmental Impacts and Costs of Food Loss and Waste in Israel

NIS 4.1 billion (USD $1.1B)– The annual environmental cost of food waste in Israel

NIS *4.1* billion – (USD $1.1B) The environmental cost of food waste in Israel, comprising:

- **NIS 1.6 billion – (USD $433.6M) Loss of natural resources**[71]
- **NIS 1.6 billion – (USD $433.6M) Greenhouse gas emissions and air pollution**
- **NIS 900 million – (USD $243.9M) Waste management**

Industrial food production uses land, water, fertilizers, chemicals, and energy, and is responsible for about one-fifth of global greenhouse gas emissions[72]. Many of these inputs are non-renewable[73], and their use pollutes water, soil, and air, and erodes biodiversity.

In 2023, the environmental cost of food waste in Israel was estimated at approximately NIS 4.1b (USD $1.1b). This includes NIS 1.6b (USD $433.6m) due to use of land and water resources, NIS 1.6b (USD $433.6m) from greenhouse gas emissions and air pollution, and NIS 900m (USD $243.9m) in direct waste management costs. About 2m tons of food and packaging from various sectors (not including the agricultural sector) were discarded, comprising approximately 35% of municipal solid waste in Israel.

[71] The cost of lost natural resources is reflected in the market value of wasted food, estimated at approximately NIS 24.3b.
[72] http://www.fao.org/economic/ess/environment/data/emission-shares/en/
[73] Cut Waste, GROW PROFIT. How to reduce and manage food waste, leading to increased profitability and environmental sustainability, Background Paper 2012

Food loss and waste carries all the environmental costs of production, disposal, and waste management without delivering any of the benefits of consumption.

In recent years, there has been growing global recognition of the food waste crisis. Both the FAO and the United Nations Environment Programme (UNEP) have been working to implement a unified global index for measuring food loss and waste worldwide. In 2019, the UN released a Report[74] emphasizing the importance of examining the environmental impacts of food waste in addition to its economic and social implications. The Report suggests that applying a Life Cycle Assessment (LCA) approach to food loss and its treatment as waste could help shape more effective food waste reduction policies.

Such policies may include measures to reduce surplus food at the source, promote food rescue efforts, and encourage composting and anaerobic digestion over landfill disposal. Around the world, governments are adopting various policy tools to curb food waste and minimize its environmental and economic impact. In September 2015, the UN and the US government set a national target, as part of the Sustainable Development Goals (SDGs)[75], to reduce food waste by 50% within 15 years.

This Report examines the environmental impacts of food loss and waste in Israel. The analysis in this chapter focuses on the environmental effects in 2023, specifically those resulting from greenhouse gas emissions and air pollutants throughout the food production, consumption, and disposal chain. It also considers the loss of natural resources (water and land) due to food waste, as well as the environmental impact of waste management. The quantification of external costs related to greenhouse gas emissions and air pollution is based on the methodology established by the FAO[76]. However, other environmental externalities, such as the impact on water and soil quality and biodiversity loss, were not included in this stage of the analysis. Therefore, the environmental cost assessment presented in this chapter is a partial estimate and serves as a basis

[75] 17 global Sustainable Development Goals (SDGs) set by the UN General Assembly in 2015.
[75] 17 global Sustainable Development Goals (SDGs) set by the UN General Assembly in 2015.
[76] FAO, Food Waste Footprint Full Cost Accounting, 2014

for a more comprehensive environmental cost evaluation of food loss and waste in Israel in the coming years.

It is important to note that **this assessment only quantifies environmental impacts occurring within Israel's geographic borders.** It does not account for natural resources used in food production abroad or for emissions generated during food production and processing outside of Israel. This is significant, as Israel currently imports a substantial share of its food supply, particularly grains, sugars, oils, and fish. Today, about 80% of the calories consumed in Israel come from imported products, either directly (as food imports) or indirectly (as animal-based products, where livestock feed is imported)[77]. Certain food categories, such as grains and meat products, have high import rates relative to total consumption in Israel. As a result, the overall environmental impact of food waste in Israel is higher than the quantified estimates presented in this Report.

6% of greenhouse gas emissions in Israel result from food waste

The environmental impact of food production spans all stages - production, processing, marketing, consumption, and disposal - and is driven by energy consumption and resource use, which vary across different types of crops. These environmental costs are further compounded by the economic and ecological burden of managing food and packaging waste.

In 2023, approximately 1,320m kWh of electricity was wasted, equivalent to the annual electricity consumption needed for producing computers and electronic devices in Israel. Additionally,80,000 tons of fuel were lost, enough to fuel around 175,000 cars for a year. Water resources were also severely impacted, with 185m cubic meters of freshwater wasted, an amount that could fill 57,000 Olympic-sized swimming pools, along with 215m cubic meters of reclaimed wastewater. The loss of 1m dunams of agricultural land, an area 20 times the size of Tel Aviv, further highlights the scale of the issue. Food waste also generated 180,000 tons

[77] Policy Paper | The Climate Crisis and Our Plate, Dr. Liron Amador

of landfill waste, including packaging and industrial waste, and over 60,000 tons of fertilizers were needlessly used. Additionally, approximately 3,000 tons of ammonia emissions from livestock farming were released into the atmosphere.

Altogether, these factors contributed to the emission of 5m tons of greenhouse gases in Israel in 2023 due to food waste, making up 6% of the country's total greenhouse gas emissions[78]. In Government Decision No. 171, issued on July 25, 2021, regarding the transition to a low-carbon economy[79], Israel set a national target to reduce greenhouse gas emissions by 27% by 2030 and by 85% by 2050, relative to 2015 levels. In October 2021, the Prime Minister announced Israel's goal of achieving net-zero carbon emissions by 2050[80].

To achieve these goals, the Israeli government established sector-specific targets for reducing greenhouse gas emissions and improving energy efficiency in the economy. These include a 47% reduction in greenhouse gas emissions from solid waste by 2030, a 92% reduction in emissions from municipal waste by 2050 (compared to 2015 levels of 5.5m tons), and a 71% decrease in landfilled municipal waste by 2030 relative to 2018, when 4.5m tons were landfilled. Reducing food waste in Israel will play a key role in supporting the national effort to meet greenhouse gas reduction targets and reduce municipal waste landfill rates.

On September 12, 2023, the Ministerial Committee on Legislation approved the Climate Law, which formally sets an updated national target of a 30% reduction in greenhouse gas emissions by 2030 and net-zero emissions by 2050. The bill still needs to be reviewed in Knesset committees and pass three readings before becoming law.

[78] Greenhouse gas emissions in 2022 totaled 4.88m tons, an increase compared to 2021, when emissions stood at 4.76m tons.
[79] https://www.gov.il/he/departments/policies/dec171_2021
[80] https://www.gov.il/he/departments/news/carbon_emissions291021

57,000 Olympic-sized pools could have been filled with the water lost to food waste in 2023

In an arid country like Israel, water is a precious and limited resource. The 185m cubic meters of freshwater wasted due to food waste in 2023 could have filled 57,000 Olympic-sized swimming pools, raised the Sea of Galilee's water level by over a meter, or provided water for approximately 3.6m people for an entire year[81]. The economic cost of this wasted water is significant, reaching an estimated NIS 710m (USD $192.4M) in lost value to the Israeli economy.

Another critical and limited resource in Israel is land. The agricultural land used to grow food that was ultimately discarded covered 1m dunams, estimated at a value of NIS 850m (USD $230.3M).

[81] Residential water consumption

Environmental Costs from Food Waste in 2023 by Cost Driver (Billion NIS)

Cost Driver	Wasted Resources	Emissions Cost	Waste Management Cost	Natural Resources Cost (Land and Water)
Waste	2m tons of municipal waste 0.9m tons of agricultural waste	0.6	0.9	
Electricity generation (not including electricity for water desalination and purification)	1,320m kWh	0.3		
Emissions from livestock	3,000 tons of ammonia	0.5		
Fuel combustion	80,000 tons	0.2		
Water	185m cubic meters of freshwater; 215m cubic meters of reclaimed wastewater	0.1		0.7
Fertilizer use	60,000 tons	0.04		
Land	1m dunams of agricultural land			0.9
Total		**1.6 (USD $433.6 M)**	**0.9 (USD $243.9M)**	**1.6 (USD $433.6 M)**

Source: BDO

Food waste accounts for one-third of household waste in Israel

The environmental impact of food waste extends beyond excess food production, which contributes to resource depletion and pollution - it is also driven by how food waste is handled after disposal. Landfilling, in particular, has significant

environmental consequences. In Israel, 34% of household waste is organic food waste[82].

Most of Israel's solid waste is landfilled. Landfills take up significant space, while transporting waste to remote landfill sites throughout Israel emits air pollutants, in addition to the emission of greenhouse gases.

Israel's municipal and commercial waste is estimated at 6.2m tons per year[83]. In 2023, food waste in Israel amounted to approximately 2.6m tons[84], of which 1.8m tons[85] required treatment as part of municipal waste management. Additionally, food packaging waste from food loss totaled 180,000 tons, bringing total food-related waste to 2m tons - one-third of Israel's total waste requiring treatment. Managing 2 million tons of waste requires approximately 200,000 compactor trucks[86] for collection and disposal, equivalent to about 550 fully loaded garbage trucks every day for an entire year.

Waste treatment demands significant resource allocation, including financial and regulatory support for sorting and end-treatment solutions. The cost of waste management is composed of several factors, including storage, collection, and disposal costs, expenses for sorting and transfer stations, transportation costs, as well as the treatment itself, depending on the required method, and landfill levies. The direct annual cost of treating food waste and packaging waste in Israel resulting from food loss[87] is estimated at NIS 900m (USD $243.9M), based on waste treatment cost estimates from the Ministry of Environmental Protection (*Waste Policy 2030*). Additionally, the external cost of greenhouse gas emissions and air pollution from waste treatment amounts to NIS 600m (USD $162.6M). In total, the direct and external economic cost of waste treatment due to food loss in Israel in 2023 stands at approximately NIS 1.5b (USD $406.5M).

