Executive Summary
The issue of food waste and rescue has been a recent topic of worldwide public discourse. There is now a broad consensus among experts and policymakers that food waste has significant negative economic, environmental, and societal impact, and that the most effective measures for reducing this impact is to optimize the prevention of food waste and the subsequent distribution of rescued food to the needy.

Acknowledging the importance of food rescue, the United Nations (UN) in September 2015 established a 50% food waste reduction goal by the year 2030. The US, one of the world’s pioneers in food rescue, also established a similar national goal. Unfortunately, Israel is lagging behind most Western countries in awareness of the food waste problem and the importance of food rescue. The 2015 State Comptroller’s Report on this issue states, among other things, that: “In Israel, food waste is an issue that has yet to receive government address. Also, no official data exists on food waste quantities in the supply chain.”

Leket Israel, the country’s national food bank, is a nonprofit organization (NPO) established in 2003 that works to rescue and redistribute surplus food nationwide to the underprivileged through a network of 180 partner NPOs. In 2015, Leket Israel rescued and redistributed approximately 15,000 tons of food with an estimated monetary value of 135 million NIS.

In view of the issue’s importance, and lack of relevant data or policies to address it, Leket Israel has initiated an annual study and report on food waste and rescue in Israel, prepared by the BDO Ziv Haft Consulting Group. The following report, based on the BDO economic model of the Israeli food sector, includes a comprehensive and detailed study of food waste in Israel. The report estimates the potential for food rescue in each of the value chain stages of food production, and points out the economic viability, and social and environmental benefits of food rescue in the country.

Leket Israel and BDO’s inaugural food waste and rescue report reveals that there is 2.5 million tons of food wasted in Israel annually, constituting 35% of domestic food production. Roughly half of this waste is rescuable, meaning the food is worthy of human consumption. The value of this rescuable food wasted in Israel is estimated at 8 billion NIS annually. This report demonstrates the significant economic and social impact of food rescue to Israel’s national economy. Rescuing 25% of food waste translates to a savings of 3 billion NIS, equivalent to the food purchasing gap between the food insecure and secure. Cost of such food rescue is 75% lower than the alternative of providing support, subsidies or allowances to the needy, and additionally offers significant environmental benefits.

We hope this report motivates Israel’s decision makers to establish national goals for the reduction of food waste, as recommended by the UN, and consolidate a policy to eliminate obstacles currently delaying the realization and potential of food rescue in Israel.
Food consumption accounts for about 16% of an average household’s spending in Israel, and 22% of the consumption basket of households in the two lowest percentiles. Food is far more than a substantive component of the family consumption basket – it is a basic existential necessity, and the consumption of a nutritionally balanced diet is essential to ensuring population health in general and the well-being of infants and children in particular. Therefore, lack of food, or insufficient consumption of basic nutritional components, leads to potential health issues at a cost that is higher than the food production cost in each of the value chain stages.

Food constitutes a unique commodity, in terms of its manner of consumption and its production. The nutrients in food are derived primarily from agricultural produce: vegetables, fruit, legumes, dairy products, eggs, meat, fish, fats, etc. The cultivation, growth, and production of food rely on the utilization of natural resources such as land and water with substantive economic costs to these resources. Israel is a densely populated country in which land is an expensive and limited resource (particularly in areas of high demand). Thus, use of land for surplus agricultural production that leads to food loss or waste incurs, beyond the direct economic costs, additional societal costs. Furthermore, the cultivation, growth, and production of food leads to significant environmental impact. Use of land, fertilizers and pesticides may damage water sources, wildlife, plants, and the environment. Currently, 20% of greenhouse gas emissions in the world are generated during the various stages of growth, production, and distribution of food.

Food waste occurs in all branches of modern industry and commerce, and in every aspect of consumption it is possible to reduce or recycle surplus production. However, the uniqueness of food, both in terms of production and consumption, necessitates particular address when considering food rescue and reuse.

This report examines the issue of food waste and its rescue from an economic viability perspective, based on quantifiable estimates and assessments. Consequently, the report includes no additional ethical based considerations that may also be relevant to food rescue.
Food rescue: Combining economic, environmental, and social contributions
The importance of rescuing food stems from three central benefits:

1. **Economic benefit**
   - Rescuing food means transforming zero or negative value waste to an economically valuable commodity, thus increasing the national product and productivity.

