Food and Agriculture Organization of the United Nations

ISET
International School of Economics at TSU
Policy Institute

RIA OF THE DRAFT LAW ON FOOD LOSS AND WASTE

FINAL REPORT

BY

ISET POLICY INSTITUTE

Tbilisi

2022

CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

Food loss and waste (FLW) management and administration is a multidimensional concept, one which encompasses prevention and waste management during food production; post-harvest activities and practices; food safety and hygiene; labeling and date indication; as well as official control and taxation (VAT, income tax, profit tax).

FLW is moreover a global challenge: a vast amount of edible food is lost and wasted every day, while the number of people affected by famine is constantly increasing. According to the United Nations Environment Programme (UNEP) Food Waste Index report from 2021, around 931 million tons of food waste were generated globally in 2019; out of which 61% originated from households, 26% from food services, and 13% from retail. Furthermore, approximately 17% of all food production around the world is wasted – 11% in households, 5% in food services, and 2% in retail (United Nations Environment Programme, 2021).

Georgia also disposes of significant quantities of food: 40% of landfill waste is organic, a large share of which is food (CENN, 2017). Around 9.5%[1] of the population experiences severe food insecurity, and yet approximately 0.6 million tons of food is wasted each year (United Nations Environment Programme, 2021).

Due to these notable issues, a Regulatory Impact Assessment (RIA) of the Draft Law on Food Loss and Waste (FLW) was initiated by the Food and Agriculture Organization (FAO). This draft law is being developed in collaboration with the Agrarian Issues Committee of the Parliament of Georgia. To support the Committee, the FAO contracted ISET Policy Institute to conduct a Regulatory Impact Assessment (RIA) on aspects related to food donation in the draft law on FWL.

While food waste is generated by households, food services, and the retail sector, due to data and information limitations, this RIA specifically analyzes the economic, social, and environmental effects of a reduction of food waste in the retail sector.

The general objective of the policy intervention is to prevent and reduce food waste, and the associated negative social, economic, and environmental impacts, while also to improve food security.

The specific objectives of policy intervention are to:

- Reduce poverty and increase food security by facilitating the efficient allocation of food to the poor.
- Limit the negative effects on the environment and on natural resources by reducing food waste and prolonging the lifecycle of food.
- Reduce the costs of actors in the food supply chain by improving food waste prevention and management practices.
- Increase the efficiency of public spending on the provision of food to the poor.
- Increase public awareness on food waste prevention, reduction, management, food recovery, and redistribution.

The policy options within the RIA represent potential actions to tackle the problem of food waste in Georgia, including those activities suggested within the draft law on food loss and waste (Option 1). These options were developed from a literature review and an analysis of international practices, as well as from stakeholder interviews. The following policy options are considered within the analysis:

[1] https://data.worldbank.org/indicator/SN.ITK.SVFI.ZS?locations=GE

- Option 0 (status quo) – No policy change.
- Option 1 – Tax incentives and other support measures to reduce food waste.
- Option 2 – Tax incentives to reduce food waste.
- Option 3 – Municipal food donations to reduce food waste.

Baseline scenario – the status quo – is characterized with limited, ad hoc food donations from retailers to charitable organizations, which then distribute these donations to beneficiaries. Irregular and limited food donations therefore often result in a lack of provisions for socially vulnerable groups.

Option 1 assumes a comprehensive approach towards reducing food waste, which includes tax benefits for the private sector, alongside a revision of the Food Products/Animal Feed Safety, Veterinary and Plant Protection Code; the creation of a database of recognized charitable organizations; the development of guidelines for the management and disposal of food waste; and conducting awareness raising campaigns. In this option, instead of having low-risk food written off, the private sector would ensure that it is transported to charitable organizations, which would store it and then distribute it to beneficiaries.

Option 2 solely assumes the offering of tax benefits to the private sector. Given this, the annual growth rate of food donations would be lower in this scenario compared to the previous option. As in Option 1, instead of having low-risk food written off, the private sector would ensure that this food is transported to charitable organizations, which would then store it and provide it to beneficiaries.

Option 3 is similar to Option 1, however it encompasses two additional features. The donation would be completed through municipalities, which would then distribute the food either 1) directly to their beneficiaries through social municipal cafes, or 2) to charitable organizations.

These four options have been compared based on a multi-criteria analysis, with the results presented below:

Evaluation Criteria	Option 0	Option 1	Option 2	Option 3
NPV of net benefits (GEL)	-	7,331,187	5,677,226	540,973
Reduce poverty and increase food security level	-	+++	+	+++
Limit negative effects on the environment and natural resources by reducing food waste and prolonging the lifecycle of food	0	+++	+	+++
Reduce costs of actors in the food supply chain by improving food waste prevention and management practices	0	++	+++	+
Increase the efficiency of public spending on the provision of food to the poor	0	0	0	0
Increase public awareness on food waste prevention, reduction, management, food recovery, and redistribution	-	+++	+	+++
Feasibility	0	++	+++	+
Minimization of risks	-	+++	+	++

Based on the multi-criteria analysis, it can be concluded that Option 1 is preferable as it is associated with both the highest monetary and non-monetary benefits.

1. INTRODUCTION

The Regulatory Impact Assessment (RIA) of the Draft Law on Food Loss and Waste (FLW) was initiated by the Food and Agriculture Organization (FAO). In 2019, the FAO conducted a comparative analysis and assessment of food losses, waste, donation policies, and legislation in Georgia as part of the ENPARD III project. Furthermore, the draft law on FLW is being developed in collaboration with the Agrarian Issues Committee of the Parliament of Georgia. To support the Agrarian Issues Committee, the FAO contracted ISET Policy Institute to conduct a Regulatory Impact Assessment (RIA) on the draft law.

FLW is a critical issue related to waste management in Georgia. A notable amount of food that is still suitable for human consumption is wasted by Food Business Operators (FBOs) and large food retailers; due to packaging or quality issues, expiration date, excess supply, and inappropriate consumption habits. This consequently results in significant economic losses for such FBOs (FAO, 2018), and potentially adverse impacts on socially vulnerable groups who lack access to proper nutrition.

An RIA is a tool for evaluating the various alternatives (options) designed to resolve specific policy issues. An RIA is applied when a new regulation has been drafted and there is a need to assess its potential impact on stakeholders and to identify and quantify the expected costs of regulatory implementation and compliance. RIAs aim to improve policy-making procedures through the utilization of various approaches, such as openness, public involvement, and accountability. The focus of an RIA is dependent on the stage of the lawmaking process, and it is directed at improving the quality of governance by increasing the transparency and legitimacy of the regulatory process (OECD, 2022). Many countries currently use RIAs to support their decision-making processes. Developing countries are also encouraged to use RIAs, and Georgia is no exception. In 2020, the Government of Georgia approved the use of the RIA methodology, based on international best practices, and determined a list of legislative acts for which RIAs are mandatory for the introduction of amendments (Government of Georgia, 2020).

While this draft law goes beyond food donation, the objective of this RIA is to assess the economic, social, and environmental impacts of the donation-related aspects of the draft law on FWL by conducting a cost-benefit analysis (CBA), alongside a multi-criteria analysis (MCA). Thereby identifying the most suitable mechanisms for regulating food donations by assessing the need for the law and considering alternative regulatory options.

As a result of the RIA, the ISET Policy Institute team developed conclusions and recommendations to further contribute to evidence-based and accountable policy-making in regard to food donation.

2. PROCEDURAL ISSUES AND CONSULTATION OF INTERESTED PARTIES

2.1 ORGANIZATION AND TIMING

The RIA on the draft law on food loss and waste was implemented between November 2021 and December 2022. In November 2021, the RIA team started to analyze the framework of the existing legislation on food loss and waste, to collect necessary data, and to identify the relevant stakeholders.

The first consultation meeting was held on 13 December 2021, and was attended by representatives from the FAO, the Agrarian Issues Committee of the Parliament of Georgia, and the ISET-PI team. During which, the scope of the proposed draft law and additional details were discussed. Furthermore, the parties agreed on an action plan and the next steps towards the assessment process. Thereafter, the ISET-PI team met with an FAO legal expert to discuss the existing legislative framework and the changes proposed in the draft law.

The consultation with the legal expert was followed by a meeting attended by FAO representatives together with representatives from the Agrarian Issues Committee of the Parliament of Georgia held on 11 February 2022.

The next meeting was held on 4 April 2022, during which the ISET-PI team presented the RIA policy options and received comments and suggestions from the FAO and the Agrarian Issues Committee.

In the April-October period of 2022, the ISET-PI team regularly consulted with and received feedback from the FAO and the Agrarian Issues Committee of the Parliament of Georgia.

In December 2022, the ISET-PI team presented the results of the RIA to a wider audience.

2.2 CONSULTATION AND EXPERTISE

In order to assess the impact of the proposed regulation on the various stakeholders, the RIA team opted for a wide range of research methods, including but not limited to: a literature review of existing reports, expert assessments, requests for official data, telephone interviews, and in-depth, online interviews with the identified stakeholders.

The type of data used in the analyses and respective data sources are summarized in Table 1 below:

Table 1. Data and information collected during the research

Type of data/information	Source of data/information
Total expenditure on free municipal canteens	Budget of Tbilisi, Rustavi, Batumi, Kutaisi, Zugdidi
Number of beneficiaries of the free meals program	Budget of Tbilisi, Rustavi, Batumi, Kutaisi, Zugdidi
Amount of municipal waste disposed in landfills	Tbilservice Group LTD, Solid Waste Management Company of Georgia LTD, Sandasuftaveba LLC, Kobuletis Sandasuftaveba NNLE, Keda Komunalurservice LTD
Revenues, expenditure, program budgets, and the number of beneficiaries of Caritas Georgia	Caritas auditor report
Number of people receiving subsistence allowance	Social Service Agency
Share of the population under the absolute poverty line	Geostat

Waste management cost	MRDI
Waste collection, recycling, and disposal program	MEPA
Food security indicators	FAO
Data on solid waste	Georgia Solid Waste Sector Assessment Report, 2021
Emissions from the agricultural and waste sectors	Georgia Solid Waste Sector Assessment Report, 2021
Total estimated quantity of food waste in Georgia	Food Waste Index Report
Amount of low-risk food written off annually	Revenue Service
Value of low-risk food written off annually	Revenue Service
Number of applications for writing off food	Revenue Service
State revenue from applications regarding writing off food	Revenue Service
Transportation and storage costs	Logistics company

The ISET-PI team conducted various stakeholder consultations to study the effect of the proposed draft law on the interested parties; including representatives from the Revenue Service, charitable organizations, the retail sector, the restaurateurs' association, the Ministry of Finance, the National Food Agency, the National Association of Local Authorities of Georgia, and from various municipalities.

3. PROBLEM DEFINITION

3.1 POLICY CONTEXT

Georgia's legislative framework

The following section offers a review of Georgian legislation and the institutional framework related to the management and prevention of food loss and waste. Despite the lack of specific legislation, Georgia has legal instruments regulating various aspects of FLW management and prevention.

This study encapsulates the most important legal acts on the regulation of food loss and waste. These include: the tax code, the waste management code, food safety and hygiene, and official inspections.

Tax Code

Under the current tax legislation, food donation is subject to value added tax, as well as profit tax. Donations can only be made after a company has recognized that a product has not been sold as a "shortage"; Article 8 (Definition of terms) of the Georgian Tax Code defines this as a "shortage of inventory and/or fixed assets identified during the comparison (including by means of stock-taking) of inventory and/or fixed assets with a taxpayer's accounting records". According to Article 160 (Supply of goods), paragraph 3 subparagraph h, a shortage is also regarded as the supply of goods. While in Article 159, paragraph 1 subparagraph a, any supply of goods is considered to be a VAT taxable transaction. Moreover, within Article 98, prime 3 paragraph 2, a shortage is considered to be the free delivery of the good. Finally, Article 97, paragraph 1 subparagraph c, states that the free delivery of goods is object to profit taxation.

A loss is not considered to be a shortage if it is written-off according to №994 Order of Minister of Georgia, chapter 8. However, this legal document is intended for the writing-off and terminating of goods that are no longer suitable for use or consumption. In Article 32 of the same document, charged

off goods are eventually terminated. The request form for charging off goods also includes information on the place where goods are to be terminated.

Contrarily, Article 98, prime 3 paragraph 3 subparagraph a, stipulates that the free delivery of goods is not subject to taxation if a donation is made to a charitable organization during the calendar year, not exceeding 10% of the net profit of the organization during the previous calendar year. It should be noted that this only concerns profit tax – VAT still is applicable, even if goods are donated to charitable organizations. The latter is still considered a shortage and therefore taxable under the supply of goods.

Waste Management Code

“The purpose of this Code is to establish a legal framework in the field of waste management to implement measures that will facilitate waste prevention and its increased re-use, as well as environmentally safe treatment of waste (which includes recycling and separation of secondary raw materials, energy recovery from waste and safe disposal of waste)” - Article 1.

According to Article 3, subparagraph a, waste is defined as any substance or object that the holder of waste discards, intends to discard, or is obliged to discard.

FLW is considered part of biodegradable waste, defined in Article 3, subparagraph h, as – waste that may undergo anaerobic or aerobic decomposition, including food/feed waste, garden/park waste, and paper and cardboard.

Article 4 defines the waste management hierarchy, ranking the most to the least desirable aspects: prevention, preparation for re-use, recycling, and other recovery, including energy recovery and disposal.

The waste management code also obliges the competent authorities in the field of waste management to develop a national waste management strategy and a strategy for municipal biodegradable waste management, according to Articles 6 and 11.

Under Article 12, paragraph 7, in addition to the national waste management action plan, further plans can be developed for the management of certain types of waste, such as persistent organic pollutants (POPs), mercury, healthcare waste, animal waste, asbestos waste, etc. These plans must also comply with the national waste management action plan.

Other related legal acts include:

Ordinance N236 of the Government of Georgia regulates food and animal feed waste termination procedures; Article 2 defines the termination of food and animal feed as the mechanical, physical-chemical, biological, or other processing of food and animal feed waste, by placing it in a specially designated place, burying, burning, or discharging it into the sewage system, placing it in a biothermal pit, or any combination thereof. Furthermore, utilization of food or animal feed is defined in the Article as: the re-use of these goods in the form of material or energy resources (including the use for animal feed). In addition, Article 3 denotes that food and animal feed waste may be subject to destruction if it does not comply with the requirements set by the Food Products/Animal Feed Safety, Veterinary and Plant Protection Code or other normative acts, or if it is expired.