[82] Based on the Waste Composition Survey commissioned by the Ministry of Environmental Protection in 2013.
[83] Estimates of the Ministry of Environmental Protection
[84] Total loss includes agricultural produce left in the field.
[85] Approximately 870m tons of food waste originates from the agricultural stage, typically left in the field and not requiring treatment.
[86] Compactor trucks with a capacity of 10 tons.
[87] Not including food waste in agriculture.

50% of the environmental cost comes from food waste at the consumption stage

The environmental footprint of food waste is influenced by three key factors: the stage in the value chain at which the food is discarded, the environmental impact of waste treatment at the end of its lifecycle, and the cumulative impacts of all previous production and transportation stages. For example, if food is discarded at a grocery store, its environmental footprint includes emissions from its cultivation during production, transportation from the field to the packing house and store, and energy use at the store (e.g. refrigeration, air conditioning, and lighting). Landfilling the waste generates further emissions, including transportation emissions to the landfill site. The later in the process the food is lost or discarded, the greater its environmental impact.

Food waste at the **consumption stage** accounts for approximately 50% of the environmental costs of food loss. In 2023, food waste at the consumption stage[88] amounted to 1.6m tons (including packaging), with an estimated value of NIS 14b (USD $3.8B). Waste treatment costs, which consumers indirectly pay through municipal fees, totaled approximately NIS 600m (USD $162.6M). Additional environmental damage caused by greenhouse gas emissions and air pollution from food waste at this stage is estimated at NIS 800m (USD $216.8M).

Environmental Costs of Food Waste in Israel, 2023

By Stage of Disposal (Million NIS)

	Agriculture*	Processing	Distribution	Consumption**	Total
Fruit & Vegetables	416	21	475	911	**1,824**
Grains & Legumes	109	67	127	367	**670**
Dairy Products	127	48	73	266	**514**
Meat, Eggs & Fish	153	163	218	529	**1,063**
Total	**806**	**298**	**893**	**2,073**	**4,071**

[88] The consumption stage includes household and institutional consumption.

Percentage of Total	20%	7%	22%	51%	100%

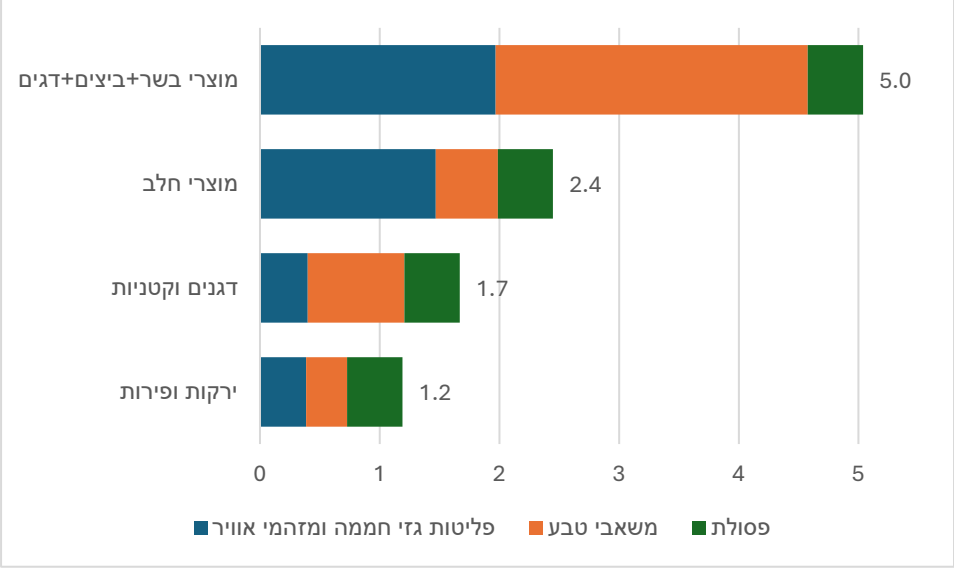
* The agricultural stage in the model also includes waste from handling and packaging.

** Emissions from water, electricity, and household gas use were not included at the consumption stage.

Source: BDO

An analysis of **environmental impacts by stage of food waste** reveals that approximately 60% of the total environmental impact originates at the agricultural stage. This is because food discarded at later stages, e.g. processing, distribution, or consumption, still carries the environmental costs accumulated from earlier stages. Agricultural emissions result from fuel and electricity consumption, fertilizer use, sludge and compost application, water desalination, and direct emissions from livestock. This stage also involves extensive use of water and land for food production.

Cumulative Environmental Cost per Kg of Food Waste in Israel, 2023 (NIS)



[Translation top to bottom, left to right: Meat, Eggs & Fish | Dairy | Grains & Legumes | Fruit & Vegetables | Greenhouse Gas Emissions & Air Pollutants | Natural Resources | Waste]

Source: BDO

Environmental Cost of Food Waste by Stage of Disposal, 2023 (Million NIS)

	Emissions	Land Resources	Water Resources	Waste Treatment	Total	Total in Thousands of Tons
Agriculture	363 (USD $101)	251 (USD $70)	191 (USD $53)	0	**806** (USD $224)	**871**
Industry	110 (USD $31)	87 (USD $24)	57 (USD $16)	44 (USD $12)	**298** (USD $83)	**87**
Distribution	293 (USD $81)	204 (USD $57)	164 (USD $46)	232 (USD $64)	**893** (USD $248)	**455**
Consumption	843 (USD $234)	313 (USD $87)	299 (USD $83)	619 (USD $172)	**2,073** (USD $576)	**1,213**
Total Billion NIS	**1.6** (USD $444M)	**0.9** (USD $250M)	**0.7** (USD $194M)	**0.9** (USD $250)	**4.1**(USD $1.1B)	**2,626**

Source: BDO

Animal-based foods have the greatest environmental impact

An analysis of the environmental impact of different food categories reveals that animal-based products have the highest environmental impact. Food waste from meat, eggs, and fish discarded at the agricultural stage imposes an environmental cost of NIS 5.9 (USD $1.6) per kg (due to air pollution and greenhouse gas emissions). If discarded at the consumption stage, this cost rises to NIS 8.2 (USD $2.2) per kg. For dairy products, the environmental cost of waste is NIS 2.3 (USD $0.6) per kg at the agricultural stage, increasing to NIS 2.9 (USD $0.8) per kg if discarded by consumers. Fruit and vegetables lost in the field carry an environmental cost of NIS 0.90 (USD $0.2) per kg, which nearly doubles if discarded at the consumer stage.

The sources of environmental costs vary by food type. For meat, eggs, and fish, about half of the environmental cost comes from natural resource depletion. For

dairy products, the primary cost driver is greenhouse gas emissions and air pollution. In contrast, for fruit and vegetables, the cost is evenly distributed between waste treatment, natural resource loss, and emissions.

International Comparison - Greenhouse Gas Emissions from Food Waste

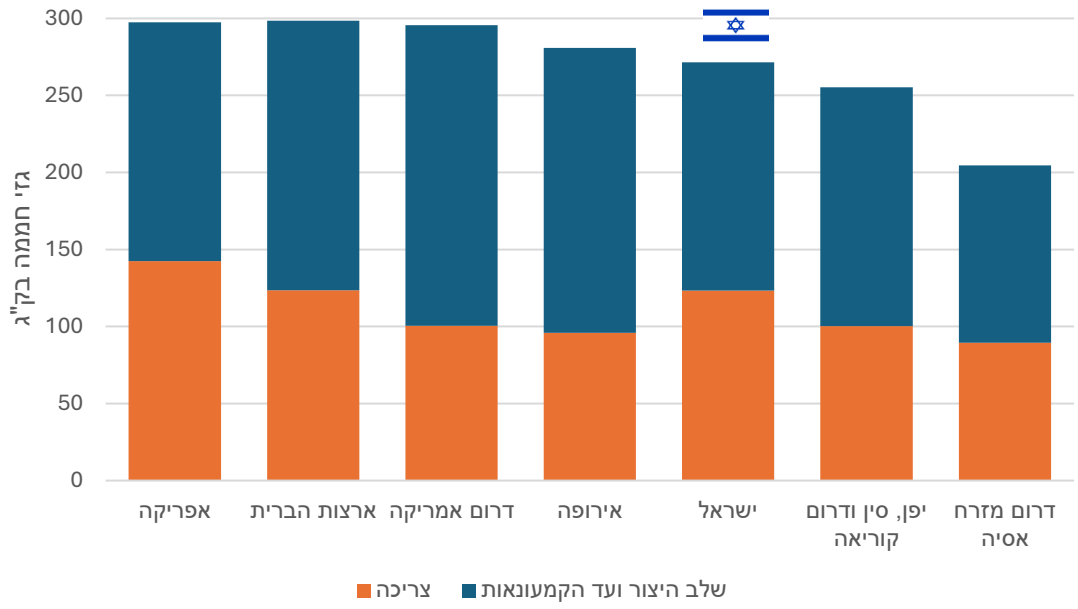
According to UN estimates, global food waste amounts to approximately 1.7b tons per year. The total greenhouse gas emissions generated from producing and growing food that is never consumed are estimated at 4.3b tons annually. This figure includes emissions produced at every stage of food cultivation and production, as well as those associated with food disposal and waste treatment[89].

The global environmental cost of greenhouse gas emissions from food waste is estimated at $515b per year[90]. However, this cost varies depending on local conditions and the types of agricultural crops grown.