2. **Social benefit**
   - Waste reduction reduces social gaps and prevents food insecurity in weaker underprivileged populations.

3. **Environmental benefit**
   - Waste reduction reduces pollutants, greenhouse emissions, and use of finite land and water resources.

Food waste is not unique to the Israeli economy, and is evident in similar volumes in all Western economies. According to UN Food and Agriculture Organization (FAO) estimates, roughly a third of all food produced in the world is wasted, translating to a quarter of produced caloric value.

Food rescue is currently a central theme of global discourse. Following food goals established by the UN, in September, 2015 the US government declared its own food reduction goal of 50% by the year 2030. Thus, the US has joined other countries that have also established national goals to reduce waste and rescue food.

The combination of these three food rescue characteristics creates a unique opportunity that requires the formation of an appropriate policy to reflect such benefits. Food rescue is the economic endeavor of transforming food surplus, currently of zero or negative value, to food of economic value distributed to the underprivileged populace.

In terms of the Global Food Recovery Hierarchy, the first priority is the prevention of food waste, and use of this surplus food to feed the poor. Many policy measures exist to address the need of the underprivileged, and deal with the problem of food insecurity. The most commonly used methods in Israel are support through donations, subsidies, allocations and allowances. The uniqueness of food rescue stems from its ability to help the needy at a low economic and budgetary cost. Instead of financing the full cost of food, it is possible to finance food rescue generally at a fifth of food prices.

There exists a constant disagreement in socioeconomic debate, both in Israel and abroad, between those proponents of encouraging growth ("Grow the Pie") as a primary objective to reducing poverty, and proponents of reducing inequality. Food rescue is an exceptional policy measure that inherently incorporates both approaches. Rescuing food and transferring it to the underprivileged populace increases national productivity while concurrently reducing inequality.
Food Rescue - Alternative to food production
Food rescue is a magic formula for producing food without substantive reliance on natural resources, land or water pollution, and use of fertilizers or pesticides.

**Food Rescue - Alternative to food production**

Throughout the growing, production, distribution and marketing of food in Israel, approximately 35% of domestically produced food is lost and becomes waste or surplus. Consequently, food rescue creates the surplus that would otherwise have been wasted.

**Economically speaking, food rescue should be viewed as a comprehensive alternative to excess food production.**

Food rescue constitutes economic action to transform such surplus, with a zero or negative value, to food that is then distributed to the underprivileged populace. Economically speaking, food rescue should be viewed as a comprehensive alternative to excess food production. However, in contrast to the usual food production processes, the raw materials relied on for food rescue are surplus that would otherwise have been wasted.

According to our estimates, approximately 50% of food waste is rescuable, equivalent to the production of 1.3 million tons of food, valued at 8 billion NIS. Currently, the majority of food rescue in Israel and abroad is carried out by NPOs, supported by donations. However, even if funding for food rescue is derived from donations, such activity is not primarily philanthropic or charitable, but an alternative economic means for food production, one that is clearly beneficial to the national economy, and contributes to reducing inequality. According to a study conducted in Australia, the multiplier reflecting the value of rescued food relative to rescue costs is 5.7. In other words, for every dollar spent rescuing food, 5.7 dollars’ worth of food is rescued. There are additional environmental and societal benefits generated by food rescue as well. According to Leket Israel, the cost of rescue is 1.4 NIS for every 1.0 Kg of food. The value of the food is 5.1 NIS per 1.0Kg, resulting in a multiplier effect of 1:3.6. Therefore, each 1.0 NIS invested by NPOs in food rescue provides 3.6 NIS worth of food for the needy clientele they serve. Although food rescue in Israel is still in its infancy, there seems to be enormous potential for expansion utilizing economies of scale to reduce the cost of food rescue, and/or raise the value of rescued products - a fact that would in time enable the increase of the multiplier similar to that seen in Australia. However, to be conservative in our estimations, we have based our assessments on the current cost structure. In terms of benefits to the national economy, it is also necessary to consider the positive environmental and societal contributions of food rescue. We did not assess such impact in the context of the Israeli economy, but assuming such environmental and societal benefits are similar to the average costs around the world, the multiplier would then increase to 7.2. As a result, a calculation that includes environmental influences would mean that every 1.0 NIS invested in food rescue generates 7.2 NIS to the national economy.

