# How Much Food Is Required to Close the Food Security Gap in Israel?

**Saving 20% of the food wasted in Israel would be sufficient to close the gap in food consumption**

BDO’s analyses of estimates based on the National Insurance Institute’s report published in December 2021 calculate that the rate of food-insecure households in 2021 stood at 16.2%. According to this report, the Gini Inequality Index in Israel went up by about 2%, before any government financial support, compared to 2020.

The report shows that the growth of the Israeli economy in 2021 did not reach all portions of the population equally. As a result, the inequality in economic income increased. Furthermore, because the assistance given as a social safety net during the COVID-19 pandemic decreased during 2021, inequality in net income, after support and grants, increased by more than 3% over levels in 2020.

**Israel’s Gini Inequality Index Ranking**

Source: BDO analyses of data from the Central Bureau of Statistics

According to OECD data measuring poverty after taxes and payment transfers (for a poverty line set at 50% of the median disposable income) the situation in Israel has deteriorated, with poverty levels increasing over last year. Israel has the highest poverty rate of all OECD countries. The data further shows that Israel is among the countries with a high level of inequality as measured by the Gini index, in fifth lowest place in the OECD above only Czechia, Mexico, Turkey and the United States.

**Israel’s Ranking in Inequality and Food Insecurity Indexes**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Israel | OECD Average | Israel’s Ranking Among the OECD |
| Inequality (Gini index) | 0.38 | 0.32 | 5 |
| Poverty Rate | 18.7% | 11% | 1 |
| Food insecurity index | 78 | 77 | 1 |
| Percentage expenditure on food out of private consumption | 17% | 14% | 6 |

Source: OECD stat, Inequality and poverty rates in Israel, BDO analyses of data from the National Insurance Institute for 2021, data from the Global Food Security Index

Inequality in the distribution of income is one of the major challenges faced by the Israeli economy, and food insecurity is one result of the unequal distribution of income in the economy.

According to the definitions of the World Health Organization, which are also used by the National Insurance Institute in Israel, food security is based on three key pillars:

1. **Food availability** – having a consistent supply of food in sufficient quantities;
2. **Food accessibility** – having enough resources to obtain sufficient amounts of foods;
3. **Food use** – having adequate water and sanitation conditions and knowing how to use food properly.

Using these criteria, which are primarily subjective, a report prepared by the NII[[1]](#footnote-1) estimates that approximately 16% of Israel's population suffers from food insecurity; of this number, 8.2% are in severe food insecurity, and an additional 8% in moderate or mild food insecurity.

According to The Economist’s Global Food Security Index 2021, Israel is ranked 12th in food insecurity among OECD member states. Among OECD countries, Israel ranks 6th in household expenditure on food.

**Poverty Rates**

**An International Comparison 2021**

**Inequality (the Gini Index)**

**An International Comparison 2021**

Source: OECD Stat., BDO analyses of data from the National Insurance Institute for 2021

Food expenses’ share in the Personal Consumption Expenditure (PCE) in Israel is among the highest in the world, measured at 17%. Therefore, a policy of food rescue and distribution to the underprivileged populace would be an especially effective welfare policy in Israel, where a significant portion of household expenditure is allocated to food.

The definition of food security is subjective. To examine whether food rescue would be an effective policy for increasing food security in Israel, this report uses the methodology of Chernichovsky and Regev,[[2]](#footnote-2) which defines normative food expenditure as the level of a household’s food expenditure that remains constant even when the household’s income increases.

To examine normative food expenditure,[[3]](#footnote-3) food expenditure in the lowest percentiles was compared to the normative levels. The analysis in this chapter shows that for the two lowest percentiles (in terms of standard consumption per capita), food expenditure was roughly half that of the normative level.

**Food Expenditure per Capita in Israel in Relation to Normative Food Secure Expenditure – Percentile Distribution**

Source: BDO analyses of data from the Central Bureau of Statistics

The volume of food required to bridge the gap between the actual consumption levels of food insecure populations and the normative consumption level (i.e. the average consumption of the second to fifth percentiles), is valued at approximately NIS 3.3 billion. The cost of eliminating this food expenditure gap for populations that are highly food insecure (about 8.2% of Israeli households) is estimated at approximately NIS 2.5 billion, and about another NIS 0.8 billion are required to close the gap for moderately food insecure populations.