A comparison of FAO research and updated UN report indicates that per capita greenhouse gas emissions from food waste do not differ significantly between low-income and high-income countries.[91] The UN Report states that per capita food waste at the consumption stage is similar across all countries, challenging the common perception that most food waste in developed countries occurs at the retail and consumption stages, while in developing countries, most food waste occurs during production, storage, and transportation.

[89] As the FAO study did not quantify air pollutant emissions resulting from food production and disposal, the comparison focuses solely on greenhouse gas emissions from food waste.
[90] Estimated by the FAO in 2014.
[91] FAO, Food Waste Footprint Full Cost Accounting, 2014

Greenhouse Gas Emissions from Food Waste by Geographic Region (Kg per Capita)[92]



[Translation, left to right, top to bottom: Greenhouse Gas Emission (kg) | Africa | United States | South America | Europe | Israel | Japan, China & South Korea | Southeast Asia | Consumption | Production to Retail Stages]

Source: FAO, UNEP, and BDO analysis; Israel data based on BDO estimates.

Findings from the UN Report, as reflected in the graph above, indicate that per capita food waste at the consumption stage in Israel is similar to that in the United States and lower than in Africa. However, per capita food waste at the consumption stage in Europe is noticeably lower.

In Israel, 5m tons of greenhouse gases are emitted annually due to the production and cultivation of food that is never consumed, accounting for approximately 6% of the country's total annual greenhouse gas emissions.

[92] FAO and UNEP data rely on studies published in various countries, which may use different estimation methodologies.

11. Food Rescue: Potential Savings for the National Economy

NIS 5.5 billion (USD $1.5B)– The potential savings for the national economy from food rescue

20% of wasted food, if rescued, would close the food insecurity gap in Israel

The amount of food needed to close the gap between the actual food consumption of food-insecure populations and the normative consumption level (defined as the average consumption of households in the second to fifth income deciles) is estimated at approximately 530,000 tons in 2023, valued at NIS 4.3b (USD $1.1B). Closing the food expenditure gap for severely food-insecure households (about 8.2% of Israeli households) would cost approximately NIS 2.9b (USD $186M), and an additional NIS 1.4b (USD $397.4M) would be needed to bridge the gap for those experiencing moderate food insecurity.

The Food Expenditure Gap Relative to Normative Spending Levels for Food-Insecure Populations (Million NIS and USD)

	Gap for Severely Food-Insecure Populations	Gap for Moderately Food-Insecure Populations	Total Food Expenditure Gap
Fruit & Vegetables	729 (USD $203)	268 (USD $79)	997 (USD $277)
Bread & Grains	331 (USD $92)	142 (USD $39)	473 (USD $131)
Meat, Poultry & Fish	831 (USD $231)	475 (USD $132)	1,305 (USD $363)
Milk & Dairy	206 (USD $57)	133 (USD $ 37)	339 (USD $94)
Other Foods	776 (USD $216)	448 (USD $124)	1,224 (USD $340)
Total	**2,872** (USD $798)	**1,466** (USD $407)	**4,338** (USD $1205)

The Food Expenditure Gap Relative to Normative Spending Levels for Food-Insecure Populations (Million NIS)

	Gap for Severely Food-Insecure Populations	Gap for Moderately Food-Insecure Populations	Total Food Expenditure Gap
Fruit & Vegetables	729	268	997
Bread & Grains	331	142	473
Meat, Poultry & Fish	831	475	1,305
Milk & Dairy Products	206	133	339
Other Food	776	448	1,224
Total	**2,872**	**1,466**	**4,338**

Total:

NIS 4.3b (USD $1.2B) **Total food expenditure gap**	**NIS 1.2b (USD $333M)** **Cost of reducing the gap through food rescue**

Rescuing approximately 530,000 tons of wasted food per year - equivalent to around 20% of all wasted food in Israel and 45% of all rescuable food - would completely close the food expenditure gap relative to normative spending levels. According to the estimates presented in this Report, an investment of approximately NIS 1.2b (USD $325M) in food rescue could recover food worth NIS 4.3b, (USD $1.1B) making food rescue a far more cost-effective solution compared to cash benefits, donations, subsidies, or direct aid to food-insecure populations. At the same time, food rescue would generate significant environmental and economic savings, including 80m cubic meters of water, 260m kWh of electricity, 16,000 tons of fuel, NIS 320m (USD $86.7M) in savings from reduced greenhouse gas and air pollutant emissions, and NIS 180m in waste treatment cost reductions. Additionally, food rescue would prevent an estimated

NIS 5.5b (USD $1.5B) in additional healthcare costs resulting from the health impacts of food insecurity.

By investing NIS 1.2b (USD $325.2M) per year in nutritious food rescue, with a focus on fruit and vegetables, Israel could reduce food insecurity while saving 70% of the costs associated with alternative solutions.

Summary of National Economic Benefits of Food Rescue (Million NIS per Year)

Food Rescue Rate Out of Total Food Waste	Around 2% (current situation)	5%	10%	20%
Volume of rescued food (thousand tons)	45	130	260	530
Food rescue as a share of the nutritional gap for food-insecure populations	9%	25%	50%	100%
Market value of rescued food	260	1,050	2,100	4,300
Cost of food rescue	70	290	580	1,190
Savings to the national economy (before external impacts)	190	760	1,520	3,110
Environmental and social benefits (based on FAO estimates)	230	650	1,300	2,600
Health benefits	480	1,380	2,760	5,510
Total savings from food rescue for the national economy	900	2,790	5,580	11,220

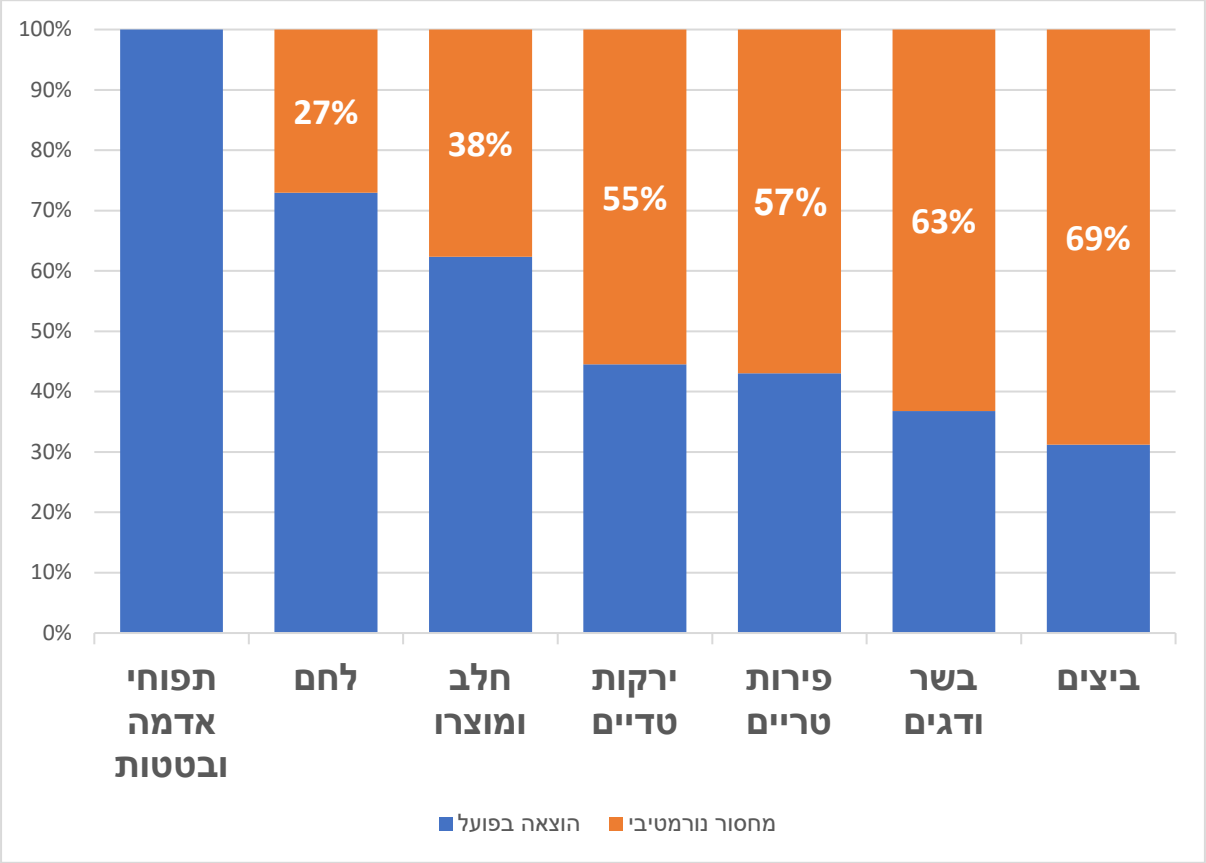
Source: BDO estimates

The issue of food insecurity is reflected not only in total food expenditure but also in consumption patterns. Analyzing the food consumption basket of food-insecure populations compared to the average consumption basket of food-secure populations reveals that **food-insecure households tend to spend**

significantly less on high-nutritional-value foods such as fruit, vegetables, meat, and fish.

Composition of Food Expenditures among Households Suffering from Severe Food Insecurity

(100% = Consumption of the population with normative food expenditures)



[Translation, left to right, top to bottom: Potatoes & Sweet Potatoes | Bread | Milk & Dairy | Fresh Vegetables | Fresh Fruit | Meat & Fish | Eggs | Actual expenditure | Normative gap]

Source: BDO analysis and the CBS Household Expenditure Survey

For high-nutritional-value foods such as meat, poultry, fish, eggs, and fresh fruit and vegetables, spending among food-insecure households is 55% to 70% lower than normative consumption levels. In contrast, for staple foods such as bread and milk, the gap narrows to 25% to 40%.