**Food Rescue Feasibility Assessment Food Cost / Benefit NIS per kg**

<table>
<thead>
<tr>
<th>Product</th>
<th>Food Production</th>
<th>Food Rescue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutritional Value</td>
<td>Nutritional Foods</td>
<td>Nutritional Foods*</td>
</tr>
<tr>
<td>Land Use</td>
<td>Yes</td>
<td>None</td>
</tr>
<tr>
<td>Water Use</td>
<td>Yes</td>
<td>None</td>
</tr>
<tr>
<td>Greenhouse Gas Emissions</td>
<td>Yes</td>
<td>None</td>
</tr>
<tr>
<td>Logistics, Distribution</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Cost</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*may be aesthetically flawed

**Food Rescue Benefits**

- **Food Rescue Benefits**
  - **Food Value**
  - **Nutritional Value**
  - **Land Use**
  - **Water Use**
  - **Greenhouse Gas Emissions During Production**
  - **Use of Fertilizers and Pesticides**
  - **Logistics, Distribution and Transportation Costs**
  - **Total Cost**
  - **Multiplier**

<table>
<thead>
<tr>
<th>Food Rescue Feasibility Assessment Food Cost / Benefit NIS per kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recovered Food Value*</td>
</tr>
<tr>
<td>-----------------------</td>
</tr>
<tr>
<td>To National Economy – Excluding External Factors</td>
</tr>
<tr>
<td>To National Economy – Including External Factors</td>
</tr>
</tbody>
</table>
Food Rescue – Feasibility to the national economy
Food Rescue – Feasibility to the National Economy

The rescue of 600,000 tons of food annually, constituting 25% of all food waste in Israel, would fully bridge the food consumption gap between the normative expenditure of the general population and those suffering from food insecurity. The cost of rescuing food is estimated at 1.4 NIS/kg. An investment of 840 million NIS would therefore rescue 3 billion NIS worth of food, equivalent to the total gap of food consumption.

Food rescue alleviates food insecurity while incurring a 75% cost savings, and also provides significant social and environmental benefits. Food rescue alleviates food insecurity while incurring a 75% cost savings, and also provides significant social and environmental benefits.

For the national economy, such efforts would generate a value of 2 billion NIS annually, constituting the surplus value of rescued food over the food rescue costs.

Food rescue entails unique circumstances in which there is a clear economic preference for supporting the needy with products over money. This advantage stems from the specific characteristics involved in transforming waste into food, meaning that every shekel invested in food rescue generates a direct economic value 3.6 higher than the cost.

| Food Rescue – Summary of Feasibility Estimate to National Economy NIS in Millions Annually |
|-----------------------------------------------|-----------------|-----------------|-----------------|-----------------|
| Percentage of Rescued Food from Food Loss    | 1% (currently)  | 5%              | 10%             | 25%             |
| Recovered Food (in tons)                     | 20,000          | 100,000         | 200,000         | 600,000         |
| Food Rescued Share of Food Insecurity Gap   | 4%              | 20%             | 40%             | 100%            |
| Value of Rescued Food                        | 120             | 600             | 1,200           | 3,000           |
| Cost of Food Rescue                          | 28              | 140             | 280             | 840             |
| Benefit to National Economy (before external factors) | 92              | 460             | 920             | 2,160           |
| Environmental-Social Contribution (FAO)      | 100             | 500             | 1,000           | 3,000           |
| Total Value of Food Rescue to National Economy | 192             | 960             | 1,920           | 5,160           |

In September, 2015 the US government established a national food waste reduction goal of 50% within 15 years. Our analysis shows that rescuing 25% of food waste in Israel and its subsequent contribution to 450,000 households suffering from food insecurity, would fully cover the consumption gap relative to normative expenditure for these households. For the national economy, such efforts would generate a value of 2.1 billion NIS annually, constituting the surplus value of rescued food over the food rescue costs. This is even prior to considering the added benefits to the national economy in terms of poverty and inequality reduction, and before the external environmental impacts are factored.