**The Food Expenditure Gap for Food-Insecure Populations Relative to the Normative Expenditure Level**

In Millions of NIS

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Value of Food Required to Bridge Gap for the Highly Food-Insecure**  | **Value of Food Required to Bridge Gap for the Moderately Food-Insecure**  | **Total Food Expenditure Gap** |
| Fruit & Vegetables | 627 | 224 | 850 |
| Bread & Grains | 336 | 99 | 435 |
| Meat, Poultry & Fish | 717 | 241 | 958 |
| Milk & Dairy | 265 | 112 | 376 |
| Other Food | 567 | 148 | 715 |
| **Total** | **2,511** | **823** | **3,334** |

The rescue of approximately 500 thousand tons of wasted food each year, which constitute about 20% of overall food waste in Israel, would enable the food expenditure gap in Israel to be closed. According to the estimates presented in this report, it would cost about NIS 0.9 billion to rescue food valued at about NIS 3.3 billion, which is the total gap between the food expenditure of insecure populations and the normative food expenditure level. At the same time, it would save about 80 million cubic meters of water, 260 million kWh of electricity, approximately 15 thousand tons of fuel, about NIS 290 million as a result of reducing greenhouse gas and air pollutant emissions, and another NIS 170 million as a result of reducing waste treatment costs.

# Food Rescue: Potential Savings for the National Economy

**Food rescue has a savings potential of about NIS 5 billion for the national economy // Rescuing approximately 500 thousand tons of wasted food, which constitute about 20% of overall food waste, would allow complete closure of the food expenditure gap in Israel.**

Rescuing around 500 thousand tons of wasted food annually, which constitute around 20% of food waste in Israel, would enable the food insecurity gap between the general population’s normative food expenditure and that of those suffering from food insecurity to be entirely closed. According to BDO and Leket Israel estimates, the current rescue multiplier is 3.6, and when taking into account greenhouse gas and air pollutant emissions as well as waste treatment costs, the rescue multiplier rises to 4.3. This means that every shekel spent on food rescue saves food worth NIS 3.6 or NIS 4.3, respectively. Based on these multipliers, it would cost only NIS 0.9 billion to rescue food worth NIS 3.3 billion.[[4]](#footnote-4) Food worth NIS 3.3 billion equals the value of the entire food expenditure gap that exists between the population living with food-insecurity and the normative consumption level.

Without food rescue, an annual cost of NIS 3.3 billion in financial aid would be required to close this gap completely. Hence, food rescue is clearly preferable to the alternatives of government stipends, donations, subsidizes or financial aid for the needy as a means of bridging the food insecurity gap. Food rescue makes it possible to reach the same social goal at the significantly lower cost of approximately NIS 0.9 billion annually. In other words, **food rescue bridges the food insecurity gap while cutting costs by 73% and provides significant social and environmental benefits.**

**Food Rescue: Summary of Estimated Savings for the National Economy**

In Millions of NIS/Year

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Percent of Food Rescued from Food Waste  | ~1.5% (currently) | 5% | 10% | 25% |
| Rescued Food (in thousand tons) | 40 | 130 | 260 | 520 |
| Food Rescued: Potential Share of the Nutritional Gap for Food Insecure Populations | 8% | 25% | 50% | 100% |
| Value of Rescued Food  | 230 | 890 | 1,800 | 3,300 |
| Cost of Food Rescue  | 60 | 240 | 500 | 900 |
| Savings to National Economy (before external factors) | 170 | 650 | 1,300 | 2,400 |
| Social and Environmental Contribution (FAO) | 200 | 650 | 1,300 | 2,600 |
| Total Savings to National Economy from Food Rescue  | 370 | 1,300 | 2,600 | 5,000 |

Source: BDO estimates

The problem of food insecurity is not only expressed in the amount of money spent on food, but also in the types of food consumed. An analysis of the average consumption basket of those who are food insecure compared to the average basket of the food-secure population reveals that **food insecurity often goes along with spending little on fruits, vegetables, meat, and fish, which have high nutritional value.**

**The Effect of Food Insecurity on Food Expenditure Patterns of Severely Food-Insecure Households**

**(100% = Diet of the population with normative food expenditure patterns)**

Source: BDO analyses and a household expenditure survey conducted by the Central Bureau of Statistics

Thus, for example, the gap in expenditure for highly nutritious food such as meat, poultry, fish, and fresh fruit and vegetables ranges from 55% to 70% of the normative expenditure, while the gap for other products, such as potatoes, bread and pita, is lower, and ranges from 15% to 25%.

According to principles of economic theory, income in the form of goods is less preferable than income in the form of money, because it deprives the recipient of the freedom to allocate resources according to their full range of needs. Therefore, in principle, the general tendency is to prefer monetary support over the direct provision of products. This economic principle is also known as “subsidize people, not products.” However, **in the case of food rescue, the unique set of circumstances present a clear economic advantage to supporting the needy with products over money. This stems from the specific characteristics involved in transforming waste into food, i.e. that every shekel invested in food rescue generates a direct economic return of 360%. Moreover, taking into consideration the environmental impact of greenhouse gas emissions, air pollutants, and waste treatment, the return on investment for the economy rises to 430%.**

In this context, it should be noted that those suffering from food insecurity also suffer from

financial insecurity, expressed in consumption gaps for other basic necessities (housing, health, education, etc.). It is likely that food rescue would enable these households to effectively allocate some of their increased disposable income towards the consumption of other goods. From a social perspective, these households view consumption of such products as prerequisites for ensuring their financial security. Therefore, beyond the direct value of the rescued food distributed to them, they also benefit from having more resources available for purchasing other goods and services.