The Law on Environmental Protection, in Article 5, defines the two main environmental concepts. Firstly, under the waste minimization principal, preference is thus given to such technology that ensures the minimization of waste. Secondly, within the recycling principle, preference is allotted to substances, materials, and chemical compounds that can be reused, reprocessed, biologically degraded, or decomposed safely into the environment.

Food safety and hygiene

The Food Products/Animal Feed Safety, Veterinary and Plant Protection Code (FFSVPPC) is the main law in the respective field as it regulates all food safety, animal health, and pesticide management activities. This law has a primary and direct impact on the management and prevention of FLW and it requires that any food that reaches consumers, whether donated or otherwise, is safe.

Article 18 of the Code also defines the responsibilities of food business operators (FBOs), including ensuring the safety of food and feed at all stages of production, processing, and distribution.

Georgian Government Resolution N17356 additionally provides general and simplified hygiene requirements for food and animal feed safety. This resolution sets out the hygiene requirements for all FBOs; the FFVSPPC defines FBOs as legal entities involved in the primary production, processing, and distribution of food products – including the transfer of food for charity. General hygiene rules are approved for all business operators, except small business operators who use traditional methods or have non-factory production, processing, and distribution of food products. Such cases are governed by the "Simplified Rules of Food / Animal Feed Hygiene", contained in the resolution.

Food labeling and date marking

Governmental Resolution N301 (2016) defines the general principles and requirements of food labeling and mandatory information on labels. This resolution was prepared under the Association Agreement and is in line with EU FIC Regulation. It ensures the protection of consumer rights alongside the effective functioning of the internal market. The resolution sets out the mechanisms for transmitting information relating to shelf life, storage, and the safe consumption of food, so that the consumer can fully understand "shelf life" labeling.

According to Article 2 of this resolution, every business operator (manufacturer, retailer, seller) is required to indicate specific information on each product label, including use-by, shelf life, and safe consumption expiry dates. Article 23, in accordance with EU FIC Regulation, requires products which are particularly microbiologically perishable or may pose a risk to human health in a short period of time to replace the minimum shelf life with an expiry date, after which the FFSVPPC deems the food harmful. Additionally, Annex 9 of the resolution describes, in detail, rules and instructions for the use of abbreviations for shelf life and expiration dates, and the appendix describes how and when to use minimum shelf life, best-before, and use-by date marking.

Official inspection

Resolution N533 (2015) of the Government of Georgia provides the principles, detailed rules, and procedures for the implementation of official state control mechanisms (inspection, monitoring, supervision, selection, document review, laboratory analyses, etc.) to ensure food and feed safety.

While Resolution N55 (2015) provides the rules for the state control of products of animal origin. This resolution however has a neutral impact on the management and prevention of FLW, and it does not regulate issues related to food donation or processing.

Finally, there are rules for integrating with the European Union Rapid Alert System for Food and Feed (EU RASFF). The purpose of the rule approved within the resolution is to create and implement an effective system (notification, information exchange procedures, and forms) and integrate it with RASFF for the protection of human health.

Relevant EU policies and legal instruments

The EU and its member countries are committed to meeting United Nations (UN) Sustainable Development Goal 12.3 – targeted at halving per capita food waste at the retail and consumer level by 2030, while also reducing food losses along food production and supply chains.

In 2014 and 2015, the EU implemented the following policy documents: “Towards a circular economy: A zero waste program for Europe”[2] and “Closing the loop – An EU action plan for the circular economy”,[3] for transitioning to a more circular economy, where the value of products, materials, and resources is maintained in the economy for as long as possible, and waste is minimized, including food waste.

To support the achievement of SDG 12.3 on food waste and to maximize the contribution of every actor, the Communication on Circular Economy (2015) called on the European Commission to establish a platform dedicated to food waste prevention. Thus, the EU Platform on Food Losses and Food Waste (FLW) was established in 2016, thereby bringing together EU institutions, experts from EU member states, international organizations, and relevant stakeholders, selected through an open call for applications. This platform aims to support all actors by defining the measures needed to prevent food wastage, sharing best practices, and evaluating the progress made over time.[4]

In 2017, within the Circular Economy Action Plan, the Commission adopted the “EU guidelines on food donation” notice[5] to facilitate the recovery and redistribution of safe, edible food for those in need. These guidelines seek to enable the compliance of providers and recipients of surplus food with the relevant requirements laid down by EU regulatory framework (for instance, food safety, food hygiene, traceability, liability, VAT, etc.), and to promote a common interpretation of the rules for the redistribution of surplus food by the regulatory authorities of member states.

In 2020, the Commission published guidance on food safety management systems for food retail activities,[6] including food donations, which aims to support food business operators, such as butchers, bakeries, groceries, and ice-cream shops, as well as food banks and other charities, in their implementation of EU rules to ensure the safe production of food sold to consumers. Building on EU food donation guidelines, this guidance further facilitates food donation by making recommendations on additional and simple good hygiene practices that contribute to ensuring the safe redistribution of surplus food.

The Georgian national waste management strategy 2016-2020 is based on the 6th Environment Action Program, a European Parliament and Council decision adopted in 2002 that identified the framework for environmental policy-making in the EU for the period of 2002-2012 and outlined necessary actions. The 7th Environment Action Program[7] was later formulated to direct European environment policy until 2020, and the proposal for the 8th will act as a guide until 2030.

Besides the broader legislative context, there are certain more specific regulations regarding FLW management including: food waste management and prevention, food safety and hygiene, official inspection, and the tax code.

Food waste management and prevention

Directive 2008/98/EC[8] of the European Parliament and Council on waste and repealing certain directives lays down measures to protect the environment and human health by preventing or reducing adverse impacts from the generation and management of waste, and by reducing the overall

[2] COM (2014) 398 final/2.
[3] COM (2015) 614 final.
[4] https://ec.europa.eu/food/safety/food-waste/eu-actions-against-food-waste/eu-platform-food-losses-and-food-waste_en
[5] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:C:2017:361:FULL&from=EN
[6] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.C_.2020.199.01.0001.01.ENG&toc=OJ%3AC%3A2020%3A199%3ATOC
[7] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32013D1386
[8] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32008L0098

impact of resource use and improving efficient resource utilization. The Directive recalls the general environmental protection principles of precaution and sustainability; technical feasibility and economic viability; the protection of resources; as well as considering the overall environmental and economic effects, and the impact on human health and social well-being. An unofficial consolidated version of this Directive was last amended by Directive (EU) 2018/851[9] in 2018.

Directive (EU) 2018/850[10] amends Directive 1999/31/EC on landfill waste. Certain extensions in Article 5 include the following statements: "Member States shall endeavor to ensure that as of 2030, all waste suitable for recycling or other recovery, in particular in municipal waste, shall not be accepted in a landfill with the exception of waste for which landfilling delivers the best environmental outcome in accordance with Article 4 of Directive 2008/98/EC"; and "Member States shall take the necessary measures to ensure that by 2035 the amount of municipal waste landfilled is reduced to 10% or less of the total amount of municipal waste generated (by weight)."

Food safety and hygiene

Rules on the hygiene of foodstuffs were adopted in April 2004 by the European Parliament and the Council (Regulation (EC) No. 852/2004, 853/2004, and 2017/625). They became applicable in 2006. These 2004 rules merged, harmonized, and simplified the detailed and complex hygiene requirements previously contained within several Council Directives covering food hygiene and the production and marketing of products of animal origin.

The rules in place since 2006 make a single, transparent hygiene policy applicable to all food and every food operator throughout the food chain ("from farm to fork"), together with effective instruments to manage food safety and any future food crises along the chain.

Official inspection

Regulation (EU) 2017/625[11] of the European Parliament and of the Council – "on official controls and other official activities performed to ensure the application of food and feed law, rules on animal health and welfare, plant health and plant protection products" – was adopted in 2017. This Regulation lays down rules for: (a) the performance of official controls and other official activities by the competent authorities of member states; (b) the financing of official controls; (c) the administrative assistance and cooperation between member states for correct application of the rules; (d) the performance of controls by the Commission in member states and third countries; (e) the adoption of conditions to be fulfilled on animals and goods entering the European Union from a third country; and (f) the establishment of a computerized information system to manage information and data in relation to official controls.

Tax code

Council Directive 2006/112/EC[12] creates the legislative framework for a common system of value added tax for the EU. Further guidelines are provided by the VAT Committee. The amount of VAT depends on the market value at the moment of donation. In some countries, if a product cannot be sold, its price, and therefore the VAT, is calculated as zero. Conversely, in other EU member states, the price of a donated product is calculated as the same as its purchase price. Thus, VAT is assessed at the same level.

[9] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32018L0851
[10] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018L0850
[11] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32017R0625
[12] https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32006L0112

International experience concerning FLW management and administration

Various countries apply different regulations on FLW management. For instance, France has some of the strictest regulations regarding food waste management. In 2016, they adopted a law on fighting food waste,[13] under which supermarkets are forbidden to destroy unsold food products and are compelled to donate them instead. This law constituted the starting point of the fight against food waste through banning its destruction and facilitating subsequent donation. Since adoption, its scope has been extended further through new decrees and laws.

One key issue when discussing food waste management is liability. Italy tries to tackle this issue by The Good Samaritan Law,[14] adopted in 2003. The Law recognizes food banks as the final link in the food chain (i.e., the final consumer of donated products) and thus prevents individuals receiving products from food banks from being able to file lawsuits against donors. This law has been recognized as one best practices to foster food donations in member states, and as the regulatory instrument to have the greatest impact on the donation of surplus food.

Yet another notable legal document in Italy is Law No. 166/2016 on the "donation and distribution of food and pharmaceutical products for purposes of social solidarity and food waste prevention".[15] The objective of this law is to fight against food waste. It lays down provisions reorganizing the regulatory framework on food donation by simplifying, harmonizing, and fostering the process. It also establishes food recovery and the redistribution of surplus food for the most deprived in Italy as a priority. The law addresses the difference between "use-by" and "best-before" dates, and it clarifies that food products may be donated even if their "best-before" date has passed. It also provides other useful tools such as the opportunity to donate confiscated food products, the "family bag", and an application by local authorities for a reduction coefficient on waste tax in order to further encourage businesses to donate surplus food.

3.2 PROBLEM DEFINITION

Food loss and waste management and administration is a multidimensional concept, which encompasses the management and prevention of waste during food production; post-harvest activities and practices; food safety and hygiene; labeling and date indication; official controls; and during taxation (VAT, income tax, profit tax). The FAO defines food loss as "the decrease in the quantity or quality of food resulting from decisions and actions by food supply chain actors from the production stage up to, but excluding retailers, food service providers and consumers".[16] More specifically, food loss occurs at each stage of the food supply chain, from post-harvest and slaughter up to but not including the retail level. While food wastage is defined as "the decrease in the quantity or quality of food resulting from decisions and actions by retailers, food service providers and consumers".[17]

FLW is a global challenge, and a vast amount of edible food is lost and wasted every day, while the number of people affected by hunger is still increasing. According to the 2021 Food Waste Index report, developed under the United Nations Environment Programme (UNEP), in 2019, around 931 million tons of food waste was generated globally; of which, 61% came from households, 26% from food services, and 13% from retail. Furthermore, about 17% of all world food production is wasted:

[13] https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000032036289/
[14] https://www.gazzettaufficiale.it/eli/id/2003/07/01/003G0174/sg
[15] http://extwprlegs1.fao.org/docs/pdf/ita160906.pdf
[16] FAO. (2021). Voluntary Code of Conduct for Food Loss and Waste Reduction.
[17] FAO. (2021). Voluntary Code of Conduct for Food Loss and Waste Reduction.

11% in households, 5% in food services, and 2% in retail (United Nations Environment Programme, 2021).

Although the proportion of food waste generated within the retail sector is relatively low, it serves as a gatekeeper to the food supply chain and hence plays a crucial role in the pursuit of minimizing food waste (Gruber, Holweg, & Teller, 2015). As the retail stage is located near the end of the food supply chain, food at the retail stage encompasses every resource used along the whole food supply chain (e.g., the resources used in production, processing, packaging, and distribution) and it reflects the environmental impacts generated during the process. According to the FAO, "the total food loss from the modern retail trade has been estimated at a minimum of 11.4 million USD/year, of which USD 3.4 to USD 4.6 million can be recovered and distributed! The volume of modern retail is 20% of the total food distribution" (FAO, 2019a). As previously mentioned, the reduction of food waste at the retail level is an explicit target in UN Sustainable Development Goal 12.3.

Georgia equally wastes large quantities of food: 40% of landfill waste is organic, of which a significant share is food (CENN, 2017). Around 9.5%[18] of the population experiences severe food insecurity in Georgia, yet approximately 0.6 million tons of food is wasted each year (United Nations Environment Programme, 2021).

The UNEP 2021 Food Waste Index report offers an insight into the amount of food waste at the household, food service, and retail level, based on a sub-national study of food waste in Georgia conducted in 2014. The estimate for Georgia is derived from a sample of residual waste in a residential area. According to this study, estimated household food waste is 101 kg/capita/year – 403,573 tons per year in total. The greatest contributors to household waste include poor planning, overbuying, a lack of awareness of food labels, as well as insufficient knowledge on the reuse of leftovers for composting or preparing new meals (Takvarelia, 2021). While, in food services, the average waste was 28 kg/capita/year, accounting for 110,471 tons annually (United Nations Environment Programme, 2021). In Georgia, a notable amount of food that is still fit for human consumption is wasted by Food Business Operators (FBOs) and in particular large food retailers; due to packaging or quality issues, expiration dates, excess supply, and consumption habits (e.g., open buffets in hotels), among other issues (FAO, 2019a). The estimated retail food waste is 16 kg/capita/year, which amounts to 62,505 tons per year (United Nations Environment Programme, 2021). It should be noted that these estimates are based on data collected in 2011, therefore recent figures may have changed and risen even higher.

While the scope of available data is limited, it reveals that the proportion of food waste from the retail sector in Georgia is smaller (around 11% of total mass) than the consumer and service levels. Notwithstanding, the retail sector is an important actor in the food supply chain and significantly influences the upstream and downstream handling of food. Furthermore, food waste from the retail sector appears to be relatively manageable; it is comprised of good-quality written off or excess food, which is mostly still suitable for human consumption and that could be collected or donated (Schneider & Eriksson, 2020). Currently there is no legislative framework in Georgia that regulates or encourages food donation. Under present tax regulations, food donation is not favorable for businesses. Because donated food is subject to VAT (18%) and profit tax (15%), supermarkets and other FBOs refuse to donate excess food. Therefore, a large amount of food is simply discarded in Georgia.