It should be emphasized that incremental implementation of a 50% national food waste reduction goal, spanning a 15-year period, is not expected to reduce the volume of agricultural production in Israel compared to current conditions. According to our estimates, should such a rescue goal be realized fully, domestic demand for agricultural produce is expected to increase by approximately 0.5% on average per year in real terms, even prior to the increase of domestic demand for food resulting from food rescue and its distribution to the needy.

For the national economy, such efforts would generate a value of 2 billion NIS annually, constituting the surplus value of rescued food over the food rescue costs.

Billion NIS
food rescue has a 5 billion NIS potential profit to the national economy

5

Food Rescue
Food Waste and Rescue – Inaugural report
Food Waste – How much food is wasted in Israel?
Food waste estimates in Israel are based on a unique model of the value chain in domestic food production. Food waste in Israel is estimated at approximately 2.45 million tons annually, constituting 35% of overall domestic food production. In terms of quantities, roughly 75% of that food waste is in fruit and vegetables.

A comprehensive value chain model for various food production and consumption stages was designed to assess food waste and the potential for food rescue in Israel. This model is based on a bottom-up approach, and includes analysis of data relevant to agricultural production, import, export, industry, distribution, and a sample of consumption patterns of 50 various foods*

Input and output analysis was conducted for each of the food groups in terms of quantity of gross agricultural production and rate of waste, in each of the four value chain stages.

Food waste estimates in Israel are based on a unique model of the value chain in domestic food production. Food waste in Israel is estimated at approximately 2.45 million tons annually, constituting 35% of overall domestic food production. In terms of quantities, roughly 75% of that food waste is in fruit and vegetables. A comprehensive value chain model for various food production and consumption stages was designed to assess food waste and the potential for food rescue in Israel. This model is based on a bottom-up approach, and includes analysis of data relevant to agricultural production, import, export, industry, distribution, and a sample of consumption patterns of 50 various foods*

We are aware such estimates may include deviations or inaccuracies that are inevitable in view of lacking any official data. Additionally, the volume of annual food waste also depends on random variables, such as weather conditions, natural events and pests, deviations in demand, etc. The data presented here is based on an annual analysis and average weather conditions. It does not include impact of singular events or deviations from the norm. This data is indicative and intended to serve as the basis for public debate, and further research and study.

Food Loss Estimate in Israel 2015 In Shekels Per Household

<table>
<thead>
<tr>
<th>Household Loss (monthly NIS)</th>
<th>Agriculture</th>
<th>Processing &amp; Packaging</th>
<th>Industry</th>
<th>Distribution</th>
<th>Consumption</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruit &amp; Vegetables</td>
<td>75</td>
<td>29</td>
<td>7</td>
<td>116</td>
<td>121</td>
<td>348</td>
</tr>
<tr>
<td>Grains &amp; Legumes</td>
<td>7</td>
<td>2</td>
<td>1</td>
<td>10</td>
<td>79</td>
<td>99</td>
</tr>
<tr>
<td>Meat, Fish &amp; Eggs</td>
<td>8</td>
<td>0</td>
<td>13</td>
<td>38</td>
<td>80</td>
<td>139</td>
</tr>
<tr>
<td>Milk &amp; Dairy</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>21</td>
<td>29</td>
</tr>
<tr>
<td>Total</td>
<td>94</td>
<td>31</td>
<td>22</td>
<td>167</td>
<td>301</td>
<td>616</td>
</tr>
</tbody>
</table>

*The Loss estimation is based, among other sources, on a waste survey conducted by Dr. Ron Porat (Volcanic Institute, 2015)
### Food Value Chain - Share of Food Loss in Each Stage