In September 2015, in the context of the Sustainable Development Goals,[[5]](#footnote-5) the United Nations and United States government adopted the national goal of reducing food waste by 50% within fifteen years. Analysis of the data in this report shows that achieving even less than half of that goal, and donating the rescued food to approximately 450 thousand households suffering from food insecurity in Israel, would fully close the gap between their food intake and the normative level**. In terms of the national economy, this would mean annual savings of about NIS 2.5 billion, bridging the gap between the value of the rescued food and the cost of rescuing it.** This is before taking into account the added benefits resulting from the reduction of poverty and inequality in the economy and before factoring in the external benefits to the environment.

It should be emphasized that the incremental implementation of the 50% national food waste reduction goal over a fifteen-year period is not expected to reduce the volume of agricultural production in Israel intended for local consumption compared to the current situation, but only to slow down the growth rate of local food production.

# Food Rescue: An Integrated Economic, Environmental, and Social Contribution

**In 2021, there were more than 1 million tons of rescuable food in Israel. The combination of an increase in food waste, the climate crisis, the problem of food insecurity and the percentage of households living with food insecurity in Israel reinforces the national need to use food rescue as a central national policy tool**.

Food waste is an international phenomenon. It is not unique to the Israeli economy and exists on a similar scale in all Western countries. The United Nations estimates that, in quantitative terms, more than one-third of all the food produced worldwide is wasted, which translates into approximately one-quarter in terms of the total caloric value.

The Food Recovery Hierarchy set forth in the European Union's directive on food waste sets priorities for the treatment of unconsumed food. Each stage in this hierarchy focuses on a different strategy for managing food waste. Within the hierarchy, preventing food waste and using wasted food to feed underprivileged populations are clearly preferred, because these methods for managing food waste have the greatest environmental, economic and social advantages, and therefore are the most efficient.

**The Economic-Environmental Food Recovery Hierarchy**

Source: EPA

Many policy measures exist to address the needs of underprivileged populations and to help alleviate the problem of food insecurity. The most commonly used methods in Israel include donations, subsidies, stipends, and financial aid. Food rescue is unique in that it makes it possible to help those in need at a low budgetary and economic cost: instead of having to finance the full cost of buying food, only the cost of food rescue needs to be financed.

In the socioeconomic discourse in Israel and around the world there is an ongoing dispute between those who advocate prioritizing growth (“increasing the pie”) and those who believe the reduction of inequality should be prioritized as a main goal.

Food rescue is unique because it is a policy tool that inherently integrates both of these approaches. **Rescuing food and distributing it to underprivileged populations increases economic productivity while simultaneously reducing inequality.**

Furthermore, crisis and emergency situations – such as Covid-19 and the climate crisis – underscore the possible scenarios for instability in the local and international food supply. Thus, food rescue is also a tool for expanding food reserves and ensuring food security in times of crisis.

The importance of rescuing food stems from three main benefits:

1. **The economic benefit** - Food waste is detrimental to economic productivity because of the production and labor inputs that are irretrievably lost. Food rescue means converting waste with zero or negative value into a product that has economic value and giving it to underprivileged populations to consume, without the need to invest additional production inputs. It costs less to rescue food than it does to produce and transport it. This, and the fact that rescued food retains its full nutritional value, explain how food rescue contributes to increasing productivity in the economy.
2. **The social benefit** - The cost of food waste throughout the entire value chain, from growing and production through distribution, sales, and consumption, is ultimately passed onto the consumer and affects the cost of living in Israel. Therefore, food rescue contributes to closing gaps in society and lowering the cost of living, and reduces food insecurity among underprivileged populations.
3. **The environmental benefit** - During the growing, production, distribution, and sales processes, about 35% of the volume of local food production is lost and turns into waste or surpluses. When that happens, all of the resources required to cultivate and produce the food are irretrievably lost. These include land, water, fertilizers, chemicals, and energy. Some food production also requires animal feed and uses resources to grow and produce it. Many of the resources used by the food industry are non-renewable and their use adversely affects water, soil, air, and biodiversity. Furthermore, agriculture causes air pollution as a result of energy and fuel consumption.