Although food waste is generated in households, food services, and the retail sector, the current draft law focuses on the management of food waste in the retail sector. Therefore, this RIA will analyze

[18] https://data.worldbank.org/indicator/SN.ITK.SVFI.ZS?locations=GE

the economic, social, and environmental effects of a reduction of food wastage in the retail sector, as envisaged by the law.

Causes of the problem

To reduce food wastage in the retail sector and to prolong the lifecycle of food, it is important to understand the root causes of the problem. Food loss and waste occurs due to malfunctions in the production and supply chain, or its institutional and political framework (e.g., managerial and technical constraints, the lack of proper storage facilities, proper food processing practices, packaging, inefficient market systems, etc.) (FAO, 2011).

A literature analysis (Broad Leib, Shapiro, Jagdagdorj, & Hill, 2021; Colombo de Moraes, Costa, Pereira, Da Silva, & Delai, 2020; Schneider & Eriksson, 2020) reveals that one common key cause of food wastage in the retail sector is a legislatorial framework that constrains donation. In Georgia, there are no guidelines readily available for food recovery or redistribution that define safety procedures for food donation. Retailers are often uncertain as to which food safety regulations apply to donated food, and they are unaware of the steps necessary to safely donate food in compliance with any applicable regulations. This uncertainty stems from the lack of precise definition of the key actors and concepts, and their corresponding responsibilities, in the context of food donation. At present, there is no specific guideline or legislatorial framework that specifically address FLW management, and various aspects are addressed by various legal acts (FAO, 2019b). For example, in accordance with the Association Agreement, Georgia has already adopted its primary legal act in the field of waste management and prevention – the Law of Georgia Waste Management Code (WMC) – which, to some extent, regulates food loss and waste management issues. However, the regulation is far from comprehensive or exhaustive.

In addition, there is additional administrative burden associated with food donation. The non-existence of clear, specific guidelines and procedures for food waste management makes it difficult (and potentially costly) for retailers to manage and administer donations. As a result, safe, surplus food that could have been donated to charity organizations for redistribution to vulnerable populations is instead destined for landfills.

Another reason that prevents food donation, and therefore leads to waste, is fiscal distortions (FAO, 2019b). In Georgia, donating surplus food is expensive for supermarkets and retailers, as food donations are subject to taxation (18% of VAT and 15% of profit tax); with the exception of donations to charity organizations within 10% of the net profit limit as discussed above. Moreover, FBOs have to spend time on donation procedures, packaging, storage, and the transportation of excess food, which would otherwise typically be discarded at no cost. In addition, Georgia does not have a proper taxation scheme for food wastage. Therefore, under the current policy framework, the costs of immediately disposing food can be far lower than the cost incurred donating food, as such businesses prefer simply to discard surplus product. In effect, the exemptions offered by the current taxation system are insufficient. As a result, charity organizations currently experience difficulty in attracting food donations to serve their beneficiaries and relieve hunger.

Lack of awareness also leads to higher food waste (Huang, et al., 2021; Davis, 2015). In Georgia, awareness of food waste management practices is lacking among food industries, retailers, and consumers. An overabundance of food in stores, alongside consumer attitudes (with the expectation of a wide range of available products), leads to high food waste. Thus, as retailers place a variety of foods and brands on their shelves, it increases the likelihood of items reaching their use-by date before being sold. Retailers also offer large packages and “get one free” bargains to consumers, encouraging them to buy more than they need, and therefore, leading to waste. In the HoReCa

sector, hotels often offer buffet breakfasts, while restaurants serve buffets at fixed prices. This also encourages people to fill their plates with more food (FAO, 2011).

Another cause for food waste relates to marking issues. There are two types of expiry date used on packaging: the “best-before” and the “use-by” date. Misperception and a lack of knowledge on labels are a significant cause of food waste. Food products that are close to, at, or beyond the best-before date are often discarded by retailers and consumers, while they may still be edible and suitable for human consumption. Whereas a product is unsafe and should be discarded after reaching its use-by date (FAO, 2011). In addition, consumers often ignore food products close to their expiry date.

Additional food waste also results from distribution, transportation, and storage challenges, as well as inefficient retail practices. Insufficient transportation vehicles and poor or inefficient logistical management each hinder the proper conservation of perishable commodities during distribution (HLPE, 2014). Fresh products like fruit, vegetables, meat, and fish, derived from farms or after a catch, can be spoilt due to inadequate transportation and storage infrastructure.

Poor food safety and hygiene practices, including improper storage, can lead to food losses and wastage. A range of factors can lead to food being unsafe: naturally occurring toxins in the food itself, the unsafe use of pesticides, veterinary drug residues, contaminated water, etc. Poor and unhygienic handling and storage conditions and a lack of adequate temperature control, can also make food unsafe for human consumption, and therefore precipitate waste (FAO, 2011).

Furthermore, consumers have “high appearance quality standards” for products, especially fresh fruit and vegetables, and they tend to ignore some produce that is still suitable for consumption due to rigorous quality standards concerning size, shape, appearance, and packaging (Grewal, Hmurovic, Lamberton, & Reczek, 2018). These attitudes consequently lead to increased wastage.

A significant barrier to decreasing waste through food donation is the concern over liability issues: businesses are afraid they will be liable if someone becomes sick after consuming donated food (FAO, 2019a). To mitigate this concern, many countries (e.g., Belgium, France, the Czech Republic, the US) have adopted liability protections: a donor is only responsible for the food before donation (Akwii, Broad Leib, Shapiro, & Paparo, 2021). After which, food aid organizations become liable for the produce. In addition, businesses are equally concerned about a reduction in the quality of products, which could affect their brand image (FAO, 2019a).

The literature analysis (Broad Leib, Shapiro, Jagdagdorj, & Hill, 2021; United Nations Environment Programme, 2021; Colombo de Moraes, Costa, Pereira, Da Silva, & Delai, 2020) highlights that there is insufficient data collection and management related to food waste. The research is mostly limited to industrialized countries and to retail chains or supermarkets, and there is a lack of data from wholesalers, street markets, and small grocery stores. At the country level, the collection of certain information and data, both qualitative and quantitative, is necessary to enable stakeholders and decision-makers to take actions and implement policies that overcome challenges leading to greater wastage. Food waste prevention can include technical solutions, like improved logistics, forecasting, and packaging, but also incentive structures that motivate retail businesses to donate food (Schneider & Eriksson, 2020)

Consequences of the problem

Food waste is becoming huge concern because of the associated economic, social, and environmental costs. It is not only the misuse of valuable nutritional resources, but also of water, land, capital, and energy. It has a negative impact on the environment and the economy of individual

countries. Notably, "food wastage[19] represents a missed opportunity to improve global food security, but also to mitigate environmental impacts and resources use from food chains" (FAO, 2013).

Environmental costs

Food production is one of the most resource-intensive industries and it is associated with high emissions of harmful substances. When food is not consumed, all sources in the production, transport, and distribution are effectively wasted. Food waste is subsequently associated with four environmental impact categories – greenhouse gas (GHG) emissions, water, land occupation and degradation, and potential biodiversity impacts.

Such wastage contributes to the emission of biogenic GHG, such as methane (CH_4) and nitrous oxide (N_2O). Methane and nitrous oxide are important GHGs, as they contribute to global warming. Methane is 25 times stronger (a weighting factor) than carbon dioxide (CO_2) and nitrous oxide by 298 (FAO, 2013). The proper management of food waste and adjusting its decomposition can alter the type of emissions; with proper composting, less harmful carbon dioxide could be released into the atmosphere, instead of methane (Seberini, 2020). It is estimated that 8-10% of current global GHG emissions are associated with produce that was never consumed – food loss and wastage (United Nations Environment Programme, 2021). While there are no proper separate estimates for GHG emissions associated with food waste in Georgia, applying this global estimate to the country means that approximately 797,448-996,809 tons of CO_2 equivalent GHG emissions were associated with food loss and waste in 2020.[20]

The amount and type of GHG released during the decomposition stage depends on the category of food. Cereals, meat, and vegetables act as the most significant contributors to the carbon footprint (in the total amount of GHGs, expressed in kilograms of CO_2 equivalent). According to FAO estimates, taken together, this amounts to more than 75% of the carbon footprint globally. Cereals account for 34% of the carbon footprint of food wastage, meat 21%, and vegetables 21% (FAO, 2013). It is notable that in Georgia, as wheat rather than rice is the main cereal crop, the GHG emissions from cereal wastage are expected to be lower as wheat is less carbon-intensive. In terms of vegetable growing, greenhouse cultivation increases the carbon-intensity.

Another environmental impact of FLW is associated with water consumption; particularly, the amount of water "that is no longer available for the immediate water environment because, for instance, it has been transpired by plants, incorporated into products or consumed by people or livestock" (FAO, 2013). The water footprint varies significantly across regions and countries, and it is dependent on differences in crop type and yield. For instance, Europe maintains comparatively low water footprints per ton of cereal crop, as it has a relatively high average yield. Crops that have a larger fraction of their biomass when harvested are generally associated with a smaller water footprint per ton (e.g., starchy roots, fruit, or vegetables). Whereas crops with a low yield or small fraction of harvested crop biomass (e.g., cereals or oil crops) have a larger water footprint per ton (FAO, 2013). The food wastage associated with animal products has higher water consumption per ton of product than crops; this is because animals need drinking water, and the production of animal feed requires water as well. These latter amounts regarding the highest share of water footprint are thus associated with animal products.

[19] i.e., both food loss and food waste.

[20] Authors' calculations, based on the 8-10% of annual production-based carbon dioxide (CO_2) emissions. This data is based on territorial emissions, which do not account for those embedded in traded goods. Source: Global Carbon Project. (2021). *Supplemental data of Global Carbon Project 2021 (1.0)* [Data set]. Global Carbon Project. https://doi.org/10.18160/gcp-2021.

Therefore, the total water footprint associated with food wastage depends heavily on the region and the type of product. Unfortunately, there are no separate estimations available Georgia. However, in Europe the average water intensity is relatively low; only contributing to 5-10% of the total water footprint associated with global food wastage. The per capita water footprint of food wastage in Europe is approximately 25 m^3 per year, while the global average is around 40 m^3 (FAO, 2013).

Uneaten and lost food is also associated with land-related environmental impacts, taking into account the land surface used in food production, including cropland and grassland. The FAO has evaluated the surface of land used to produce food that is left unconsumed because of wastage. In 2007, globally, the total amount of this wastage was estimated to occupy almost 1.4 billion hectares; equal to about 28 percent of the world's agricultural land at that time (FAO, 2013). By country size, this land area would be the second largest only after the Russian federation, at 1.7 million hectares. These estimations suggest the major contributors to land occupation are meat and milk – with 78 percent of the total surface, whereas their contribution to total food wastage is only 11%. Oil crops, fruits, vegetables, and starchy roots each amount up to 5% of total land occupation from food wastage, and cereals up to 10%. The European contribution to land occupation from food wastage was calculated to be around 7% of the respective global area, one of the lowest among all regions. This relatively slight contribution is because the region relies less on grassland, and as grasslands are more productive. In addition, feeding rations include a higher share of concentrates, resulting in more arable land occupation and less non-arable occupation, thereby reducing total land occupation intensity in Europe.

However, one has to bear in mind that global estimates of the land area associated with food wastage underestimate the situation as they do not account for the influence of deforestation, urbanization, soil sealing, or soil quality, therefore the real impact is much higher.

Biodiversity is affected by food loss and waste at the ''ecosystem level through the extent of deforestation due to agriculture, and at species level, through the extent of Red Listed species of mammals, birds and amphibians threatened by agriculture". While the third impact affects fisheries in the marine ecosystem (FAO, 2013). The impact on biodiversity varies notably around the world, and often it relates to a country's development level – the higher the development level, the lower the threat to biodiversity. More specifically, a) on average, crops are responsible for 44% of species threats in developed countries, compared with 72% in developing countries; and b) in livestock production, developed countries are associated, on average, with 21% of the threats, while the same figure for developing countries is 34%.

Socio-economic costs

A large amount of food waste is also associated with social costs, and this constitutes a missed opportunity for Georgia to scale down the problems of poverty and food insecurity. Food waste pushes up the price of food while contributing to food insecurity itself, where food costs amount to a notable share of expenditure in poor families.

Poverty and food insecurity are both challenges for Georgia. World Bank data suggests that the prevalence of severe food insecurity in 2019 reached 9.5% of the Georgian population.[21] A household is classified as severely food insecure when ''at least one adult in the household has reported to have been exposed, at times during the year, to several of the most severe experiences… such as to have been forced to reduce the quantity of the food, to have skipped meals, having gone hungry, or having

[21] World Development Indicators. Last updated 16/12/2021.

to go for a whole day without eating because of a lack of money or other resources".[22] Thus, food waste on the one hand is a forgone opportunity to support poor families, and on the other hand it leads to their limited access to food (as a result of lower quantities and higher food prices).

As such, the existence of significant wastage intensifies the problem of malnutrition. Malnutrition has three main forms: a) undernutrition; b) overweight and obesity, and c) micronutrient deficiencies. Often, these forms coexist, creating what is referred to as the "triple burden of malnutrition" (FAO, 2018). According to the latest available data:

- The prevalence of undernutrition in 2019 was 8.7% of Georgian population.[23]
- The prevalence of overweight individuals (modelled estimate, % of children under 5) was 7.6%.[24]
- The prevalence of anaemia among women of a reproductive age (% of women, aged 15-49) reached 27.5% in 2019.[25]

Wasting food when the country exhibits a higher level of poverty and food insecurity is quite simply a lost opportunity. In 2020, 21.3% of the Georgian population were living under the absolute poverty line. Most people under the absolute poverty line live in the country's rural areas – 27.5% of the rural population are below 17 years old, and 26.4% of those aged 0-17 fell under the absolute poverty line in 2020. The COVID-19 pandemic has also worsened this situation, leading to an increase in the share of the population living under the poverty line. Reducing food waste might consequently help increase access to food for the undernourished and may contribute to food security (FAO, 2011).

Food wastage equally creates additional costs to society by increasing the expenditure of all actors (including higher disposal costs) involved in the food supply chain – the private sector, the government, charitable organizations, and end consumers. It also results in increased input prices for industries using food as an intermediate product.