According to economic theory, receiving in-kind support (goods) is generally considered less desirable than receiving monetary aid, as it limits the recipient's freedom to allocate resources according to their individual needs. This principle, known as "subsidizing the consumer rather than the product," typically favors financial assistance over direct product distribution. However, **food rescue presents a unique case where in-kind support offers a clear economic advantage. This is because surplus food, which would otherwise be discarded, is transformed into a valuable resource. As a result, every shekel invested in food rescue generates a direct economic return of 3.6 times its value. Moreover, when factoring in the environmental benefits of reducing greenhouse gas emissions, air pollution, and waste treatment costs, the overall economic return increases to 4.2 times the investment. When also considering the health benefits of reducing food insecurity in Israel, the total national economic impact reaches 10.3 times the investment.**

In this context, it is important to note that food-insecure populations often face broader economic instability, which manifests in gaps in access to essential goods and services such as housing, healthcare, and education. When these households receive food assistance, they effectively free up a portion of their limited disposable income, allowing them to redirect spending toward other critical needs. As a result, food assistance provides benefits beyond just food - it enhances overall well-being by enabling families to allocate resources to other vital services, ultimately improving their stability and quality of life.

It is important to emphasize that the gradual implementation of a national target to reduce food waste in Israel by 50% over 15 years is not expected to decrease the volume of domestic agricultural production compared to current levels. Rather, it would primarily slow the rate of growth in local food production.

12. Food Rescue: Economic, Social, Health, and Environmental Benefits

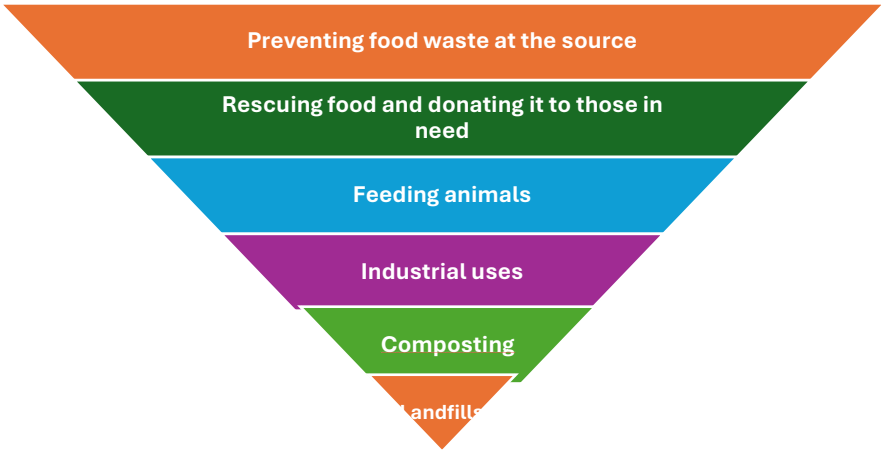
1.2 million tons of rescuable food in Israel in 2023

The combination of rising food waste levels, the climate crisis, food security challenges, the high percentage of households experiencing food insecurity in Israel, and the associated healthcare costs, underscores the urgent national need to adopt food rescue as a central policy tool.

Food waste is a global phenomenon and occurs at similar levels across Western economies. According to UN estimates, over one-third of all food produced worldwide is wasted when measured by volume, or about one-quarter when measured by caloric value.

The food waste treatment hierarchy, established by the EU Food Waste Directive, sets priorities for managing uneaten food. Each level in the hierarchy focuses on a different strategy for addressing food waste. The highest priority is given to preventing food waste at the source followed by redirecting surplus food to populations in need, as these approaches offer the greatest environmental, economic, and social benefits, making them the most effective solutions.

The Economic-Environmental Hierarchy for Food Waste Management



Source: EPA

There are various policy tools available to support vulnerable populations and address food insecurity. In Israel, the most common measures include donations, subsidies, welfare benefits, and financial assistance. What makes food rescue unique is that it provides aid to those in need at a significantly lower fiscal and economic cost. Instead of funding the full cost of purchasing food, only the cost of rescuing food needs to be covered.

In economic and social policy discourse, both in Israel and globally, there is an ongoing debate between those who advocate for economic growth as a central goal ("expanding the pie") and those who prioritize reducing inequality.

Food rescue is unique because it inherently integrates both approaches. **By rescuing surplus food and distributing it to vulnerable populations, it simultaneously boosts economic output and reduces inequality.**

Additionally, in light of crises such as COVID-19 and the climate crisis, there are potential risks of instability in local and global food supplies. In such scenarios, food rescue serves as a critical tool for expanding food reserves and ensuring food security.

Food rescue provides benefits in four key areas:

1. **Economic** – Food waste reduces economic productivity by wasting production inputs such as labor, land, and energy. In contrast, food rescue transforms discarded surplus food, which would otherwise have little or no value, into a valuable resource for vulnerable populations without requiring additional production inputs. Since the cost of food rescue is significantly lower than production and transportation costs, and rescued food retains its full nutritional value, the process contributes to economic growth and productivity.

2. **Social** – Food waste costs accumulate throughout the entire food supply chain, from production and distribution to retail and consumption, ultimately increasing consumer expenses and the cost of living. Food rescue helps reduce social disparities and lower the cost of living, while also alleviating food insecurity among vulnerable populations.

3. **Health** – The right to food goes beyond caloric intake - it also pertains to the nutritional value and quality of the food. Economic access to a healthy food basket, which provides essential nutrition for physical and cognitive function, is a critical component of food security. Food insecurity increases the risk of chronic and mental illnesses, lowers academic performance, reduces earning potential, and worsens economic hardship. On a national level, it leads to higher healthcare costs and lower productivity. By rescuing nutritious food, particularly fruit and vegetables, and distributing it to food-insecure populations, food rescue can reduce food insecurity rates and, in turn, lower excess healthcare costs in Israel.

4. **Environmental** – Approximately 38% of Israel's domestic food production is wasted. The resources such as land, water, fertilizers, chemicals, and energy that are used in food production are also wasted, resulting in significant environmental damage

The environmental impact of food waste extends beyond excessive food production to waste management. Most discarded food ends up in landfills, where its decomposition releases methane gas, a major driver of climate change, and degrades soil quality. Moreover, organic food waste makes up about one-third of household waste, increasing the total waste volume and compromising the recyclability of other materials. Additionally, transporting food waste to landfills contributes to greenhouse gas emissions, further exacerbating environmental degradation. Food rescue maximizes the use of resources already invested in food production while reducing the need for additional environmental resources.

The combined economic, social, health, and environmental benefits make food rescue a uniquely effective solution, underscoring the need for dedicated policies to expand and promote food rescue efforts as a national priority.

Food Production vs. Food Rescue

	Food Production	Food Rescue
Product	Nutritional food	Nutritional food that may have aesthetic defects
Nutritional value	100%	100%
Land use	Yes	Minimal[93]

[93] Since most resources have already been invested in food production, the additional cost of rescuing it is minimal.

Water use	Yes	Minimal[94]
Greenhouse gas emissions from production	Yes	None
Use of fertilizers and pesticides	Yes	None
Logistics, distribution, and transportation costs	Yes	Yes

Approximately half of all wasted food - over 1.2m tons - is rescuable, and its recovery could reduce Israel's greenhouse gas emissions by 3%[95] while saving the economy NIS 5.5b (USD $1.5B) in excess healthcare costs.

Most food rescue efforts in Israel and worldwide are carried out by nonprofit organizations funded primarily through donations. However, it **in fact provides an economically viable alternative to food production. Thus, in addition to its social impact in reducing inequality, food rescue provides direct economic benefits to the national economy.**

The direct cost of food rescue in Israel averages NIS 1.7 **(USD $0.5)** per kilogram, while the direct market value of rescued food is approximately NIS 6.1 **(USD $1.7)** per kilogram, representing a return of 3.6 times the investment. In other words, every shekel invested in food rescue generates NIS 3.6 **(USD $1)** worth of food products for food-insecure populations. The benefits of food rescue extend beyond direct savings and include environmental and health impacts (see Chapters 8 and 10). The environmental benefit from reducing greenhouse gas emissions, air pollution, and waste treatment costs is estimated at NIS 1.1 **(USD $0.7)** per kilogram, bringing the total return on investment to 4.2 times the initial cost. The health benefit is valued at NIS 10.4 **(USD $2.8)** per kilogram, further increasing the economic return, bringing the total multiplier effect of food rescue to 10.3.

[94] See previous footnote.
[95] Out of a total of 80m tons of greenhouse gas emissions in Israel per year.

Food rescue in Israel is still in its early stages, there is significant potential to scale up operations, improve efficiency, and increase the value of rescued food. However, to maintain a conservative approach, the estimates in this Report are based on current cost structures.

Estimated Feasibility of Food Rescue, Cost-Benefit per Kg of Food

	Value of rescued food*	Environmental contribution according to BDO	Health contribution according to BDO	Total value for the national economy	Rescue cost	Profit from food rescue	Value multiplier = Total value for the national economy / rescue cost
Viability for the national economy without greenhouse gas emissions and air pollutants	NIS 6.1	Not included	Not included	NIS 6.1	NIS 1.7	NIS 4.4	**3.6**
Feasibility for the national economy including greenhouse gas emissions, air pollutants, and waste management	NIS 6.1	NIS 1.1	Not included	NIS 7.2	NIS 1.7	NIS 5.4	**4.2**
Feasibility for the national economy including greenhouse gas emissions, air pollutants, waste management, and excess health costs	NIS 6.1	NIS 1.1	Nis 10.4	NIS 17.5	NIS 1.7	NIS 15.8	**10.3**

*Market price of an alternative product with the same nutritional value

Source: BDO estimates

The scale of food waste in Israel is similar to that of comparable developed countries. In recent years, initial steps have been taken by the Israeli government to reduce food waste (for more details on government initiatives, see Chapter 12). However, unlike many other countries that have established legislation, national programs, and multi-year targets to promote food rescue and reduce waste, Israel has yet to adopt a national policy on the matter.