Loss percentage figures were rounded for presentation purposes.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Agriculture</th>
<th>Processing &amp; Packaging</th>
<th>Industry</th>
<th>Distribution</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruit &amp; Vegetables</td>
<td>6% (28 thousand ton) loss</td>
<td>4% (18 thousand ton) loss</td>
<td>1% (5 thousand ton) loss</td>
<td>2% (24 thousand ton) loss</td>
<td>15% (193 thousand ton) loss</td>
</tr>
<tr>
<td>Bread &amp; Grains</td>
<td>3% (23 thousand ton) loss</td>
<td>1% (5 thousand ton) loss</td>
<td>5% (33 thousand ton) loss</td>
<td>4% (34 thousand ton) loss</td>
<td>9% (68 thousand ton) loss</td>
</tr>
<tr>
<td>Meat &amp; Dairy</td>
<td>15% (641 thousand ton) loss</td>
<td>7% (269 thousand ton) loss</td>
<td>8% (94 thousand ton) loss</td>
<td>12% (407 thousand ton) loss</td>
<td>16% (454 thousand ton) loss</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>4,325 thousand ton</td>
<td>3,684 thousand ton</td>
<td>1,220 thousand ton</td>
<td>3,269 thousand ton</td>
<td>2,863 thousand ton</td>
</tr>
</tbody>
</table>

Loss percentage figures were rounded for presentation purposes.
There is a great measure of variance in food waste among the different foods reviewed, as well as in the stage in which such losses are incurred. On average, there is approximately 40% waste in all food types in the initial stages of production, where produce is grown and then packaged. We estimated waste in these stages according to average proceeds to farmers. An additional 60% of waste is incurred in later stages of the food value chain. Waste estimates for these stages are based on retail food prices. We estimate the economic value of food waste in Israel in 2015 at approximately 18 billion NIS, constituting 1.6% of domestic product.

The relative importance of fruit and vegetable waste in Israel stems from the high percentage of fresh produce in total domestic agricultural production, and the high waste rate of 45% throughout the value stages. This high waste rate in fruit and vegetables is not exclusive to the Israeli economy. Compared internationally, Israel has a similar waste rate in this category to Europe. Israel has an overall lower waste rate than the US. Compared to the US there is less waste during the production and consumption stages, but greater waste in the intermediary stages.

Total food waste in all value chain stages, translates to a loss of 84 kg of food per household per month, and constitutes an equivalent monthly loss of 616 NIS per household. Quantitatively speaking, approximately 68% of this waste is incurred during production, manufacturing and distribution, prior to food reaching household or institutional consumers. In monetary values, roughly 50% is lost, or wasted, during consumption.

### Food Waste Estimate in Israel - Select Products

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Loss in processing</th>
<th>Consumption Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruit &amp; Vegetables</td>
<td>641</td>
<td>454</td>
</tr>
<tr>
<td>Grains &amp; Legumes</td>
<td>28</td>
<td>193</td>
</tr>
<tr>
<td>Meat, Fish &amp; Eggs</td>
<td>23</td>
<td>68</td>
</tr>
<tr>
<td>Milk &amp; Dairy</td>
<td>55</td>
<td>70</td>
</tr>
<tr>
<td>Total</td>
<td>748</td>
<td>784</td>
</tr>
</tbody>
</table>

### Food Loss Estimate in Israel 2015

<table>
<thead>
<tr>
<th>Category</th>
<th>Agriculture</th>
<th>Processing &amp; Packaging</th>
<th>Industry</th>
<th>Distribution</th>
<th>Consumption</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruit &amp; Vegetables</td>
<td>641</td>
<td>269</td>
<td>94</td>
<td>407</td>
<td>454</td>
<td>1,865</td>
</tr>
<tr>
<td>Grains &amp; Legumes</td>
<td>28</td>
<td>18</td>
<td>10</td>
<td>24</td>
<td>193</td>
<td>272</td>
</tr>
<tr>
<td>Meat, Fish &amp; Eggs</td>
<td>23</td>
<td>5</td>
<td>33</td>
<td>34</td>
<td>68</td>
<td>162</td>
</tr>
<tr>
<td>Milk &amp; Dairy</td>
<td>55</td>
<td>8</td>
<td>18</td>
<td>8</td>
<td>70</td>
<td>159</td>
</tr>
<tr>
<td>Total</td>
<td>748</td>
<td>299</td>
<td>155</td>
<td>472</td>
<td>784</td>
<td>2,458</td>
</tr>
</tbody>
</table>
International Comparison of Fruit/Vegetable Waste Loss