In Georgia, as the existing legislative framework does not encourage food donation, and charity organizations have to buy food themselves, food waste is associated with all the aforementioned negative effects and it results in higher costs for these organizations. The same is true for local budgets, as some municipalities finance the provision of free meal programs for socially disadvantaged people. In total, the five largest cities (Tbilisi, Batumi, Kutaisi, Rustavi, and Zugdidi) spent over 24.7 mln. GEL on such programs in 2020, and this expenditure trend has been increasing over the years.[26]

The importance of food waste reduction in the 2030 Agenda for Sustainable Development

Food loss and waste are addressed within the UN Sustainable Development Goal (SDG) 12, to ensure sustainable consumption and production patterns. While target 12.3 explicitly states: "by 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along the production and supply chains, including post-harvest losses."[27] Georgia declared all 17

[22] World Bank. World Development Indicators. Definition of the prevalence of severe food insecurity in the population (%) indicator.
[23] The prevalence of undernourishments is the percentage of the population whose habitual food consumption is insufficient to provide the dietary energy levels required to maintain a normal active and healthy life.
[24] The prevalence of overweight children is the percentage of children under five whose weight for their height is more than two standard deviations above the median for the international reference population of the corresponding age, as established by the WHO's new child growth standards, released in 2006.
[25] The prevalence of anemia among women of reproductive age refers to the combined occurrence of both non-pregnant women with hemoglobin levels below 12 g/dL and pregnant individuals with hemoglobin levels below 11 g/dL.
[26] Authors' calculations based on the local budgets of Tbilisi, Rustavi, Batumi, Kutaisi, and Zugdidi.
[27] https://sdgs.un.org/goals/goal12

SDGs to be national priorities in 2017, and it finalized the process of nationalizing the SDGs and adjusting them to the local conditions and context in 2019. Nevertheless, the fact is that target 12.3 has not been nationalized and the country is committed to only one of eleven targets, namely 12.8 – "…by 2030, ensure that people of Georgia have the relevant information and awareness for sustainable development and lifestyles in harmony with nature."[28] Local food waste reduction could still contribute towards environmental sustainability and the achievement of the SDGs overall. Therefore, not addressing the problem of wastage will prove to be a constraint in achieving the SDGs in Georgia.

The proper management of food loss and waste is closely related to and can contribute towards the other nationalized targets, particularly to the following:

Goal 2 – End hunger, achieve food security and improved nutrition, and promote sustainable agriculture. A reduction in FLW would contribute to improved efficiency in agricultural production, and consequently food and nutrition security (HLPE, 2014). Additionally, reducing the amount of wasted food is a prerequisite for the promotion and achievement of sustainable agriculture. The following national targets are closely related to food waste:

> 2.2 "By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and addressing the nutritional needs of adolescent girls, pregnant and lactating women and older persons."
>
> 2.4 "By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality."
>
> 2.c "Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility."

Goal 6 – Ensure the availability and sustainable management of water and sanitation for all. The demand for freshwater resources is increasing at an unsustainable rate globally, and water used for agricultural production constitutes one of its greatest pressures (FAO, 2015). As food waste is associated with a significant water footprint, a reduction of food waste would lead to "improved water-use efficiency in the agriculture sector and mitigate risks of water scarcity. In addition, reducing FLW would make more sustainable use of resources thereby putting less pressure on ecosystems, including aquatic and other water-related systems" (Wieben, 2015). Thus, the following national target is closely related to food waste:

> 6.1 "By 2030, achieve universal and equitable access to safe and affordable drinking water for all."

Goal 15 – Protect, restore, and promote the sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss. Food production is a major competitor "for land, leading to land degradation, deforestation, and loss of biodiversity" (Wieben, 2015). The loss of land, water, and biodiversity, as well as the negative impacts of climate change related to food waste are a huge cost to society. A reduction of waste would result in the more efficient use of land and lessen its impact on the country's biodiversity. As such, food waste can contribute to the fulfilment of the following national targets:

[28] https://sdg.gov.ge/goals-details-inner/12/1

15.1 “By 2030, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.”

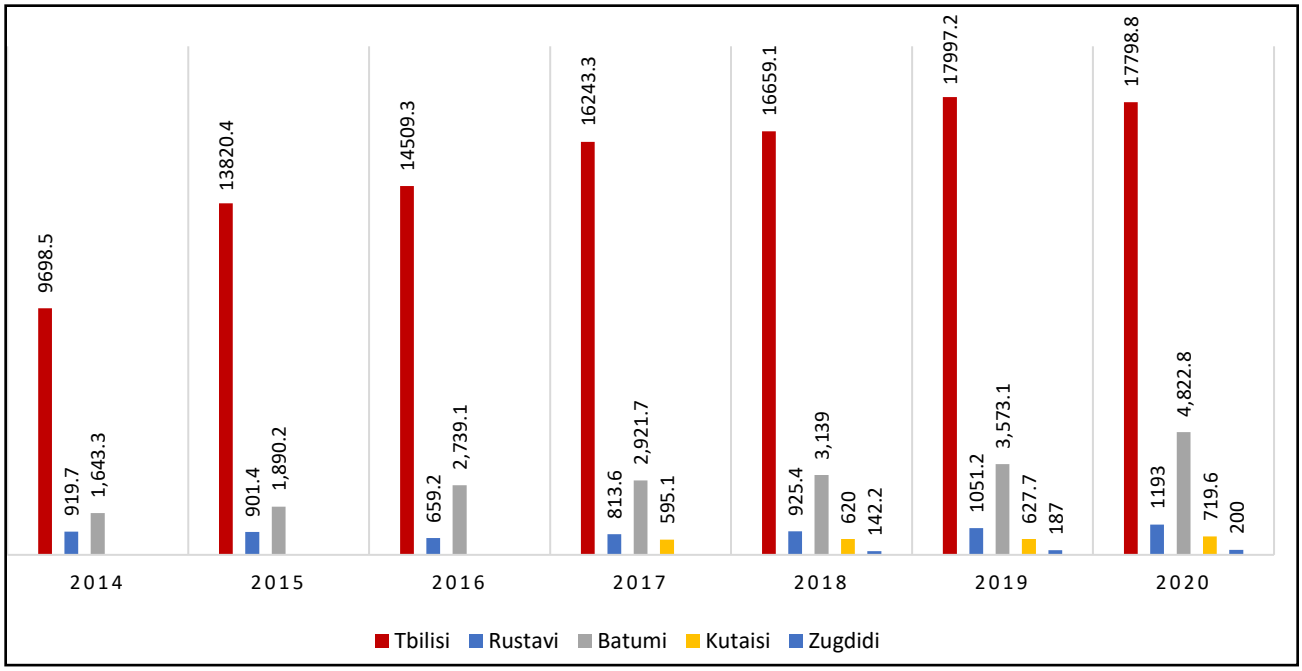
15.5 “Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.”

3.3 BACKGROUND TO THE BASELINE SCENARIO

The baseline scenario, as described in this section, reveals the major tendencies characterizing the issue of food waste in Georgia. The problem has two main dimensions, it concerns food waste management and resource efficiency issues, while equally considering social factors like food security.

Municipalities in Georgia provide free meal programs for socially disadvantaged people (SDP). In total, there are 62 canteens serving SDPs in Tbilisi, compared to the four and six canteens that serve socially disadvantaged individuals in Rustavi and Batumi, respectively. The total expenditure on municipal canteens in the largest Georgian cities demonstrates an increasing trend over time (Figure 1). This holds true for five of the six largest cities in Georgia – Tbilisi, Batumi, Kutaisi, Rustavi, and Zugdidi – while the data for Gori is unavailable for each of the years provided below. Due to having the most beneficiaries, Tbilisi historically spends notably more on municipal canteens compared to other cities: 17 million GEL in 2020, compared to 4 million GEL spent in Batumi, which holds second place.

Figure 1. Total expenditure on municipal free canteens (ths. GEL)

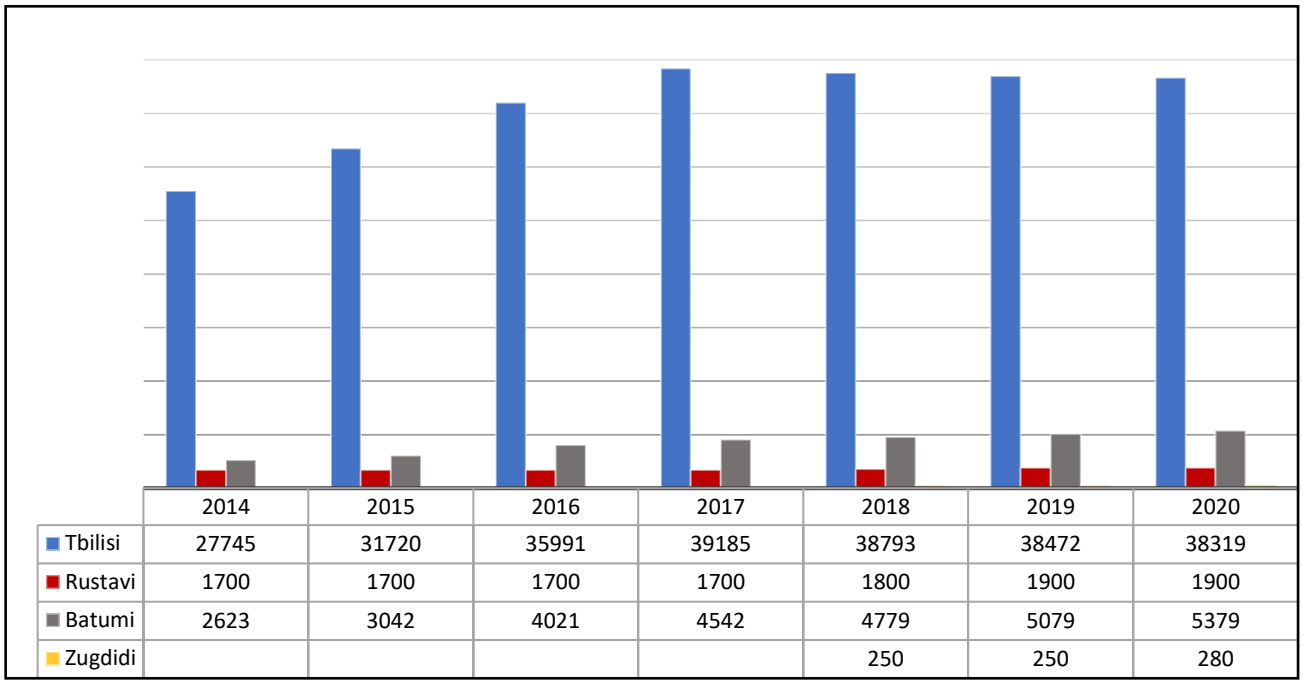


Source: Budget of Tbilisi, Rustavi, Batumi, Kutaisi, and Zugdidi

In Tbilisi, the number of beneficiaries rose until 2017 and then started to decline slightly, while in other large cities this trend has increased over time (Figure 2). Unsurprisingly, as the most populated city in Georgia, Tbilisi also leads in terms of the number of beneficiaries. Throughout 2020, 38,319

beneficiaries in total were served in the capital's municipal canteens, compared to 5,379, 1,900, and 280 beneficiaries served in Batumi, Rustavi, and Zugdidi, respectively.

Figure 2. Number of beneficiaries of the free meals programs



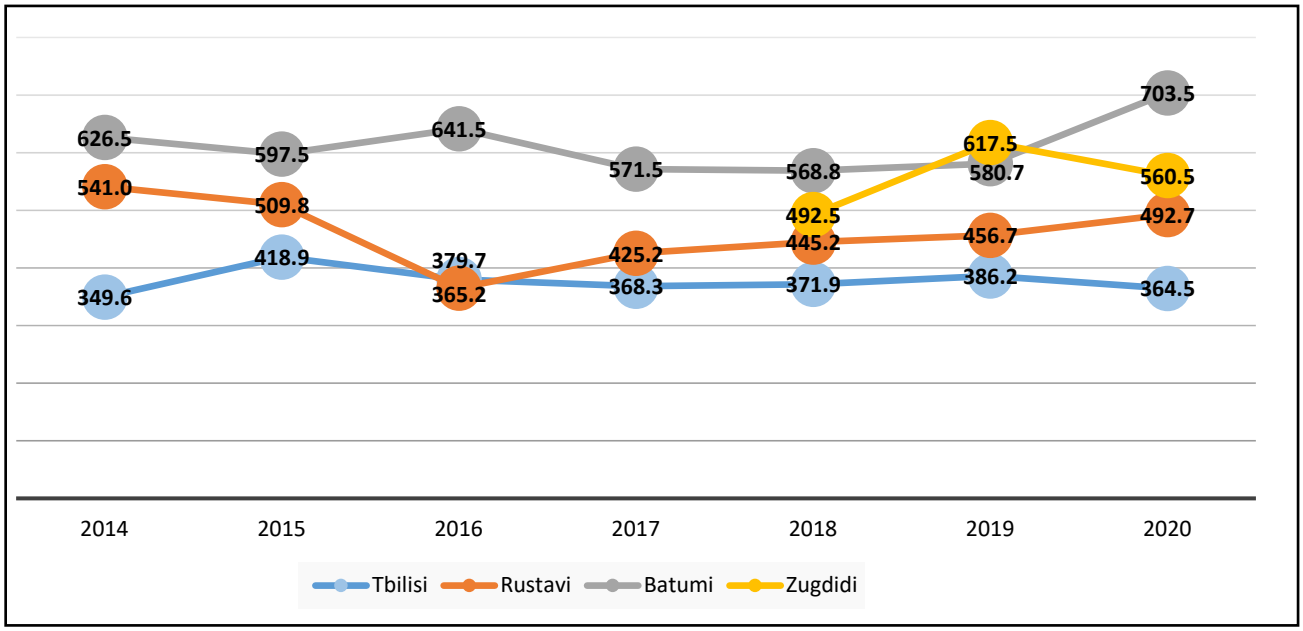
	2014	2015	2016	2017	2018	2019	2020
Tbilisi	27745	31720	35991	39185	38793	38472	38319
Rustavi	1700	1700	1700	1700	1800	1900	1900
Batumi	2623	3042	4021	4542	4779	5079	5379
Zugdidi					250	250	280

Source: Budget of Tbilisi, Rustavi, Batumi, and Zugdidi

The real annual spending per person per city does not vary much over the years (Figure 3).[29] For example, in Tbilisi's canteens, an average of 364 GEL was allocated per person in 2020, which corresponds to less than 1 GEL per individual per day. The variance of the per person budget over the years has always been lowest in Tbilisi. Over the last seven years, this number has remained relatively stable. The greatest funding allocated per person in a single year was 419 GEL in 2015 and the least was 350 GEL in 2014. Tbilisi spends less per person than other municipalities, which can be explained by the significant number of beneficiaries and economies of scale. For the other cities, funding is clearly more volatile than in the capital. For example, Rustavi's real spending per person fell by 28% in 2016 because of reduced funding that particular year, however it constantly increased over the following years. There was a 21% increase in funding per beneficiary in Batumi in 2020, due to an increase in the allocated budget for the governmental program (the number of beneficiaries did not change drastically from 2019 to 2020). Although the per-beneficiary spending in Batumi and Rustavi increased in 2020, in Zugdidi and Tbilisi, this number fell.