However, the environmental impact of food waste is not only the result of excessive food production. It is also caused by food waste treatment, as most food waste is transferred to landfills. Landfilling damages the soil and contributes to climate change due to methane emissions produced by the decomposition of organic waste. Moreover, approximately one third of household waste consists of organic waste originating in food. Therefore, discarded food increases the volume of waste requiring treatment and affects the quality of other recyclable materials found in household waste. Food rescue maximizes the use of the resources already invested in producing the food and prevents the need to use additional environmental and other resources.

The combination of these three characteristics of food rescue call for appropriate policy tools that reflect these benefits.

**The Benefits of Food Rescue**

|  |  |  |
| --- | --- | --- |
|  | Food Production | Food Rescue |
| Product | Nutritional Foods | Nutritional Foods that May be Aesthetically Flawed |
| Nutritional Value | 100% | 100% |
| Land Use | Yes  | Negligible[[6]](#footnote-6)  |
| Water Use | Yes | Negligible[[7]](#footnote-7) |
| Greenhouse Gas Emissions in the Growing Process | Yes | None |
| Fertilizer and Pesticide Use | Yes | None |
| Logistics, Distribution, and Transporting Costs | Yes | Yes |

**More than one million tons, which is about half of the total amount of wasted food, is rescuable. Rescuing it would prevent about 3% of greenhouse gas emissions in Israel.[[8]](#footnote-8)**

The majority of food rescue in Israel and abroad is carried out by nonprofit organizations (NPOs) that are supported by donations. However, even if funding for food rescue is derived from donations, the main foundation of food rescue activity is not primarily philanthropic or charitable, but an alternative economic method of food production that is clearly beneficial to the national economy, above and beyond its important contribution to reducing social inequality.

The direct cost of food rescue averages at approximately NIS 1.5 for every kilogram of food. The direct value of rescued food is NIS 5.4 per kilogram, yielding a multiplier effect of 3.6. In other words, every NIS 1 invested by NPOs in food rescue provides income in the form of products worth NIS 3.6 for underprivileged people. Food rescue in Israel is still in its infancy and there seems to be potential for expanding the activity, utilizing economies of scale to reduce the cost of food rescue, and raising the value of rescued products. However, for reasons of conservatism, the assessments here are based on the current cost structure.

In terms of benefit to the national economy, it is also necessary to consider the positive environmental contributions of food rescue [see Chapter 9]. The environmental benefit of reducing greenhouse gas and air pollutant emissions as well as waste treatment stands at about NIS 0.8 per kilogram, yielding a multiplier effect of 4.3. In other words, when incorporating greenhouse gas and air pollutant emissions as well as waste treatment [see Chapter 9], every NIS 1 invested in food rescue generates a value of NIS 4.3 for the national economy.

**Food Rescue Feasibility Assessment**

**Cost / Benefit per Kilogram of Food**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Value of Rescued food\*** | **Environmental Contribution according to BDO** | **Total Value to the National Economy** | **Rescue Cost** | **Gain from Food Rescue** | **Value Multiplier = Value to the National Economy / Rescue Cost** |
| Benefit to National Economy (Excluding Greenhouse Gas and Air Pollutant Emissions)  | NIS 5.4  | Not included | NIS 5.4 | NIS 1.5 | NIS 3.9 | **3.6** |
| Benefit to National Economy (Including Greenhouse Gas and Air Pollutant Emissions) | NIS 5.4 | NIS 1.0 | NIS 6.4 | NIS 1.5 | NIS 4.9 | **4.3** |

\* Market price of an alternative product with the same national value.

Source: BDO estimates

The volume of food waste in Israel is not unique and is similar to that in comparable developed economies around the world. However, unlike many other countries that have developed legislation, national policies, and multi-year targets to encourage food rescue and reduce food waste, in Israel there is still no national policy for dealing with this issue.

1. Poverty and Income Inequality Indexes – 2020, National Insurance Institute [↑](#footnote-ref-1)
2. Food Expenditure Patterns in Israel, Taub Center, 2014. [↑](#footnote-ref-2)
3. Not including dining out, spirits and alcoholic beverages, and soft drinks. [↑](#footnote-ref-3)
4. The nutritional gap for food-insecure households was calculated based on Chernichovsky and Regev’s report on food insecurity (Food Expenditure Patterns in Israel, Taub Center, 2014), the Central Bureau of Statistic’s Household Expenditure Survey and the National Insurance Institute’s Poverty Report. [↑](#footnote-ref-4)
5. These 17 sustainable global development goals were adopted by the General Assembly of the United Nations in 2015. [↑](#footnote-ref-5)
6. Most of the resources have already been invested during the agricultural and production stages therefore any additional investment in food rescue is negligible. [↑](#footnote-ref-6)
7. Ibid. [↑](#footnote-ref-7)
8. Out of a total of 80 million tons of greenhouse gas emissions in Israel annually. [↑](#footnote-ref-8)