- North America: 52%
- South America: 54%
- Europe: 46%
- Israel: 45%
- Japan, China & South Korea: 18%
- North Africa & West Asia: 27%
- Southeast Asia: 55%
- Africa: 51%

шейואה בינלאומית של שיעור האובדן בפירות וירקות

- אמריקה הצפונית: 52%
- אמריקה הדרומית: 54%
- אירופה: 46%
- ישראל: 45%
- יפן, יוניון סיני ודרום קוריאה: 18%
- צפון אפריקה & מזרח אסיה: 27%
- אסיה הדרומית: 55%
- אפריקה: 51%
Food Waste – How much food can be rescued?
Roughly 35% of food produced in Israel is lost, or wasted, during the production, distribution and consumption stages, totaling 2.5 million tons annually. This translates to food losses valued at 18 billion NIS, equivalent to 1.6% of GDP. About half of this waste is considered unworthy of human consumption due to natural deterioration, damage during the production processes and the like, and are not considered potentially rescuable.

In terms of food rescue, the most important component are edible foods (fit for consumption with nutritional and health benefits that do not reach consumers). There are various reasons for loss in each of the stages of the food value chain. The common denominator is lack of economic viability to food producers (i.e. farmers, industrialists, distributors, etc.) to invest additional resources in the more advanced stages of the production and distribution chain.

It is evidently clear that zero food waste is an impossible goal. However, reducing food waste, either by prevention or by rescuing surplus, should be a primary public objective.

Estimates of food fit for rescue is derived from BDO’s food value chain model designed specifically for the food industry. Classification into rescuable (worthy of consumption) vs. unrescuable food were analyzed according to each food type, and their loss rates, in each of the value chain stages.

It is important to note that classification of rescuable foods does not address economic viability of rescue, but rather the technical ability to use this food waste to feed people. According to our estimate, roughly 50% of food waste is rescuable and can, given appropriate resources and economic viability, serve to feed needy populations suffering from food insecurity.

For analysis purposes, we did not classify food waste during household consumption as rescuable. There are various approaches to the issue of food waste in household consumption. Western culture is based on the notion of consumerism and prosperity, and it seems that consumers extract benefit (and enjoyment) not only from food consumption, but also from a range of selections and even excess. Economically, as long as consumers pay the full amount for purchased products, no restrictions should be placed on their consumption. The problem in the case of food consumption is that, while food production entails using natural resources and the exacting of environmental impact, its external costs are not calculated in the price paid by consumers for food - aspects that were not reviewed in our study. However, these circumstances may justify actions to reduce waste, such as by raising public awareness regarding the external repercussions of producing food that is left unconsumed.

### Recoverable Food Estimate in Israel 2015 thousands of tons

<table>
<thead>
<tr>
<th></th>
<th>Total Consumption</th>
<th>Total Local Production</th>
<th>Loss</th>
<th>Recoverable Loss</th>
<th>Percentage of Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruit</td>
<td>1,465</td>
<td>1,234</td>
<td>154</td>
<td>1,134</td>
<td>24%</td>
</tr>
<tr>
<td>Vegetables</td>
<td>2,163</td>
<td>1,019</td>
<td>509</td>
<td>272</td>
<td>39%</td>
</tr>
<tr>
<td>Potatoes &amp; Starch</td>
<td>1,234</td>
<td>1,134</td>
<td>273</td>
<td>149</td>
<td>39%</td>
</tr>
<tr>
<td>Grains &amp; Legumes</td>
<td>1,022</td>
<td>661</td>
<td>159</td>
<td>16</td>
<td>10%</td>
</tr>
</tbody>
</table>

*Grains and Legumes loss is presented as a share of consumption, due to high import levels.