[29] To calculate the spending per year, we have used real spending in 2014 terms. To estimate this, we adjusted the nominal spending by the corresponding year's CPI.

Figure 3. Real spending in municipal canteens per person per year in 2014 terms (GEL)



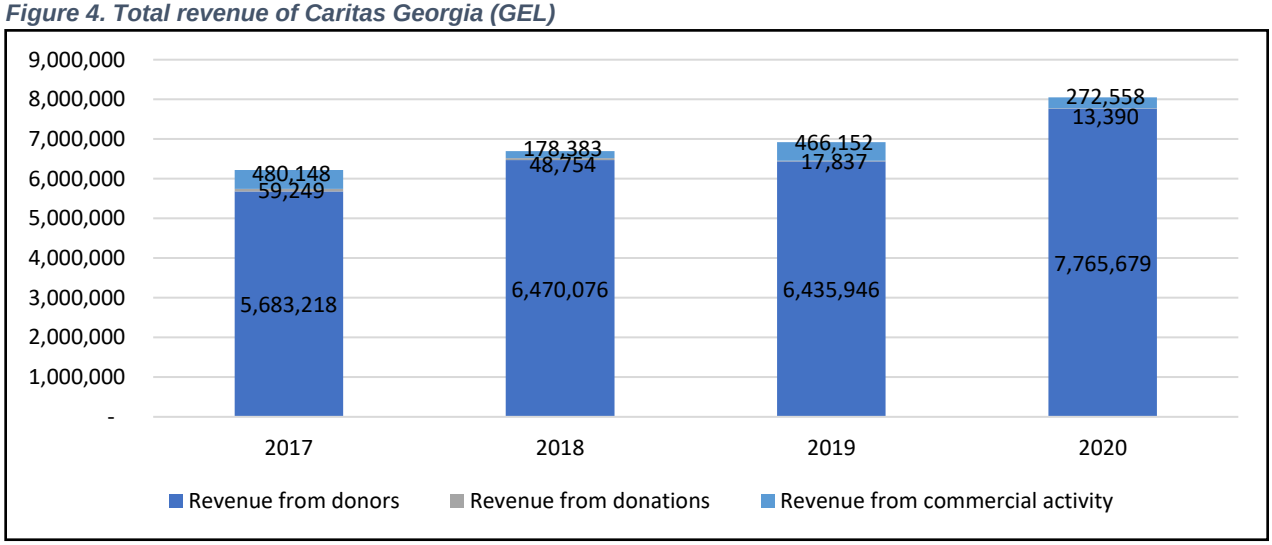
Source: Authors' calculations

Food programs of charitable organizations

In addition to municipal canteens, charity organizations also contribute to providing socially disadvantaged groups with basic nutrition. Aggregated information on the spending of charitable organizations is not available. However, there is some public information on particular charities like Caritas Georgia, the International Humanitarian Union Catharsis, and the Chernovetskyi fund.

Caritas Georgia, a charitable foundation, has humanitarian canteens in Tbilisi and Kutaisi. These canteens operate on food and cash donations, and serve the vulnerable, notably the elderly, people living below the poverty line, large families, as well as children and young people. The revenues of the foundation have been steadily increasing over the last four years (Figure 4).

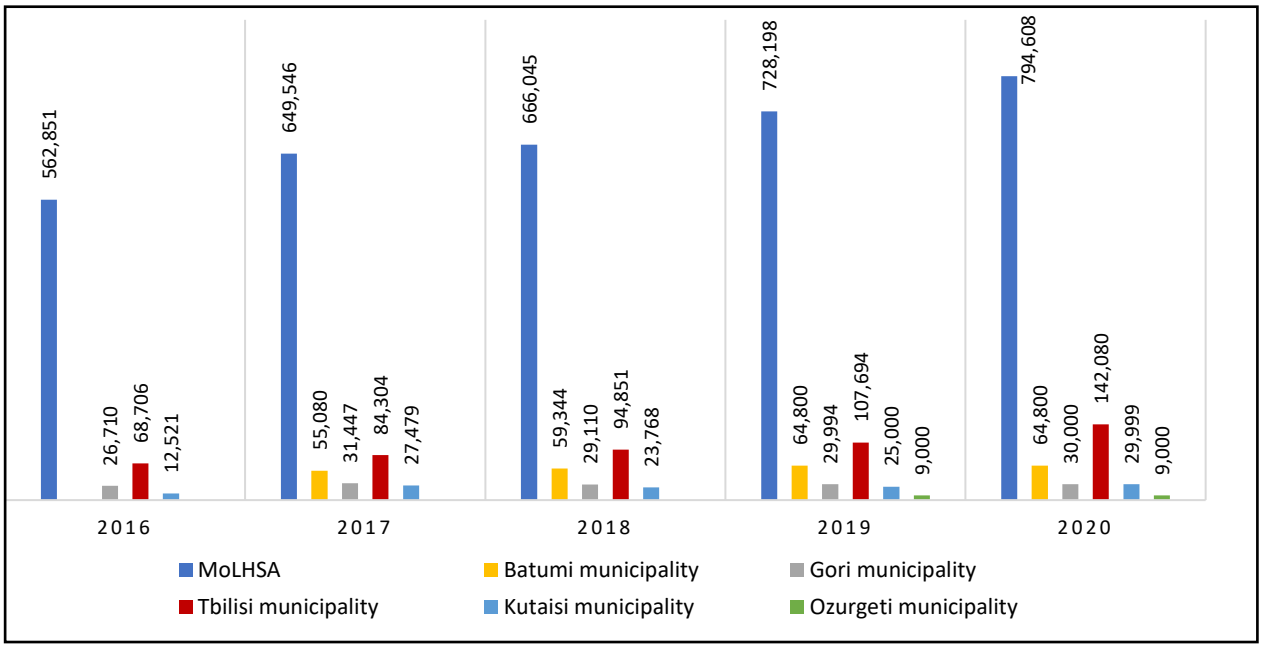
Figure 4. Total revenue of Caritas Georgia (GEL)



Source: Caritas Audit Report

The main source of revenue for the foundation fall on its donors. Funding from the Ministry of Health, Labour and Social Affairs of Georgia (MoLHSA) and directly from municipalities amounts to 13-14% of their total revenue (Figure 5). While their commercial activity (income from rent, medical services, carpentry school, etc.) adds up to 3-8% of the total revenue of the foundation.

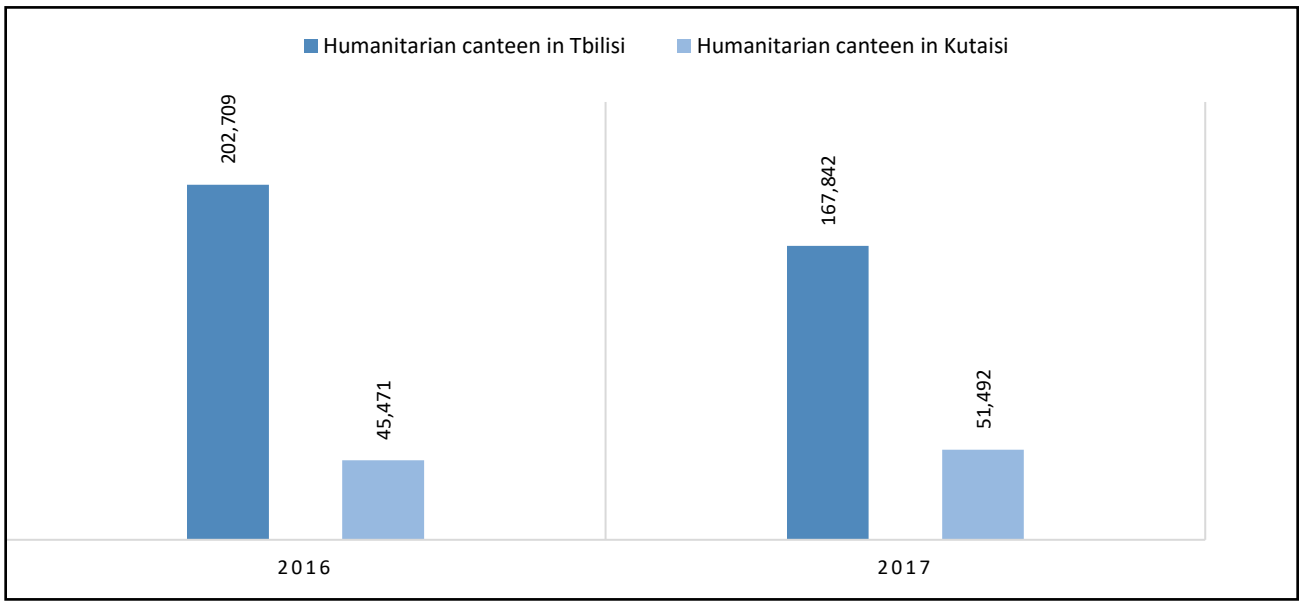
Figure 5. Revenue of Caritas Georgia from MoLHSA and municipalities (GEL)



Source: Caritas auditor's report

In Tbilisi, the foundation's canteens serve 410-430 individuals per day, at a cost of 203 thousand GEL in 2016 and 168 thousand in 2017, which is roughly 5% and 3% of the total revenue of the foundation in each respective year (Figure 6). As for the canteen in Kutaisi, it serves around 170 beneficiaries per day, and cost 45 thousand GEL in 2016 and 51 thousand in 2017 – 1% of the revenue in both years. Unfortunately, the expenditure for these canteens has not been made publicly available in more recent years.

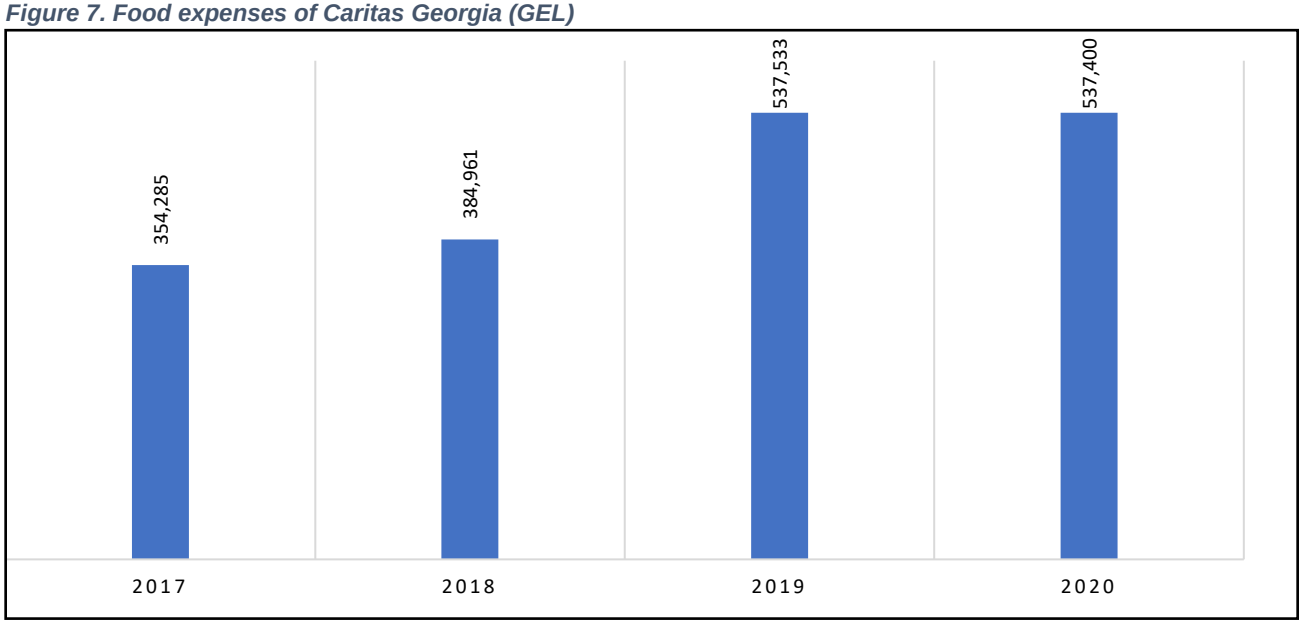
Figure 6. Expenditures of humanitarian canteens in 2016-2017 (GEL)



Source: Caritas auditor's report

Caritas implements other free meals programs as well. For example, in December 2016, the foundation held a food distribution program in Tbilisi, Kutaisi, Gori, Rustavi, and Ozurgeti. The budget for this program was 40,000 GEL and it covered 801 beneficiaries.[30] In addition, between 2018 and 2019, three times a week they served 80-90 portions of soup to homeless people. Notably, the foundation spent a significant amount of capital on food expenses on these types of programs (Figure 7). Caritas Georgia's food expenses were rising over the last recorded four years, although in 2020 there was a minor decrease.

Figure 7. Food expenses of Caritas Georgia (GEL)



[30] The beneficiaries of that particular program were people with limited ability to live independently as a result of a temporary or permanent physical or mental illness; people who have a chronic illness or are in the process of recovery; lonely elderly people who suffer from a lack of communication; and socially disadvantaged people living in rural areas.

Source: Caritas auditor's report

Similar to Caritas Georgia, the International Humanitarian Union Catharsis provides free meals to susceptible elderly people. Samadlo Dinery has been operating since 1990 and serves 430 socially vulnerable individuals every day. By the end of 2020, more than 3.11 million services had been provided. In 2020 alone, the free canteen served 80,000 beneficiaries. Additionally, the Union offers free meals to everybody who arrives at Catharsis on specified days; 5-6 days before each event, 10 road flags offering "lunch for everyone" (sometimes banners also bear a sponsor's logo) are hung in the streets of Tbilisi in areas well-known to socially vulnerable Tbilisians. In addition, the Georgian Public Broadcaster has run a social video about the project. The scheme itself has been implemented since 2002, and to date more than 90 such events have been held, while at each event, 1,100-2,000 beneficiaries are served. In 2019, eight of these events were implemented and the budget for each was 5,000-7,000 GEL.

In 2018-2019, the Chernovetskyi fund also ran a free canteen program in Kutaisi. In 2019, the total cost of the canteen was 113,426 GEL, out of which 26,812 was spent on food expenses. The canteen served 400 beneficiaries every day. However, it closed in April 2019, and the funds were transferred to other social projects.