13. International Comparison – Food Waste and Policies for Its Reduction

a. Food Waste Around the World

2021 UN Report Findings: Consumer Food Waste Is Significantly Higher than Previously Estimated

In 2021, the United Nations Environment Programme (UNEP) published the Food Waste Index Report[96], revealing that the UN had previously underestimated food waste at the consumption stage (household and institutional). According to the updated findings, global food waste totals approximately 1.7b tons per year - 30% more than earlier estimates.

This marks the UN's first update in a decade, revising its previous estimate from 1.3b tons of annual food waste - about one-third of global food production.

The FAO defines waste as "the decrease in the quantity or quality of food resulting from decisions and actions by retailers, food service providers, and consumers."

The UN Food Waste Index Cites Findings from the Israeli *Food Waste and Rescue Report* by Leket Israel, the Ministry of Environmental Protection, and BDO

The UN Food Waste Index[97] supports the advancement of the UN's sustainable development goal[98] to reduce global per capita food waste by 50% by 2030. It serves as a complementary measure to the Food Waste Index published by the

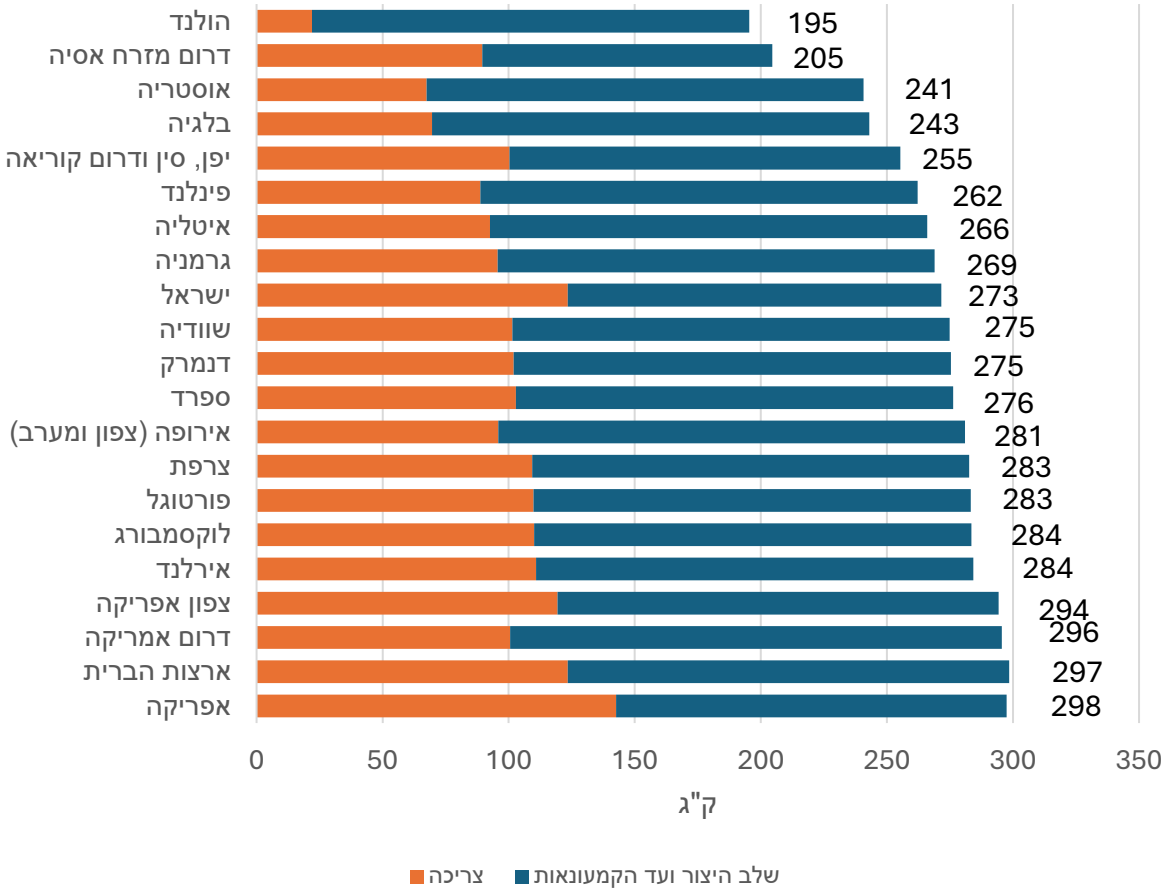
[96] United Nations Environment Programme (2021). Food Waste Index Report 2021, Nairobi
[97] United Nations Environment Programme (2021). Food Waste Index Report 2021. Nairobi
[98] Sustainable Development Goals, Goal indicator 12.3.1, FAO- https://www.fao.org/sustainable-development-goals/indicators/1231/en/

FAO, which focuses on food waste during the agricultural, sorting, packaging, and industrial processing stages.

The UN report highlights that the true scale of global food waste has remained unclear due to past estimates relying on limited data from a small number of countries, often using outdated figures. The new UN Report presents a more accurate and up-to-date global food waste assessment, based on comprehensive data covering waste at both the retail and consumption stages, in households and institutions.

The report synthesizes findings from 84 studies on food waste across various countries: 52% are academic studies, 33% were conducted by government institutions, 10% by NGOs, and 6% by other sources. **Regarding Israel, the UN Report cites and relies on the findings of the *Food Waste and Rescue in Israel* Report by Leket Israel, the Ministry of Environmental Protection, and BDO.**

International Comparison of Food Waste per Capita, Kg per Year



[Translation, top to bottom, left to right: Netherlands | Southeast Asia | Austria | Belgium | Japan, China & South Korea | Finland | Italy | Germany | Israel | Sweden | Denmark | Spain | Europe (North and West) | France | Portugal | Luxemburg | Ireland | North Africa | South America | United States | Africa | Kg | Consumption | Production through retail stages]

Source: FAO, UNEP, and BDO analysis; Israel data based on BDO estimates.

The UN Report indicates that per capita food waste at the consumption stage in Israel is comparable to that of the United States and lower than in Africa. However, it is higher than in Europe.

A study on household food waste in Israel[99], conducted by Prof. Ophira Ayalon, Dr. Efrat Elimelech, and Dr. Eyal Ert, found that households waste less food when waste is separated at the source. Unlike European countries, Israel does not implement source separation, which may explain its higher food waste at the consumption stage.

It is important to note that the UN Report does not provide explanations for the differences in per capita food waste among countries.

The UN classifies food waste reduction as a key issue for sustainable development and for addressing global food insecurity. Its latest report emphasizes that current global estimates are unreliable concluding that countries must measure and monitor food waste within their territories while implementing structured policies to address it.

This Report examines the scale of food waste in Israel, its economic and social impacts, and the policy measures needed to address it. In the wake of rising living costs—exacerbated by the **Swords of Iron War**—reducing food waste is more urgent than ever. Wasted food represents a market failure, signaling the need for government intervention to improve resource efficiency. Drawing on global best practices, this report offers policy recommendations to enhance food rescue efforts and mitigate food insecurity.

b. Policy Tools for Reducing Food Waste in Israel and Around the World

In collaboration with the Global Food Donation Policy Atlas[100]

OECD countries use integrated policy tools to reduce food waste.

[99] "Household Food Waste," Prof. Ofira Ayalon, Prof. Efrat Elimelech, University of Haifa, Dr. Eyal Ert, The Hebrew University of Jerusalem, commissioned by the Chief Scientist's Office, Ministry of Agriculture, under the management of the Volcani Institute.
[100] https://atlas.foodbanking.org/atlas.html

With growing global recognition of the food waste crisis, **the FAO and UNEP** have worked to implement complementary international indicators for assessing food waste worldwide. These indicators aim to standardize measurement, establish a quantitative baseline for food waste, and support countries in developing policies to reduce waste while tracking progress.

Various policy tools are used worldwide to reduce food waste. Food waste reduction policies may include measures to minimize food surplus at the source, rescue surplus food, and promote composting and anaerobic digestion as alternatives to landfill disposal.

Global efforts are being made to make information about food waste and policies to reduce it more accessible. For example, the European Commission, through the EU Food Loss and Waste Prevention Hub (FLWPH), compiles and shares information on policies and legislation related to food waste prevention across European countries.

Additionally, in February 2019, the Food Law and Policy Clinic (FLPC)[101] at Harvard Law School and the Global FoodBanking Network (GFN)[102] launched the Global Food Donation Policy Atlas[103]. This initiative focuses on non-EU countries with the goal of advancing policies, legislation, and regulations for food rescue and waste reduction while also addressing regulatory barriers.

Atlas partnership initiatives include:

1. Identifying and compiling food rescue and donation laws in a continuously expanding list of countries.
2. Analyzing common barriers to food rescue and donation in these countries.
3. Sharing best practices to help overcome these barriers.

[101] Harvard Law School Food Law and Policy Clinic
[102] The Global FoodBanking Network
[103] https://atlas.foodbanking.org/atlas.html

As part of this initiative, comprehensive reports are published, providing in-depth reviews of national policies and regulations related to food waste reduction and rescue. The Atlas has identified key policy tools in this area and highlighted best-practice countries where these measures are most effectively implemented.

In June 2023, Israel launched the **Report on Surplus Food Donations in Israel: A Legal Guide and Policy Recommendations** in collaboration with the Harvard Food Law and Policy Clinic, the Global Food Donation Policy Atlas, the Ministry of Environmental Protection, the Global FoodBanking Network, and Leket Israel.

Best practices according to the Atlas Partnership and the European Commission:

1. Safety Regulations for Food Donations

Establishing a legal framework with clear guidelines on food safety standards for donated or rescued food.