### Food Waste Unworthy of Human Consumption

- Unpicked edible agricultural produce
- Aesthetically flawed agricultural produce
- Agricultural produce not sold in wholesale markets
- Unsold food surplus in markets/stores
- Surplus prepared food from catering, industrial kitchens & restaurants
- Packaged food with flawed or damaged packaging
- Food nearing its sell-by date that will not be sold

### Food Waste – How much food can be rescued?

<table>
<thead>
<tr>
<th>Total Consumption</th>
<th>Total Local Production</th>
<th>Loss</th>
<th>Recoverable Loss</th>
<th>Percentage of Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk &amp; Dairy</td>
<td>5,686</td>
<td>1,481</td>
<td>1,331</td>
<td>35%</td>
</tr>
<tr>
<td>Meat, Fish &amp; Eggs</td>
<td>7,097</td>
<td>1,578</td>
<td>1,162</td>
<td>24%</td>
</tr>
<tr>
<td>Total</td>
<td>2,458</td>
<td>1,590</td>
<td>1,590</td>
<td>35%</td>
</tr>
</tbody>
</table>

*Grains and Legumes loss is presented as a share of consumption, due to high import levels.*
Food Security – How much food is required to close the food consumption gap in Israel?
One of the greatest challenges facing the Israeli economy is the problem of inequality in distribution of income. The inequality level in Israel, measured by the Gini (Inequality) Index, is one of the highest of developed economies, excluding the US, Turkey, Chile, and Mexico. Food insecurity is one of the consequences of income inequality.

Relying on World Health Organization definitions, also used by the National Insurance Institute of Israel (NII), food security is based on three key pillars:

1. **Food Availability:**
   Sufficient quantities of food available on a consistent basis.

2. **Food Access:**
   Sufficient resources to obtain appropriate foods for a nutritious diet.

3. **Food Use:**
   Awareness to proper use of food as well as adequate water and sanitation.

Using these criteria, which are primarily subjective, the NII estimates that approximately 18% of Israel’s population suffers from food insecurity; of this number, 10% in severe food insecurity, and an additional 8% in moderate or mild food insecurity.

Comparison of inequality and food insecurity data indicates that the US and Israel have similarly high inequality and poverty levels, however paradoxically food security in the US is among the highest in the developed world.

It seems that the high US measure of food security,
Food Security – How much food is required to close the food consumption gap in Israel?

despite high general inequality, is the result of many years of public awareness to the problem of food insecurity, evident among other things by the American reliance on food stamp programs to ensure food provision to the needy.

Furthermore, the US is a pioneer in instating food banks to save surplus and distribute it to underprivileged populations, and is a world leader in establishing policies to remove obstacles for food waste and reuse. As early as 1996, the US passed the Good Samaritan Food Donation Act to protect those involved in food rescue from litigation.

Despite similar inequality and poverty rates in Israel and the US, food expenses as part of the Personal Consumption Expenditure (PCE) in Israel is among the highest in the world, measured at 16% · a number two and half times that of the US. Therefore, a policy of food rescue and distribution to the underprivileged populace is an effective welfare policy particularly applicable to Israel, where a significant portion of household expenditure is allocated to food.

The definition of food security is subjective. In order to examine food rescue effectiveness as a policy measure to increase food security in Israel, we relied on the methodology of Chernichovsky and Regev to define normative food expenditure as a measure of expenditure that remains constant even with an increase to household income.

According to our estimates, the volume of food required to bridge the gap between actual food consumption of food insecure populations and normative consumption level (average levels of second-to-fifth percentiles), is valued at 3 billion NIS. The cost of eliminating this food expenditure gap relative to normative level for the severely food-insecure population (10% of Israeli households) is estimated at 2.2 billion NIS, with an additional 0.8 billion NIS required to assist populations experiencing moderate food insecurity.

The rescue of 600,000 tons of wasted food each year, constituting 25% of overall food waste in Israel, will enable the closing of the food gap in Israel. According to our estimate, 840 million NIS would enable the rescue 3.3 billion NIS in food, equivalent to the gap between food expenditure of food insecure populations and normative expenditure levels.
Obstacles and Policies to Encourage Food Rescue
Food waste results from a range of causes at each level of the food value chain. The primary reason relevant to all stages is lack of economic viability (to farmers, industry, distributors and others) to invest additional resources in the latter stages of the food production and distribution chain.

Lack of economic viability may stem from characteristics of the foods themselves, their production environment, or from market conditions. Food traits that lead to waste include aesthetically marred produce, for example fruit or vegetables that are either smaller or larger than accepted standards. Viability is also measured by a reduction in shelf life, as produce becomes overripe, shortening the length of time available for sale. Additionally, defects may occur during processing.