Food insecurity in Georgia

As previously highlighted, the number of beneficiaries of municipal canteens has been slowly increasing over time. However, to see the whole picture, it is necessary to comprehend the total number of individuals that are potentially eligible for food assistance. In every region, the number of people receiving subsistence allowance (with a social score of 0-30,000) increased in 2020, most probably due to the pandemic (Table 2). These are the most socially vulnerable people, and the most likely to participate in free canteen programs. It is notable that the number of people with a social score of less than 30,000 is not significantly different to the number of free canteen beneficiaries: in Tbilisi it was around 38,319 in 2020, while the number of the most socially disadvantaged individuals was 47,151; and in 2019, the numbers were 38,415 and 38,472, respectively. For Batumi, in 2020, the numbers were 5,379 and 4,924, and for Rustavi 1,900 and 2,515, respectively. As these statistics reveal, the number of people with the lowest social score coincides with the beneficiaries of canteen programs. These programs, in theory, are directed to all people who are socially disadvantaged. According to data from the Social Service Agency, the people receiving targeted social assistance are around four times more numerous than those belonging to the lowest score group (524,598 socially disadvantaged individuals in total, and 142,869 individuals in the lowest score group, as of December 2020).[31] Therefore, clearly, there is a room to expand the coverage of municipal canteens as they could potentially serve more people.

Table 2. Number of people receiving subsistence allowance with a social score of 0-30,000, by region and year

Regions	2016	2017	2018	2019	2020
Tbilisi	38,860	48,082	46,900	38,415	47,151
Guria	4,931	3,895	3,921	3,565	4,039
Racha-Lechkhumi-Kvemo Svaneti	4,162	3,671	3,841	3,660	4,187
Kakheti	15,020	13,704	12,582	9,967	12,679
Imereti	18,214	12,868	12,332	10,010	12,261

[31] http://ssa.gov.ge/index.php?lang_id=&sec_id=1540

Mtskheta-Mtianeti	4,763	4,680	4,223	3,368	4,124
Samegrelo-Zemo Svaneti	14,366	15,586	16,110	16,330	19,387
Samtskhe-Javakheti	2,601	2,604	2,486	2,335	2,658
Kvemo Kartli	12,171	13,172	13,260	13,076	16,486
Shida Kartli	13,283	11,560	10,551	8,623	10,386
Adjara AR	8,425	8,059	7,943	7,730	9,511
Total	136,796	137,881	134,149	117,079	142,869

Source: Social Service Agency

Food insecurity can be clearly identified by incidences of malnutrition, excess weight or obesity, and anemia, which might all have significant effects on an individual's health. To analyze the problem, the RIA team investigated the share of the Georgian population suffering from malnutrition. An alarming tendency is observable in the country. According to data obtained from the FAO, in 2011 Georgia (4%) was well behind the world average population (10%) suffering from undernourishment, although, by 2020, Georgia moved closer to the global average – both the world average and Georgia's three-year average finds an undernourished population of 9% (Figure 8). For comparison, the same statistic for Eastern European countries stands at 2%, while for lower-middle income countries it is around 13%. However, the case for Georgia is particularly disturbing, as unlike the other subgroups, the country has been seeing an upward trend (Table 3).

It is also valuable to analyze the effects of malnutrition on separate groups of people to consider how the impacts differ. Firstly, children are one of the most vulnerable groups, and the most likely to be severely affected from a lack of proper nutrition. In 2005, 3% of children suffered from wasting. Since then, this number has been decreasing (it reached 0.6% in 2018), indicating that children are suffering less. The share of children with stunting has also been decreasing in Georgia.[32] The statistic is well below the world average (22%), and it keeps falling annually.

Contrary to the situation in children, the obesity level in older populations (adults 18 and above) is well above the world average (22% of the Georgian population in 2020, compared to 13% around the world). The trend towards obesity is upward sloping for all relevant country groups, yet Georgia's trend is growing faster than others (Table 3).

Observing the data about anemia among women of a reproductive age (15-49), one can note that trends are relatively stable both in the relevant country groups and in Georgia (Table 3). Although a slight increase can be seen in all groups in recent years. It is also significant that the gap between the world average and Georgia has been increasing (the world average is higher).

The data regarding birthweight may also indicate problems with malnutrition. In this statistic, Georgia scores significantly lower than the world average (Table 3). In 2015, 15% of infants born in the world were characterized by low birthweight, while the same value was 5% in Georgia. 5However, the latest trend does not appear promising. Since 2011, the trend has been rising in Georgia, while globally this statistic has been steadily decreasing. This might signal that the gap will soon shrink if nothing changes.

[32] Stunting is low height for age – the indicator measures children up to the age of five, whose height for their age is two or more standard deviations below the median height in the reference population. Stunting is caused by chronic nutrient deficiency or illness.

Table 3. Nutrition related indicators in Georgia

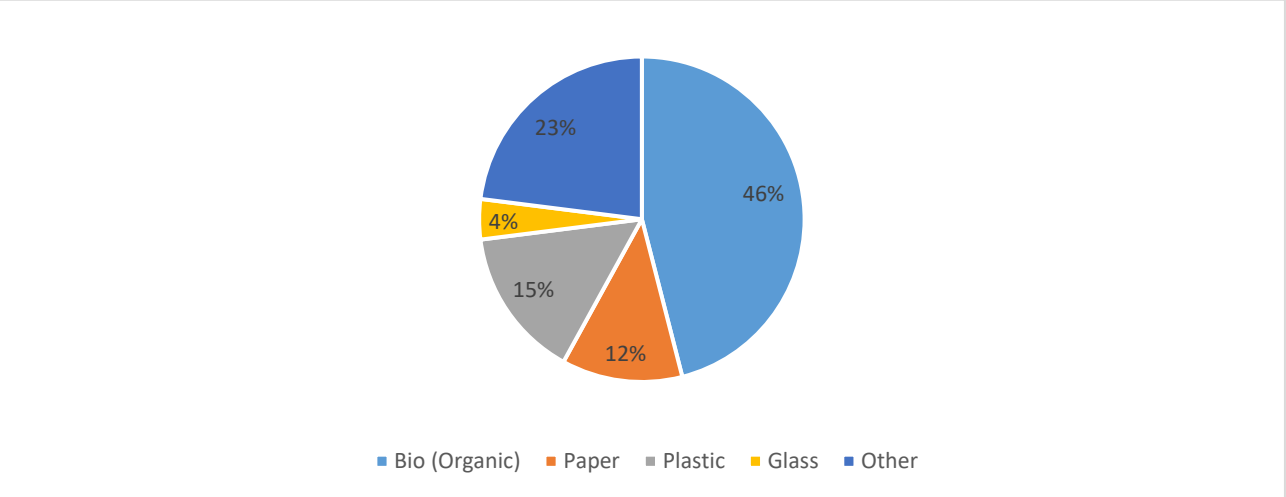
Year	Prevalence of undernourishment (3-year average)	Percentage of children under 5 who are stunted	Prevalence of obesity in the adult population (18 and older)	Prevalence of anemia among women of reproductive age (15-49 years)	Prevalence of low birth weight	Percentage of children under 5 who are overweight (modelled estimates)
2011	4%	10%	17%	27%	6%	15%
2012	5%	9%	17%	27%	5%	14%
2013	4%	9%	18%	27%	5%	13%
2014	5%	8%	18%	27%	5%	12%
2015	7%	8%	19%	27%	5%	12%
2016	8%	7%	19%	27%	5%	11%
2017	8%	7%	20%	27%	5%	11%
2018	8%	7%	21%	27%	5%	10%
2019	8%	7%	21%	27%	6%	10%
2020	9%	7%	22%	28%	6%	10%

Source: FAO, 2022

Food Waste

Food waste has certain indirect effects on nature. Such wastage accumulates in various landfills and forms a significant part of all solid waste. Managing waste is also costly and several negative externalities (for example, emissions) are associated with this excess waste. To study the waste composition in Georgia and the share of food waste, the RIA team checked the World Bank's assessment of Georgia's solid waste sector (2021). From the total amount of solid waste, 46% is organic, including food (the majority of organic waste), together with garden and park waste. The remaining 54% is split between paper, plastic, glass, and other types of refuse (Figure 8).

Figure 8. Solid waste composition in Georgia

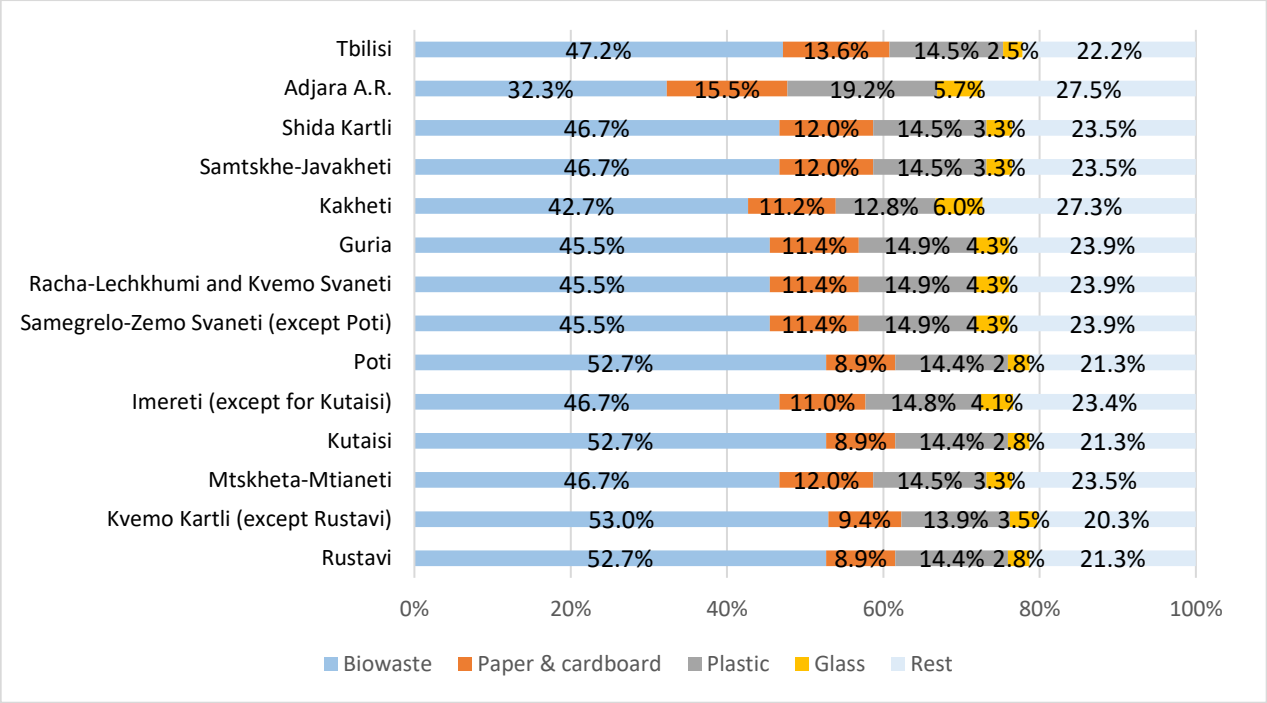


Source: Georgia Solid Waste Sector Assessment Report, 2021

Food waste is one of the largest components of accumulated solid waste, not only in Georgia but also around the world – 44% of solid waste is composed of food and green waste (Kaza et al., 2018). Therefore, careful analysis is important for optimization in the sector. According to one World Bank

study, the share of biowaste (organic waste) in total waste varies across Georgian municipalities and cities. For this study, the World Bank researched four landfills and estimated the distribution of different types of waste in various cities. The highest share of biowaste was registered in Kutaisi, Poti, and Rustavi (52.7% of the total was biowaste), while in the Autonomous Republic of Adjara, the level was found to be the lowest (32%) (Figure 9).

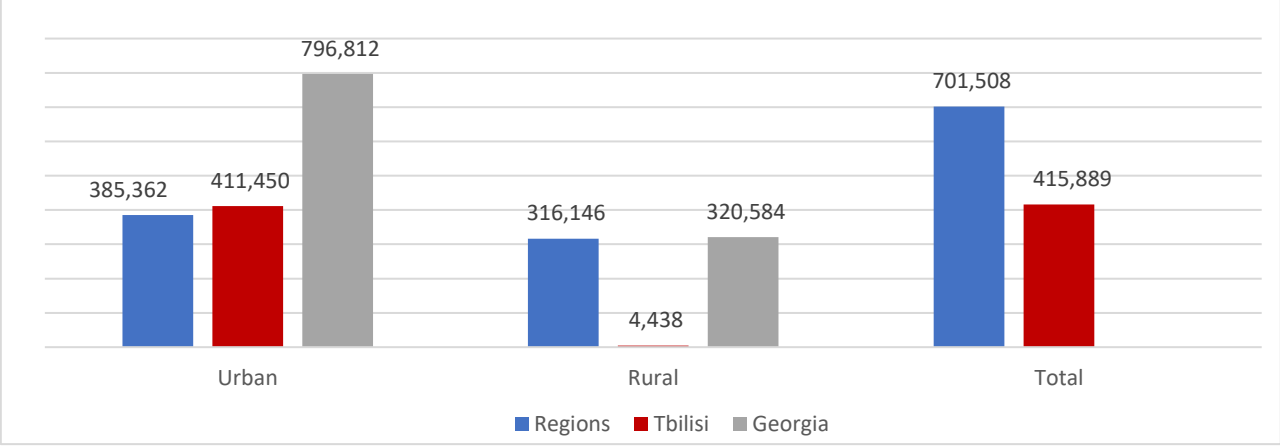
Figure 9. Municipal solid waste composition



Source: Georgia Solid Waste Sector Assessment Report, 2021

Most waste is accumulated within urban areas and, unsurprisingly, Tbilisi is the largest "generator", with more than half of all urban waste and more than one third of total waste deriving from the capital (Figure 10).

Figure 10. Municipal solid waste generation, tons per year



Source: Georgia Solid Waste Sector Assessment Report, 2021

The number of illegal dumpsites in Georgia is equally worth considering. Most of such sites happen to be located outside of Tbilisi. The World Bank assessment identified that most illegal dumpsites are

located in Adjara A.R. (244), Racha-Lechkhumi Kvemo Svaneti (231), and Kakheti (164) (Table 4). In terms of their total area, Kakheti leads with 41.5 hectares (ha) of illegal dumping grounds. The data for Tbilisi is not yet fully available, although on face value illegal dumpsites do not appear to be a notable problem in the capital.