India – *Food Safety Regulations (Rescue and Distribution of Surplus Food)*[104]

- Defines the responsibilities of food donors and surplus food distribution organizations, with the Food Safety and Standards Authority serving as the regulatory body.
- Establishes labeling requirements for donated food.
- Mandates the registration and tracking of surplus food.

Israel – *Public Health Protection Law (Food), 2015*[105]

- Section 11 regulates the use of food leftovers.

104 https://www.fssai.gov.in/upload/uploadfiles/files/Gazette_Notification_Surplus_Food_06_08_2019.pdf
105 https://www.nevo.co.il/law_html/law01/049_062.htm#med1

- Section 159 exempts nonprofit food distribution organizations from manufacturing, transportation, and storage licensing requirements. This exemption was extended under the Economic Arrangements Law for 2021–2022, however the necessary regulations have yet to be enacted[106].
- Section 162 allows food distribution organizations to use products past their recommended use-by date, provided they are non-perishable, and the manufacturer has given written approval.

2. Legal Liability Protection for Food Donations

Legislation that exempts food donors, handlers, transporters, and distributors from civil or criminal liability for damages, provided they act lawfully and without negligence.

United States – *Good Samaritan Food Donation Act (1996)*[107]

- Provides federal protection from civil and criminal liability for food donors and nonprofit organizations distributing donated food, under specific conditions (e.g., food must be donated in good faith to a nonprofit that provides it to those in need free of charge and meets safety standards).
- Some states offer broader protections for additional types of donations: Arizona, California, Massachusetts, Minnesota, Nevada, New Hampshire, New Mexico, Vermont, Rhode Island, and Tennessee protect direct food donations to individuals in need. Alaska, Arizona, Hawaii, Kentucky, Maine, Massachusetts, New Hampshire, New Jersey, Ohio, Rhode Island, and Tennessee protect donations of food past its expiration date.
- In 2021, a proposal was submitted to the US Senate and House of Representatives to amend the law and expand food donation opportunities nationwide. The amendment seeks to allow direct food

[106] The Economic Plan Law (Legislative Amendments for Implementing Economic Policy for the 2021 and 2022 Budget Years), 2021.
[107] https://www.law.cornell.edu/uscode/text/42/1791

donations by grocery stores, restaurants, schools, and similar entities, but has not yet been approved as of 2023.

Israel – *Food Donation Encouragement Law, 2018*

- The law promotes food rescue by ensuring that individuals or entities donating food to food distribution organizations, as well as organizations that transport, store, or distribute food donations, are exempt from civil and criminal liability for any damages resulting from the donation, provided they comply with all applicable laws and act without negligence.
- In November 2024, an amendment was passed requiring public entities to agree to donate surplus food to food distribution organizations.

3. Expiration Date Labeling

To reduce confusion about food labeling and ensure the safety of donated food, three complementary policy tools are recommended:

- Regulations defining two types of food labels: a safety-based label and a quality-based label. In the first case, consuming food past the labeled date may pose a health risk, while in the second, it does not.
- Legislation allowing the sale or donation of food past its quality-based label date.
- Consumer education campaigns to reduce confusion about expiration labels.

United Kingdom – *Expiration Date Guidelines* - "Label Better, Less Waste"[108]

- Following UN Codex Alimentarius recommendations, the UK has adopted a mandatory policy that categorizes food products into two groups,

[108] https://wrap.org.uk/sites/default/files/2020-07/WRAP-Food-labelling-guidance.pdf

assigning them either a safety-based label ("Use by") or a quality-based label ("Best before")[109].

- This policy explicitly prohibits the sale or donation of food past its safety date ("Use by") but explicitly allows the sale or donation of food past its quality date ("Best before").
- The UK government, in partnership with WRAP[110], has launched multiple public awareness campaigns on food waste reduction strategies, including expiration date labeling.

Israel

- There are two distinct expiration labels for food safety and quality: "Use by" and "Best before".
- The law prohibits the sale or donation of food past its expiration date, whether it is based on quality or safety.
- However, Section 12 of the Public Health Protection Law allows the use of food beyond its expiration date under certain conditions, and Section 162 discusses the potential for nonprofit organizations to distribute expired food.
- In 2017, Israel reviewed its standard for labeling packaged food. The Ministries of Environmental Protection and Economy proposed updates to reduce food waste and raise public awareness of labeling practices. The recommendations included aligning the list of products exempt from expiration labeling with the European directive, labeling expiration dates only by month and year, or year alone, depending on the product's sensitivity, and launching a public awareness campaign to clarify expiration labeling. While some recommendations were adopted, in practice, manufacturers can still apply a full expiration date to all products, and no significant changes have been implemented.

[109] From initial product design and development to sale/distribution
[110] Waste and Resources Action Programme

4. Tax Incentives

- Tax benefits that create a competitive economic alternative to discarding edible food.
- VAT exemption on food donations to food banks as a means of overcoming potential barriers.

United States – Internal Revenue Code (IRC)[111]

- Tax incentives for businesses to encourage food donations.
- The law allows a double tax deduction for food donations:
  - **A general tax deduction** equal to the cost of acquiring the donated food[112];
  - **An increased tax deduction**, which provides an additional incentive by allowing the donor to deduct the lower of (a) twice the cost of acquiring the donated food, or (b) the cost of acquiring the donated food plus half of the expected profit if sold at fair market value. This deduction can double the general tax deduction, with businesses permitted to deduct up to 15% of their taxable income for food donations[113].

Israel

- The Income Tax Ordinance grants a 35% income tax credit for food donations exceeding NIS 190 (USD $52).

5. Mandatory Food Surplus Donations

[111] https://www.law.cornell.edu/uscode/text/26/170
[112] I.R.C. § 170(e)(1); 26 C.F.R. § 1.170A–4(a)(1) (2018)
[113] 26 C.F.R. 1.170A-4A(b)(2)(ii)(A) (2019)

Requiring food suppliers to partner with nonprofit organizations to distribute unsold edible food.

France – Food Waste Prevention Legislation:

- The Food Waste Reduction Law, 2016[114], requires large supermarket chains (over 400 square meters) to donate surplus food to food banks. Violations result in fines ranging from €3,750 to €75,000.
- This law led to a 20% increase in food donations from supermarkets[115].
- The Egalim Law, 2019[116], expanded the donation requirement to large institutional caterers (serving 3,000+ meals per day), and large food manufacturers and wholesalers (with an annual revenue exceeding €50m).

Israel

- Food suppliers are not required to donate unsold edible food to nonprofit organizations.
- In November 2024, the Knesset passed an amendment in its third reading obligating government-owned companies and public entities to donate their surplus food. The law applies to institutions serving at least 500 meals per day, including government ministries, local authorities, and public corporations. Its goal is to reduce food waste, promote community donations, and combat food insecurity.

6. Ban or Tax on Landfilling Organic Waste

Banning or taxing the landfilling of organic waste as a tool to influence business behavior.

[114] https://www.legifrance.gouv.fr/loda/id/JORFTEXT000032036289/
[115] https://chlpi.org/news-and-events/news-and-commentary/food-law-and-policy/webinar-review-waste-bans-penalties/
[116] https://www.legifrance.gouv.fr/loda/id/JORFTEXT000037547946/2021-03-25/

United States – Legislation banning landfilling of organic waste by large waste generators:

- California, Connecticut, Massachusetts, Rhode Island, and Vermont have laws prohibiting food waste disposal in landfills.
- Vermont's Universal Recycling Law 2012[117] gradually phased in a food waste landfill ban, culminating in a complete ban in 2020 for both businesses and residents. According to the Vermont Food Bank, the law led to an increase of approximately $40m in food donations.
- In Massachusetts, businesses generating over one ton of food waste per week are prohibited from landfilling it[118]. A 2016 study[119] found that this ban generated $175m in economic activity and created over 900 jobs in food waste hauling, processing, and recovery.

Scotland – Scottish Landfill Tax[120]

- A two-tier landfill fee for waste disposal: A standard rate of £98.6 per ton for general waste, and a reduced rate of £3.15 per ton for waste with lower greenhouse gas emissions and pollution potential (such as low-organic-content, non-biodegradable, or non-hazardous waste).
- The tiered tax aims to reduce food waste landfilling based on the food waste hierarchy.

Israel

- There is no ban on landfilling organic waste.

[117] https://dec.vermont.gov/waste-management/solid/universal-recycling
[118] https://www.mass.gov/guides/commercial-food-material-disposal-ban
[119] http://www.mass.gov/eea/docs/dep/recycle/priorities/orgecon-study.pdf
[120] https://www.gov.scot/policies/taxes/landfill-tax/

- Since 2007, Israel has imposed a landfill tax[121] requiring landfill operators to pay a fee per ton of disposed waste. However, Israel's landfill fees[122] are significantly lower than global standards and alternative waste treatment methods. Furthermore, the landfill tax applies to all waste types and does not specifically incentivize the diversion of organic waste.
- A voluntary mechanism allows local authorities to charge businesses a commercial waste collection fee[123], however criteria and fee amounts are not standardized or regulated.

7. Government Grants and Incentives

Funding grants or incentive programs at the national or local level are a crucial resource for promoting food donation and rescue efforts.

United States

- Federal support through The Emergency Food Assistance Program (TEFAP), which allocates about $100m annually for administrative support and $500m annually for food rescue support to local organizations.
- Federal grant programs also support food banks and food rescue efforts.
- Several states allocate funds for emergency food purchase programs.

France

- A €60m fund under the Better Nutrition for All program.
- The program aims to increase access to healthier, higher-quality food for those in need.

[121] Under Amendment 9 of the Maintenance of Cleanliness Law
[122] NIS 111.34 per ton of waste as of January 2022.
[123] Based on the "polluter pays" principle, in accordance with uniform criteria for "excess waste" defined by the Ministry of the Interior.