Low field or orchard yields, for whatever reason, may decrease the economic incentive to harvest even perfectly fit produce.

Market fluctuations play a role in determining viability as well. When supply drives prices down, the expected return on selling surplus may be lower than production costs.

During the distribution and retail stages, food waste may be caused by food passing its sell-by date, and is therefore disposed of. This is a loss that ostensibly cannot be rescued (whereby imprudent planning results in excess production). However, it seems that more careful planning of inventory can allow food producers to predict which of their products are nearing their sell-by date but have low statistical probability of being sold, and transfer those for rescue before expiring.

We should note that, with the enactment of the Economic Arrangements Bill, a legislative process was started to permit donations of post sell-by-date foods to food rescue organizations, and further regulations by the Minister are expected on this issue.

It is clear to everyone that fully eliminating food waste is an impractical goal. However, reducing food waste, either by waste prevention or rescue, is a central goal of the utmost importance in global public debate.

The UN, with the US and various other countries, have established an official goal of 50% reduction of food waste by the year 2030. This is an important public declaration of intent, but also an indication that professional organizations and institutions believe a 50% reduction is both possible and realistic, however ambitious it may seem.

This is a clear case of market failure. Based solely on market prices, there may be no economic justification for food rescue. However, in terms of economic measures reflecting alternative value and nutritional benefits, food rescue has high economic viability.

In our opinion the initial measures required to increase the level of food rescue in Israel are as follows:

1. Determining national food rescue goals
   to reduce food waste by 50% by the year 2030, as specified by the UN.
   Setting a national goal carries more significance than merely raising awareness to the issue; it is a governmental commitment to act towards the realization of this objective. Furthermore, in addition to establishing such a goal, it is necessary to establish ongoing measurement and monitoring tools to review progress and implementation.

2. Finalizing legislation to encourage food surplus rescue
   as seen in the US Good Samaritan Food Donation Act. A law is needed that encourages food surplus donations and absolves NPOs and food donors from civil or criminal liability. Similar laws already exist in several countries. In 1996, the US passed a federal law exempting any person, corporation or government authority that donates food to NPOs in good faith from civil or criminal liability. This addresses wholesome foods that meet all quality and labeling standards but are not readily marketable due to appearance, age, freshness, grade, size, surplus, or other conditions (Bill Emerson Good Samaritan Food Donation Act).

3. Requirement of food rescue of all governmental and government-financed institutions
   requiring state budgeted bodies with kitchens catering to 1,000 or more patrons daily (either directly or through subcontractors) to collaborate with registered food rescue NPOs as a condition for government support (including defense agencies, school catering programs, government, companies, etc.).
Leket Israel The National Food Bank

Founded in 2003 by Mr. Joseph Gitler, Leket Israel is the only organization in Israel dedicated solely to rescuing food for the benefit of those in need. Standing at the forefront of food rescue, each year Leket rescues and redistributes tens of thousands of tons of food to needy clientele through its network of nonprofit organization (NPO) partners.

To attain such impact, Leket Israel rescues a range of food types from several different sectors: picking fresh produce straight from the field, collecting leftover agricultural produce from packing houses, rescuing meals from various prepared food suppliers, and recovering surplus manufactured food from industry.

Using Leket Israel’s fleet of refrigerated trucks, rescued food is transported to two advanced logistics centers where the food is staged under optimal conditions. The organization’s complex logistics network is responsible for efficiently distributing the rescued food from the centers to NPOs throughout the country under strict quality control and food safety guidelines.

In an effort to enhance and support the health and well-being of the underprivileged, Leket Israel places special emphasis on distributing highly nutritious foods including fruits and vegetables, prepared meals, and other food products high in protein, calcium and vitamins.

Leket Israel’s success is derived from the extraordinary generosity of more than sixty thousand volunteers from all over the world. This inspiring network of volunteers dedicate their time and effort to pick, harvest, collect, prepare, and distribute food.

*Striving to fulfill a vision where all food surpluses are rescued, Leket Israel is constantly seeking new sources of rescuable food and working to expand its network of NPO partners.*