Table 4. Data on illegal dumpsites

Region / City	Closed dumpsites	Existing dumpsites	Approximate area, ha
Adjara A.R.	96	244 small	1.2 ha
		3 large	40 ha, including Batumi dump
Mtskheta-Mtianeti	66	41 (50 according to a UNDP PMS baseline study)	4.4 ha (3.125 ha in the UNDP PMS study)
Shida Kartli	85	26	22 ha
Imereti	144	104 (103 in the UNDP PMS study)	1.7 ha (1.5 ha in the UNDP PMS study)
Racha-Lechkhumi Kvemo Svaneti	53	231	4.9 ha
Kakheti	66	164	41.5 ha
Samegrelo-Zemo Svaneti	131	156	1.9 ha
Guria	45	Unknown	7 ha
Samtskhe-Javakheti	80	51	17.1 ha
Kvemo Kartli	88	24 (22 in the UNDP PMS study)	17.6 ha (16.2 ha in the UNDP PMS study)
Tbilisi	Not available	9, including the Gldani C&DW disposal site	Not available

Source: Georgia Solid Waste Sector Assessment Report, 2021

Tbilisi generates more waste per capita per day than any other region in Georgia – 1 kg of waste per capita is generated per day in Tbilisi, while in the regions it equals 0.78 kg. Households dispose of 0.75 kg per capita per day in Tbilisi, while companies and institutions discard a third of that. A similar picture can be observed in the regions, where households are also the primary waste generators (Table 5). Overall, according to World Bank estimates, 576,588 tons of food waste were generated in Georgia in 2019; 70% from households, 19% from food services, and the remaining 11% from retail (Table 5). The estimate of total solid waste generated in Georgia in 2019 amounted to 1,117,396 tons, therefore the share of food waste is estimated to be around 52% of this total.

Table 5. A summary of waste generation rates

Source	Registered population	Registered and unregistered[33] population
Tbilisi	1.0kg/cap/day	0.86kg/cap/day
Households	0.75kg/cap/day	0.645kg/cap/day

[33] There are 135,440 unregistered people who are not included in the Geostat statistics.

Companies, institutions, industries	0.25kg/cap/day	0.215kg/cap/day
Regions	0.78kg/cap/day	
Households	0.585kg/cap/day	

Source: Georgia Solid Waste Sector Assessment Report, 2021

Households equally lead in food waste generated per capita (Table 6).

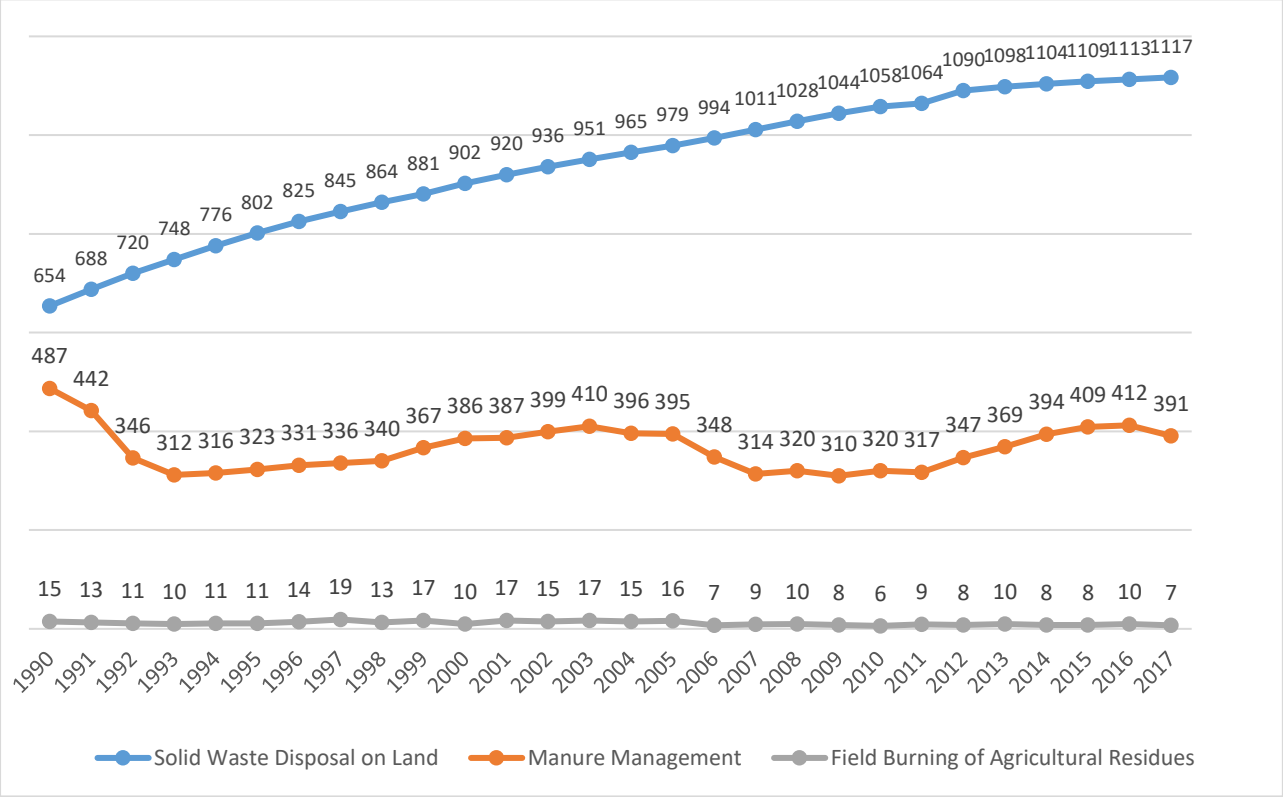
Table 6. Total estimated quantity of food waste in Georgia

Source	kg/capita/year	Tons/year
Household estimate	101	403,573
Food service estimates	28	110,504
Retail estimates	16	62,511
Total	-	576,588

Source: Food Waste Index Report 2021

Poor food waste management practices also cause negative externalities, most notable of which is the emission of pollutants into nature. As Figure 11 shows, overall, emissions from waste in terms of gigagram (Gg) CO_2 equivalent are increasing over time, and most of this increase originates from waste directly disposed onto land (Figure 11). As identified above, food represents a substantial share of this waste.

Figure 11. Emissions from the agriculture and waste sectors from 1990-2017 (Gg CO_2-eq.)



Source: Georgia Solid Waste Sector Assessment Report, 2021

In summation, the need for additional resources for food donation in municipal canteens and charity organizations clearly still exists, where the number of vulnerable people lags behind the accounted number of beneficiaries – only one fourth of potentially eligible people happen to be the beneficiaries of such entities. Food waste also represents a substantial share of the solid waste disposed of in Georgia, which could indicate inefficient waste management practices. The sector equally contributes to the increased emission of pollutants (GHGs), thus magnifying their negative effects. Finally, Georgia struggles with providing enough nutrition for vulnerable groups, with the problem of undernourishment being exacerbated over time. This is particularly alarming as malnutrition affects infant health and can contribute to several long-term health problems. The analysis of the baseline scenario therefore demonstrates that there is a mismatch between the available resources and the needs of potential beneficiaries. Thus, a forward-looking policy would help contribute to solving the problems associated with food waste, resource inefficiency, and food insecurity.

4. OBJECTIVES

4.1 GENERAL OBJECTIVES

The general objective of this policy intervention is to:

- Prevent and reduce food waste, the associated negative social, economic, and environmental impacts, and to improve food security.

4.2 SPECIFIC AND OPERATIONAL OBJECTIVES

The specific objectives of the policy intervention are to:

- Reduce poverty and increase food security by facilitating the efficient allocation of food to the poor.
- Limit the negative effects on the environment and natural resources by reducing food waste and prolonging the lifecycle of food.
- Reduce the costs of actors in the food supply chain by improving food waste prevention and management practices.
- Increase the efficiency of public spending on the provision of food to the poor.
- Increase public awareness on food waste prevention, reduction, management, food recovery, and redistribution.

Table 7. Summary of the objectives

OBJECTIVE	INDICATOR
Reduce poverty and increase food security by facilitating the efficient allocation of food to the poor.	
Operational Objective 1.1. Increased redistribution of food through donations to the poor	Share of donated food in charity organizations
	Share of donated food in municipal cafeterias
	Amount of donated food from retail business to the poor
	Quantity of food received by intermediary operators handling donations

Operational Objective 1.2. Reduce the prevalence of severe food insecurity	Average dietary energy supply adequacy (%)
	Prevalence of undernutrition in the population (%)
	Prevalence of overweight population
	Prevalence of anemia among women of reproductive age
Operational Objective 1.3. Ease the burden on food expenditure for poor families	Share of beneficiaries in extreme poverty receiving food through charity organizations and municipal cafeterias
	Share of family budget spent on food by vulnerable families
	Satisfaction level of beneficiaries receiving food through charity organizations, municipal cafeterias, or other intermediaries Share of food expenditure in total expenditure over years (source: survey of beneficiaries) Composition of the target group by age, gender, region
Limit the negative effects on the environment and natural resources by reducing food waste and prolonging the lifecycle of food.	
Operational Objective 2.1. Reduce food waste and associated greenhouse gas (GHG) emissions	Per capita food waste
	Per capita food waste by source of waste (HoReCa, household, retail, etc.)
	Food waste share in total waste
	Greenhouse gas (GHG) emissions associated with food waste
	Morphological composition of food waste
Operational Objective 2.2. Reduce water, land occupation / degradation, and potential biodiversity footprint	Cultivated areas producing domestically sold food A measure of the general impact on biodiversity from cultivation in such areas A measure of the general impact on water quality from cultivation in such areas A measure of the general impact on land quality from cultivation in such area
Operational Objective 2.3. Reduce waste generation through improved packaging and shelf life	Elaboration of detailed guidelines for packaging and labeling Share of companies fully or partially complying with the guidelines for packaging and labeling

Reduce the costs of actors in the food supply chain by improving food waste prevention and management practices.	
Operational Objective 3.1. Incentivize food donations for retail organizations	Amendment in the respective legislation to make food donation cheaper compared to disposal in the retail sector Development of a detailed guideline for food donation Share of potentially affected companies that fully pay taxes or receive subsidies for food donation Total taxes and subsidies associated with food donation Evolution of the indicator of policy change (change in taxation regime/subsidies) over time Ratio of food donated to food waste
Operational Objective 3.2. Encourage companies to adopt sustainable practices for food waste management	Number of companies using innovative approaches for food waste management (e.g., intelligent trashcans, self-service equipment, landspreading, commercial composting, etc.)
	Share of companies with declining amounts of food wasted
Increase the efficiency of public spending on the provision of food to the poor.	
Operational Objective 4.1. Increase the quality and cost effectiveness of public food donation services	Cost to the public budget per actual beneficiary Number of actual beneficiaries Number of potential beneficiaries Nutrient composition of daily food in public cafeterias Number of cafeterias, their capacity, and their regional distribution The degree of satisfaction and the quantity/level of nutrition of distributed food
Increase public awareness on food waste prevention, reduction, management, food recovery, and redistribution.	
Operational Objective 5.1. Ensure that broader society has relevant information and awareness about sustainable food waste prevention, reduction, management, and food recovery and redistribution	Information for sustainable food waste management mainstreamed in: (a) national education policies; (b) curricula; (c) teacher training Organization of increased campaigns for awareness around the importance of food waste management

	Consumer awareness level on the importance and methods of reducing food waste, and its damage and costs (estimates based on surveys) Number of companies applying sustainable food management practices

5. POLICY OPTIONS

The following RIA policy options represent potential actions that could tackle the problem of food waste in Georgia, including those activities suggested by the draft law on food loss and waste (Option 1). These options were derived from a literature review and an analysis of international practices, as well as interviews with the relevant stakeholders. The following policy options have been considered within this analysis:

- Option 0 (status quo) – No policy change.
- Option 1 – Tax incentives and other support measures to reduce food waste.
- Option 2 – Tax incentives to reduce food waste.
- Option 3 – Municipalities food donations to reduce food waste.

Before the final options were selected, two other policy options were additionally discussed, although they were discarded for various reasons. The first discarded option included the design of a food bank – a charitable organization that distributes food for those in need to avoid hunger; usually arranged via intermediaries like food pantries, cafeterias, etc. This option was rejected because, according to the Agrarian Issues Committee of the Parliament, there are a limited number of market players in the food donation chain due to the size of Georgia, thus adding one more body into that chain would be inefficient. Therefore, given the size of the country, the stakeholders did not see the need for establishing a food bank. Moreover, due to further potential investment needs, parliament proposed replacing the traditional food bank with a hybrid model of Charitable Food Organizations.

The other discarded option related to the development of various support measures for reducing FLW as proposed by the draft law, but without offering tax exemptions to FBOs. This option was discarded by the Agrarian Committee because they perceive tax incentives to play a vital role in motivating FBOs to donate food. Therefore, without tax exemptions, the draft law would not reach its objective of reducing food waste.

In the following section, there is a brief description of every policy option analyzed, including the major characteristics and risks associated with each.

Option 0 (status quo) – No policy change

The baseline scenario is characterized with limited, ad hoc food donations from retailers to charitable organizations, which then distribute these resources to beneficiaries. Irregular and limited food donations often result in a lack of food provided to socially vulnerable groups.

Free meals are provided not only by cafeterias in charitable organizations, but throughout municipal cafeterias. Currently, municipalities purchase food for municipality-led cafeterias themselves and

they have little experience in managing food donations from retailers; municipal administrations announce tenders and pay private companies to supply food to the beneficiaries.

According to one private sector representatives, the main reason behind limited donations is the present tax regime. Under Article 98 of the Tax Code of Georgia, taxpayer food donations to charitable organization should not exceed 10% of their net income from the previous calendar year (if exceeded, the surplus is considered a free delivery of food and is taxed). If this criterion is met, the donation is free of profit tax, but value added tax (VAT) still applies. In light of the existing tax regime, it is less costly for retailers to write off rather than to donate food. Another issue is that the tax regulations presently limit companies with a net loss from donating food.

As of today, there are no guidelines for food recovery or redistribution to ensure safe food donation, while supply chain actors and households lack awareness of good waste management practices.

The status quo is associated with the following disadvantages:

- Retailers' low motivation to donate food, resulting in high food waste.
- Insufficient amount of food for the poor, resulting in poverty and food insecurity.
- Negative impact on the environment and natural resources due to an increasing amount of food waste.
- High costs for actors in the food supply chain due to wasted resources during food production, which are eventually written off instead of being donated to the poor.
- Low public awareness on food waste prevention, reduction, management, and food recovery and redistribution, resulting in unsustainable production and consumption practices.
- Due to the absence of liability verification and food safety regulations at the stages of food donation, restoration, storage, and redistribution, there is ambiguity regarding liability over the safety of donated food.

Risks

If the current situation is preserved, there is the risk that the amount of food waste will increase over time, thus causing monetary losses to the economy, increasing the environmental damage, and reducing the amount of food for vulnerable populations. The latter may still prove a more pressing issue in light of the COVID-19 crisis and the war in Ukraine.