- The fund supports nonprofits, enabling them to purchase fresh products (fruit, vegetables, legumes, and unprocessed foods) under quality labels as defined by the Egalim Law.
- The fund also supports food banks and nonprofits, prioritizing the rescue and purchase of fresh products, including fruit, vegetables, and legumes.

Israel

The 2022 Food Security Initiative recognizes rescued food as an alternative to purchased food.

The initiative defines “rescued food” as safe, nutritious food saved from destruction, including unharvested agricultural produce, unsold produce from markets and stores, and aesthetically imperfect or misshapen agricultural produce

8. Setting National Targets for Reducing Food Waste

Setting a national target to reduce food waste by 50% by 2030, in line with the UN SDGs for 2030.

The US, Canada, most European countries, and Australia have committed to a 50% reduction in food waste by 2030.

Israel adopted the UN SDGs in 2015, including the food waste reduction target, but has not set an independent national target.

9. Building a National Strategy for Reducing Food Waste

Developing a comprehensive national framework to reduce food waste throughout the supply chain. Such a strategy should establish clear and integrated policies for minimizing food waste and promoting food rescue,

potentially incorporating all the policy tools mentioned above, as well as additional measures.

Australia – National Food Waste Strategy, 2017[124]

- The goal is to reduce food waste by 50% by 2030.
- A feasibility study was conducted to assess whether this goal was achievable and found that a seven-year timeline could be met under the following:
  - Significant investment in innovation
  - Incentive programs
  - Strict regulatory measures
  - Promoting voluntary commitments to reduce food waste
  - Active engagement from the food industry and civil society
- Accordingly, the Australian Department of Agriculture, Water, and the Environment (DAWE) developed and published a National Food Waste Reduction Strategy, focusing on four key areas: advancing supportive policies, improving business sector performance, market development, and behavioral change.
- The policy framework also centers on four components:
  - Establishing a national food waste baseline and a methodology for measuring progress
  - Identifying priority investment areas
  - Promoting voluntary food waste reduction commitments
  - Advancing legislation that supports food waste reduction and food rescue
- Progress against the baseline has yet to be measured.

[124] National Food Waste Strategy: Halving Australia's Food Waste by 2030, Dep't of Environ. & Energy 3 (2017), https://www.environment.gov.au/system/files/resources/4683826b-5d9f-4e65-9344-a900060915b1/files/national-food-waste-strategy.pdf

Israel – No comprehensive national food waste reduction strategy has been established. However, several initiatives are in progress:

- In October 2021, the Israeli government approved the 100 Steps Plan to address the climate crisis, which includes a food systems chapter addressing food waste reduction.
- In January 2021, the Ministry of Environmental Protection published its new waste strategy, which emphasizes waste reduction at the source, including food waste. The ministry is currently formulating an implementation plan for the strategy.
- In 2024, the Ministry of Agriculture and Food Security began developing the National Food Security Plan for 2050 and initiated a cross-ministerial working group on food waste. This team will assess Israel's current state of food waste and conduct an international review of regulations, policies, targets, and benchmarks as a foundation for developing a national food waste reduction policy.

It is worth noting the efforts of the Israeli Climate Forum, initiated by the President's Office, to underscore Israel's commitment to leading the global conversation on the climate crisis. The forum aims to raise awareness of the climate crisis among Israeli leadership across all sectors, foster collaboration between different groups and industries in addressing this issue and promote regional and international cooperation in climate action. The forum includes representatives from the President's Office, government, Knesset, local authorities, academia, and civil society organizations working in the field.

Leket Israel is a member of the Israeli Climate Forum, and food rescue has been recognized as one of the key initiatives to be advanced as part of the solutions to the climate crisis.

Summary of Key Policy Tools for Food Waste Reduction and Rescue in Selected Countries

According to the Atlas Partnership and the European Commission

Part A:

	% of countries using the tool	France	Canada	Germany	Italy	United Kingdom	Denmark	Belgium	Netherlands
No. of tools in use out of 8		8/8	7/8	7/8	7/8	6/8	6/8	6/8	6/8
Legal Liability Protection	44%	V	V		V				
Food Safety for Donations	56%	V		V	V	V	V		
Government Incentives	61%	V	V	V	V	V	V	V	V
Mandatory Donations / Food Waste Tax	67%	V	V	V	V	V	V	V	V
Food Waste Reduction Target	72%	V	V	V		V		V	V
Tax Incentives	78%	V	V	V	V		V	V	V
National Food Waste Reduction Strategy	78%	V	V	V	V	V	V	V	V
Date Labeling	89%	V	V	V	V	V	V	V	V

Part B:

	% of countries using the tool	Australia	United States	Spain	Portugal	Austria	Mexico	Chile	Israel	Finland	Sweden
No. of tools in use out of 8		5.5/8	5/8	5/8	5/8	5/8	4.5/8	3.5/8	3.5/8	3/8	3/8
Legal Liability Protection	44%	Partial	V			V	Partial		V		
Food Safety for Donations	56%		Partial		V		V		Partial	V	
Government Incentives	61%	V	V			V					

Mandatory Donations / Food Waste Tax	67%		V	V			V	V			
Food Waste Reduction Target	72%	V	V	V	V	V				V	V
Tax Incentives	78%	V	Partial	V	V		V	Partial	V		
National Food Waste Reduction Strategy	78%	V		V	V	V		V			V
Date Labeling	94%	V		V	V	V	V	V	V	V	V

Source: Global Food Donation Policy Atlas[125], FLWPH[126], Food Redistribution in the EU[127], and BDO Analysis

A review of the surveyed countries found that 94% have regulations for date labeling on food products; 78% provide tax incentives for food donations and have a national strategic plan for food waste reduction; 72% have set a food waste reduction target for 2030; 67% require food donation from businesses and/or impose a tax on food disposal; 61% offer government grants for food donations; 56% have food safety regulations for donated food; and 44% provide legal liability protection for food donations.

As a result of implementing various food waste reduction policies, the UK reported a 27% per capita reduction in food waste (after the agricultural stage) by 2018, compared to its 2007 baseline. Similarly, the Netherlands achieved a 29% reduction in consumer food waste by 2019, compared to 2010 as the baseline year. An interim Report on all EU countries is expected to be published by the European Commission later this year.

A 2020 study by Wageningen Food & Biobased Research[128], commissioned by the Dutch Ministry of Agriculture, Nature, and Food Quality, examined the impact of policy measures and regulations in Europe on food waste reduction. The study found that financial policy tools have the most significant impact on reducing food

[125] https://atlas.foodbanking.org/country-research.html
[126] https://ec.europa.eu/food/safety/food_waste/eu-food-loss-waste-prevention-hub/
[127] Food redistribution in the EU - Mapping and analysis of existing regulatory and policy measures impacting food redistribution from EU Member States, European Commission
[128] https://edepot.wur.nl/529888

waste. Among these, taxing organic waste disposal was the most effective measure, followed by VAT exemptions on food donations to food banks, which help remove barriers to potential donations.

In Israel, food waste has gained some attention in recent years, particularly with the enactment of the Food Donation Encouragement Law in 2018 and its expansion through an amendment in 2024. However, in the absence of a structured government policy to actively promote food waste reduction and rescue, Israel remains far from realizing its full potential in tackling food waste while simultaneously reducing inequality and food insecurity among its population.

c. Developments in Israeli Government Actions on Food Waste and Loss

As noted, Israel has yet to fully realize its potential in reducing food waste and promoting food rescue due to the absence of a structured government policy, with only a handful of government ministries actively addressing this issue within their respective mandates. These include:

The Ministry of Environmental Protection

Over the past two years, the **Ministry of Environmental Protection has undertaken several initiatives to address food waste and loss:**

- Leading an inter-ministerial implementation committee on adapting food systems to climate change, with representatives from the Ministries of Agriculture, Health, Intelligence, and Education, as well as the Institute for National Security Studies (INSS). The committee's objective is to develop medium-term targets (for 2030) and an action plan for Israel's food systems adaptation to climate change, incorporating both mitigation (reducing greenhouse gas emissions) and adaptation (enhancing resilience). The committee addressed food waste reduction, concluding that clear targets should be set, and that food waste reduction should be

integrated into Israel's national resilience strategy. The committee's report is published on the ministry's website.

- Leading Israel's preparations for the UN Food Systems Summit, conducting extensive dialogues with government agencies, civil society organizations, academia, farmers, and food industry representatives.
- In June 2023, the ministry partnered with Leket Israel in publishing the Report on Surplus Food Donations in Israel: A Legal Guide and Policy Recommendations. The Report provides a comprehensive overview of the legal and practical aspects of food donation in Israel, comparing policies in 20 different countries.
- Promoting the adoption of food sustainability criteria in public procurement and catering services, in collaboration with the Ministry of Health. These criteria include provisions for food waste reduction and food rescue.
- Supporting organizations working to reduce food waste through a call for proposals for environmental organizations. As part of this initiative, the ministry is promoting public awareness campaigns, behavioral change initiatives, local food rescue networks, and research on food waste policy. The ministry also funds local authorities and household programs to raise awareness and provide practical tools for food waste reduction.
- Public awareness campaigns: The ministry has produced and posted social media videos covering various aspects of food waste reduction, including general information about the issue and its scale, showcasing nonprofit activities in food rescue, and consumer tips for reducing food waste
- The ministry's waste strategy includes a focus on reducing waste at the source, including food waste.
- Since 2019, the ministry has co-published annual Food Waste and Rescue Reports in collaboration with Leket Israel, which include a dedicated chapter on environmental impacts.

In 2017, the **Ministry of Labor, Social Affairs, and Social Services** launched the National Food Security Initiative in partnership with Eshel Jerusalem - Colel Chabad, and Leket Israel. The initiative provides preloaded food cards worth NIS 500 (USD $136) to approximately 11,000 families facing severe food insecurity. The pilot program, launched in February 2017, operates nationwide in 36 municipalities, with an annual budget of approximately NIS 65m (USD $18M). Once enrolled, families receive a NIS 500 (USD $136) monthly preloaded card from the ministry via Eshel Jerusalem – Colel Chabad. Of this amount, NIS 250 can be used to purchase food products (excluding alcohol and tobacco) at select supermarkets and local stores, while the remaining NIS 250 (USD $68) is allocated for deliveries of rescued food - NIS 180 (USD $49) for fresh fruit and vegetables and NIS 70 (USD $19) for dry goods.

In May 2021, a new tender for the Food Security Initiative was published with several modifications. The number of participating families increased to 26,000, each receiving a preloaded card worth NIS 350 (USD $95) and a home-delivered fresh produce package valued at NIS 150 (USD $41). The tender explicitly prioritizes the distribution of rescued agricultural produce. The program continues to operate, led by Eshel Jerusalem – Colel Chabad in partnership with Leket Israel.

The Ministry of Agriculture continues to advance initiatives aimed at reducing food waste across the production, distribution, and consumption stages:

- The Ministry of Agriculture has decreed that as of September 2023, producers and importers will establish the shelf life of animal products that pose a health risk if they become spoiled. As part of this change, the shelf life of fresh chicken was extended from 5 to 7 days, frozen meat from 15 to 24 months, and frozen organ meats from 6 to 12 months. This measure is expected to help reduce food waste.
- The ministry's extension service supports farmers in adopting climate-control and cultivation techniques to minimize waste during production, in the field, and in orchards.

- These efforts are supplemented by grants provided through the ministry's investment administration to encourage the adoption of waste-reducing practices.
- Researchers from the Agricultural Research Organization assist packing houses and sorting stations in adopting storage technologies that reduce food waste, alongside advanced pest detection methods to remove defective produce during sorting and distribution.
- To reduce food waste in retail and households, the ministry has launched a life cycle assessment study to examine the effectiveness of specialized packaging that creates a controlled atmosphere around fresh produce. This technology helps extend shelf life and reduce food waste, with the study's findings expected to drive significant changes in the fresh produce market.

14. Policy Recommendations to Encourage Food Rescue and Reduce Food Waste

The time has come to adopt internationally accepted practices and establish a coherent government policy to encourage food loss and waste reduction and food rescue in Israel.

The 2023 Food Waste and Rescue Report, like its predecessors, highlights the high value of food rescue from economic, health, social, and environmental perspectives. A review of comparative policies and best practices worldwide for reducing food waste, along with the recognition of the health benefits associated with rescuing nutritious food, underscores the need to use food rescue as one of the national policy tools.

Economic rationale: This is a clear case of market failure. At market prices, food rescue is not economically viable; however, at an economic price that reflects its alternative value and nutritional return, food rescue becomes highly worthwhile.

Social implications: Donating rescued food to those in need can reduce inequality and increase food security for the country's residents.

Health considerations: Rescuing healthy food and providing it to populations experiencing food insecurity and inadequate nutrition ensures proper dietary intake. This directly improves public health and reduces national healthcare expenditures.

Environmental benefits: This effort will save significant resources such as energy, water, land, and chemicals, while also reducing greenhouse gas emissions, air pollutants, and the volume of waste sent to landfills.

Additional benefits were not covered in this Report. However, it is important to note that today, the focus on food—especially healthy and sustainable food—takes place within broader contexts of food security and the global need to feed the world's population. This is particularly relevant in light of population growth and the political, environmental, and health crises affecting the world, all of which have a direct impact on global food reserves. Therefore, inaction is not an option, and it is recommended to consider the following policy tools—commonly used in many Western countries—to promote food loss and waste reduction and food rescue in Israel:

1. **Establish a national target for food loss and waste reduction and rescue** – A target that sets a specific reduction in the volume of food loss and waste, aligned with the principles outlined by the United Nations and guided by a forthcoming national plan. Setting a national target brings the issue into the public agenda and represents a commitment to achieving this goal.
   Alongside setting the target, there is a need to develop monitoring and evaluation tools to enable ongoing assessment of progress toward the defined goal.

2. **Formulate a national plan for food loss and waste reduction and rescue** – Due to its scope and importance, the Ministry of Environmental Protection will lead and coordinate the plan, involving all relevant government ministries in its implementation and ensuring appropriate budgeting. The plan will address both food loss and waste and food rescue, with an emphasis on healthy and nutritious food, covering the entire value chain and all necessary conditions (operational, regulatory, and economic) to gradually achieve the food loss and waste and rescue targets. It will provide funding for the necessary measures as needed.

   For example:

   - **The Ministry of Environmental Protection** will promote, among other things, policy tools that position food loss and waste reduction and food rescue as means to meet emission reduction targets in the waste and industrial sectors. Such policy tools may include fees for excess waste, a ban on landfilling organic waste that has not been stabilized, an economic mechanism for carbon pricing, and more.
   - **The Ministry of Health** will develop policies to encourage healthy food consumption among the general population, with a particular focus on disadvantaged communities. This will help shift policy mindsets across other government ministries when making decisions and shaping policies. Additionally, the ministry will formulate incentive policies for NGOs and food banks, emphasizing the rescue and donation of fresh, healthy food. It will also explore tools and programs to raise public awareness of healthy nutrition and its benefits.
   - **The Ministry of Agriculture** will establish incentive and compensation policies for farmers who donate food instead of destroying it. The ministry will also

explore policy tools and technologies to convert food originally intended for destruction into a resource.

- **The Ministry of Economy and Industry** will develop incentive and compensation policies for producers who donate surplus healthy food rather than disposing of it. It will also explore ways to implement dynamic pricing in retail chains to reduce food waste due to approaching expiration dates, as well as consider a revised regulatory framework for expiration labeling.
- **The Ministry of Welfare and Social Security** will support initiatives and programs aimed at reducing food loss and waste, rescuing healthy food, and distributing it to vulnerable populations. The support will focus on distributing nutritious food and recognizing rescued food as a legitimate source. Such initiatives would allow the ministry to assist broader segments of the population without requiring additional budget allocations.
- **The Ministry of Education** (in collaboration with the Ministry of Environmental Protection and the Ministry of Health) will work to integrate educational programs from an early age that promote healthy and sustainable nutrition, food waste prevention, and food rescue. These programs will also include learning about the environment and sustainability, with an emphasis on resource conservation, food systems, and food rescue.
- **Government Procurement Administration** will require private entities participating in government tenders who provide any type of service to the state (not limited to food services) and that have access to surplus food, to establish partnerships with recognized food rescue organizations as a prerequisite for contract eligibility. Additionally, according to the amendment to the Food Donation Act (November 2024), government-affiliated bodies—including security agencies and state-owned companies operating kitchens that serve more than 1,000 people per day, directly or via subcontractors—are obligated to work with recognized food rescue organizations as a condition for receiving public funding. However, this amendment currently does not apply to all publicly funded bodies, and further legislative initiatives are expected to expand this requirement to additional entities.

- **The Ministry of Defense and the National Emergency Authority** will allocate budgets for food rescue and food security as part of the country's emergency preparedness strategy and planning for crisis and pandemic scenarios.

3. **Advancing Emerging Legislation and the Need for Regulatory Frameworks to Prevent Food Loss**

   Reducing food loss and waste in Israel requires a clear legislative framework that encourages food rescue and prevents its destruction. While several legislative initiatives are currently in progress, achieving meaningful change demands the completion of these processes and the promotion of broader regulation to provide a long-term solution to food waste and to strengthen food security.

   Among the key legislative proposals still awaiting approval is the **Amendment to the Customs Ordinance (Prohibition on the Destruction of Goods Held in Customs), 2023,** aimed at preventing the destruction of edible food that has been confiscated or is subject to customs duties, and redirecting it to welfare authorities and organizations that distribute food to those in need. This proposal represents an important mechanism for utilizing consumable goods that are currently discarded due to legal and regulatory constraints.

   Another proposal is the **Amendment to the Income Tax Ordinance (Tax Credit for Food Donations), 2023**, which seeks to grant tax credits to businesses that donate food instead of destroying it. Implementing this incentive mechanism would encourage commercial entities, importers, and food producers to increase food donations, thereby reducing the costly food losses incurred each year.

   These legislative measures represent an important first step in regulating this field. However, there is a need for a comprehensive regulatory policy that

includes additional economic incentives, oversight of surplus food management, and accessible mechanisms to facilitate food donation by businesses. A combination of clear legislation and regulation would establish food waste reduction as a binding norm, while creating a national infrastructure to ensure efficient management of Israel's food resources.

4. **Multi-Year Government Support for Food Loss Reduction and Food Rescue in Routine and Emergency Situations**

   The Swords of Iron War underscored the importance of food security as a core element of national resilience and highlighted the need for sustained, multi-year government support for reducing food loss and promoting food rescue—both during routine times and in emergencies.

   The severe blow to the agricultural sector, which resulted in the loss of produce worth hundreds of millions of shekels and a sharp rise in food prices, demonstrated the urgent need for a long-term governmental policy.

   To prevent future crises, it is recommended to implement a policy that ensures continuous support for food rescue and enables rapid response in times of emergency. Assistance mechanisms must be established to strengthen the agricultural sector, alongside increased investment in innovative technologies, logistical infrastructure, and incentives to reduce food waste.

   The State must formulate a stable, multi-year policy that enables farmers to recover, helps maintain price stability, and reinforces national food security. Ongoing support for the agricultural sector will not only enhance crisis preparedness but also promote the development of sustainable agriculture that can serve the Israeli economy for years to come.