There is a risk that greenhouse gas (GHG) emissions will also increase, along with the degradation of water and land resources, and negative impacts on biodiversity.

If the current situation is preserved, the unsustainable production and consumption of food is likely to continue.

There is finally the risk that donated food is unsafe, as there are no clear food safety regulations at the stages of food donation, restoration, storage, or redistribution.

Option 1 – Tax incentives and other support measures to reduce food waste

This policy option advocates for the adoption of the draft law. This draft law aims to create incentives to reduce food waste through the promotion of food donation and redistribution. The draft law covers the following areas: taxation, food safety and hygiene, product liability, food durability, and date marking.

The draft law envisages the donation and redistribution of food to be free of taxation. It also recommends specific amendments to the Tax Code of Georgia. These amendments would primarily relate to the creation of fiscal instruments for stimulating food donation.

The law regulates food safety requirement in accordance with the precepts of the Food Products/Animal Feed Safety, Veterinary and Plant Protection Code and the legislation of Georgia. The technical regulation of the law (to be drafted) sets the following requirements:

- Specific requirement for food safety and quality for food donation, restoration, storage, and redistribution.
- Rules and procedures for the delivery of surplus food (accounting, list of mandatory information, safety and quality, etc.) among participants in the food supply chain.
- Control procedures relating to the shelf life and, in particular, to the "best-before" expiration date of food. The goal is to ensure that good quality edible food is not wasted due to excessively limiting procedures.
- Procedures and lists of food products that can be used and distributed.
- Rules for good hygienic practices.

Besides the establishment of such regulations, the state is also responsible for developing and implementing programs that will encourage the reduction of food waste and loss. The state is equally liable for the creation of a database of recognized charitable organizations and the development of guidelines for the management and disposal of food waste. Furthermore, the draft law highlights that the state will encourage scientific research, technological development, and innovation to reduce food loss and waste, especially in terms of product shelf life and packaging.

The activities defined in this option affect charitable organizations, whose main function is to collect, restore, store, and to redistribute surplus donated food to other food charities or directly to beneficiaries. Food charities are obliged to: redistribute safe surplus food in accordance with the established rules and to comply with the requirements of all food safety regulations, as established by the law.

The law tackles the issue of liability. In general, a retailer or provider of donated food will not be liable for the safety requirements, set by Georgian law and legislation, of surplus food delivered to a food charity or final beneficiary.

The draft law also envisions the launching of awareness campaigns to be funded and conducted either by the central government or local municipalities. They are expected to affect every actor in the food supply chain as well as households.

This policy option is associated with the following advantages:

- Adoption of a clear and consistent legislative framework for the country's food donation processes by introducing a new law.
- Establishment of clear guidelines and principles that cover the various stages of food supply to make donation processes easier and more transparent.
- Lifting tax barriers to encourage the private sector to increase food donation.
- Legislation to provide an extra level of reassurance for donors in order to stimulate food donation. This can prove critical for companies determining whether to engage in donation.
- The option, compared to the other options, offers a comprehensive approach towards partly resolving the issue of food loss and waste as the draft law focuses on several of the areas defined above.

This policy option is associated with the following disadvantages:

- Implementation of this option requires additional financial and human resources from the central government and state agencies, given the wide range activities envisioned in the draft law to reduce food waste and loss. For instance, the state is responsible for launching awareness raising campaigns and developing programs that encourage the reduction of food waste. It is also responsible for developing a database to enable charitable organizations to identify and collect food waste. State agencies like the NFA and Revenue Service would have additional responsibilities ensuing the transparent implementation of the proposed regulation, and they may require additional staff to carry out these designated tasks.
- For the purpose of tax benefits, food donors would need to evaluate and declare the amount of their donations, and they might be reluctant to engage in additional procedures with the Revenue Service.
- Considering the proposed tax benefits, retailers with little profit would be restricted in terms of potential donations because net income, rather than total sales or total expenses, represents the basis for taxation.

Risks

The main risk relates to a lack of interest for more active engagement in food donation from the private sector (retail sector, HoReCa). The proposed incentives, including fiscal inducements, might not be enough for the private sector to achieve the goal of reducing food waste and loss.

There are several potential factors that hinder retailers from food donation. Although there is liability reduction in the draft law, there are still potential issues concerning the collection and redistribution of donated produce. Food donors might see a reputational risk from donation. Instead of donating to charitable organizations, certain retailers and producers might simply discard food; especially when products are close to their use-by or best-before date, given that unfortunate cases of food poisoning might jeopardize their reputation. Furthermore, it is cheaper (as well as significantly easier) to discard rather than donate food. Additionally, retailers may not have a clear vision of the type of food they can donate or the logistics required for operation.

Besides which, other factors such as a lack of funding must also be considered in relation to food donations. This is because food transportation and storage can be challenging for those charitable organizations that might not have the capacity to manage increased donations.

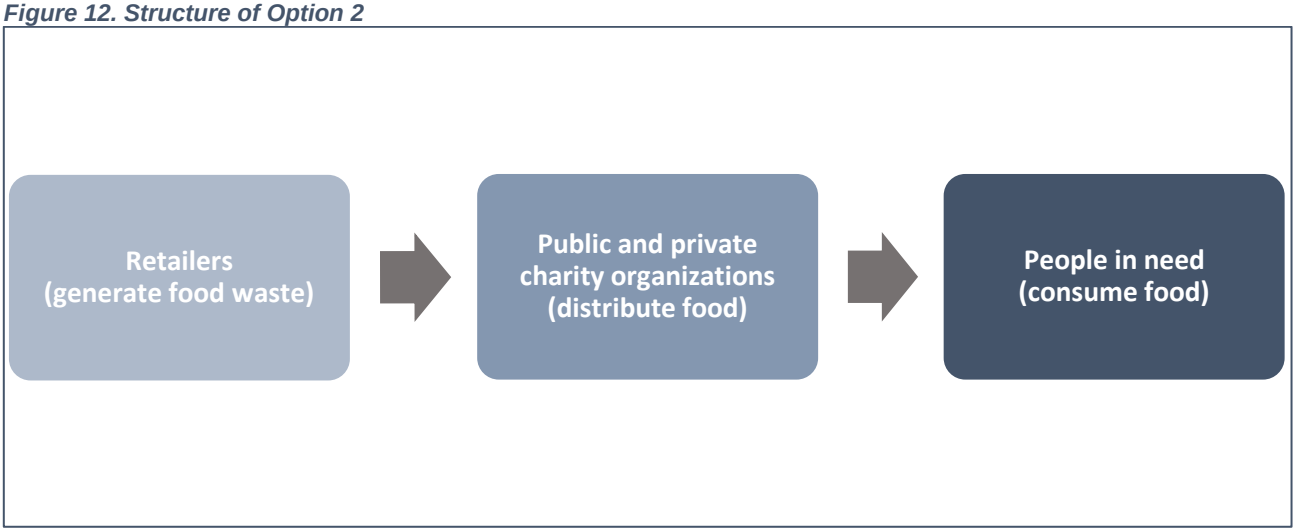
In addition to this, as the Ministry of the Finance identified, one major concern is that supposedly donated food, which would be subject to tax exemption, may revert to the market instead of being donated. In order to minimize this risk, the option perhaps necessitates additional human and financial resources from the Ministry of Finance to ensure the proper and transparent behavior of private sector representatives.

Option 2 – Tax incentives to reduce food waste

This option solely assumes that there are tax incentives offered to FBOs and that such incentives are reflected in the tax code. This option does not assume the adoption of the draft law, and therefore does not imply any other measures listed in Option 1 – excluding the tax benefits.

As in Option 1, this option includes offering tax benefits to those FBOs which donate and redistribute food (Figure 12).

Figure 12. Structure of Option 2



Option 2 has the following advantages:

- Lifting tax barriers encourages the private sector to increase food donation, compared to the status quo.
- It is more feasible than Option 1 as it does not assume a complex approach towards managing food loss and waste, rather it only requires changes to the tax code.

This option has certain disadvantages akin to the status quo and Option 1:

- Low public awareness on food waste prevention, reduction, management, food recovery, and redistribution, which results in unsustainable production and consumption practices.
- Food safety risks during the food donation, restoration, storage, and redistribution stages due to an absence of regulations in this area.
- The Revenue Service has additional responsibilities in ensuring the transparent implementation of the proposed regulation, and may therefore need to hire additional staff to carry out the assigned tasks.
- For the purpose of the tax benefit, food donors would need to evaluate and declare the amount of their donations, and they might be reluctant to engage in additional procedures with the Revenue Service.
- Considering the proposed tax benefits, retailers with little profit would be restricted in terms of potential donations because net income, rather than total sales or total expenses, represents the basis for taxation.
- Considering awareness raising campaigns on food loss and waste would not be conducted under this option, it would not do much to tackle food loss.

Risks

All the risks associated with Option 1 remain relevant within Option 2. Compared to the previous option, the legal issue of liability could be more prevalent in the second option as it solely considers tax benefits for food donations. In addition to this, there is the risk that changes in the tax code alone would be insufficient to comprehensively address the challenges associated with food loss and waste.

Yet another risk is related to the responsibility for delivery and sanitary verification during food donation and redistribution. Since Option 2 does not assume the adoption of clear rules or procedures regarding liability or food safety, there is the risk that beneficiaries could be harmed and thus the

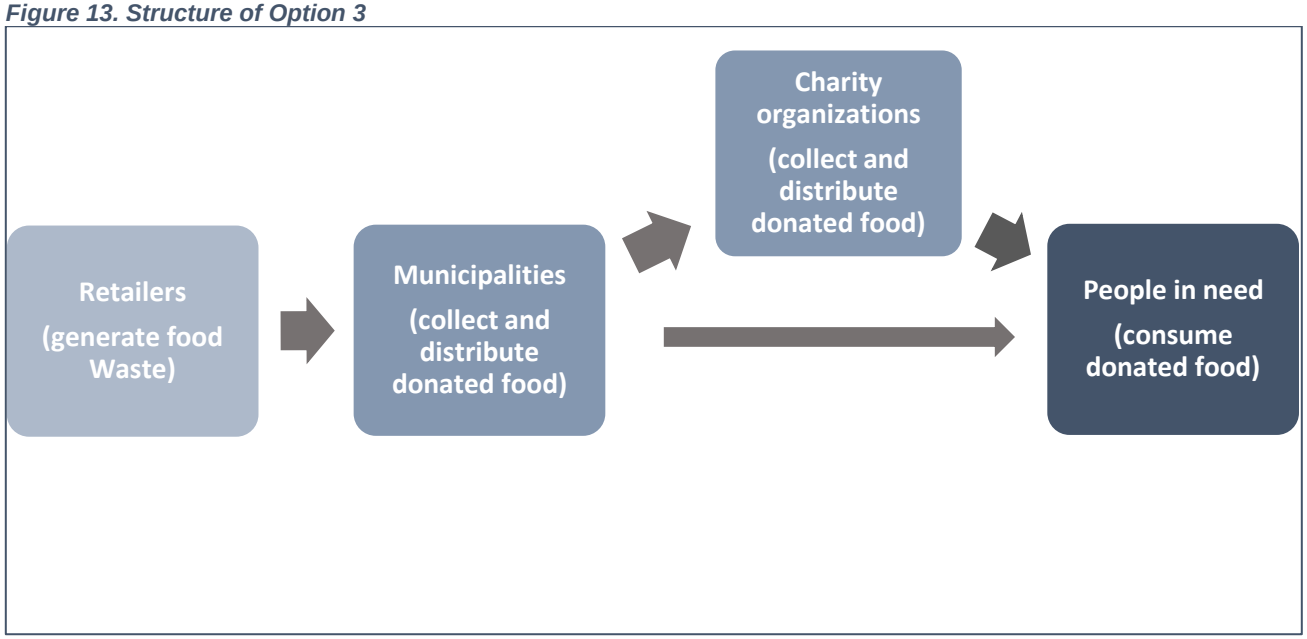
reputation of a donor might suffer. This detail might subsequently prevent retailers from donating food.

Option 3 – Municipal food donations to reduce food waste

In this policy option, food donation is completed through municipalities. As donations to municipalities are the equivalent of donations to the state, such transactions are not subject to either profit tax or VAT.

This option envisages the following donation scheme: retailers provide food to municipalities, which then redistribute it either directly to people in need or to charitable organizations. At present, municipalities already offer food donations on a regular basis, with municipal social cafes that provide free meals to their beneficiaries in need. Municipalities currently announce formal tenders for service providers, and winning organizations arrange food procurement, preparation, and provision (Figure 13).

Figure 13. Structure of Option 3



This policy option is associated with the following advantages:

- As this option is feasible under the current regulatory framework, it does not require changes to the tax code.
- Food donations through municipalities increase access to food for the most vulnerable populations residing in Georgia's regions (mostly rural areas).
- Food donations via municipalities generate additional food for more people in need, as social assistance programs continue to be implemented under this option, and food donations represent an additional source of food for the poor.
- Food donations through municipalities reduce food safety risks as donations would be streamlined and organized.

This policy option is associated with the following disadvantages:

- Food donations made by the private sector cannot reduce the costs of social programs as municipalities have formal tenders for service providers. Besides which, municipalities cannot solely rely on donations from retailers as they may not occur on a permanent or regular basis. Donated produce cannot fully replace the food required for municipal cafeterias or significantly reduce state spending on food for the poor, as retailers might avoid donating high-risk products, like fresh meat, milk, etc., to avoid food safety related risks.
- While this option maintains the same characteristics as the baseline scenario, it entails greater costs to the central government for increasing awareness, equipping municipalities with proper storage facilities, and hiring additional human resources to manage the process.
  - Increase awareness: awareness raising campaigns would be conducted to provide information to retailers on the preferential taxation system for food donated to municipalities.
  - Equip municipalities with proper storage facilities: municipalities would be equipped with proper facilities to store donated products and comply with food safety standards.
  - Hire additional human resources in the municipalities: additional human resources would be hired to manage the process of food collection and distribution.
- As in Option 1, this option also retains the development of food safety guidelines and NFA involvement, which might generate additional financial costs for the NFA or the central government budget.

Risks

All issues pertaining to Option 1 are still relevant in Option 3, alongside certain additional risks. There is the chance that municipalities, which serve as an intermediary between retailers, food charity organizations, and people in need, will not receive the necessary funds from the state and that their responsibilities will be expanded without sufficient monetary support or proper storage equipment.

There is also the risk that donations made to private charitable organizations would decline, because such food donations are still subject to profit tax and VAT. Therefore, this policy option might place private organizations in a disadvantaged position compared to state charities.

6. ANALYSIS OF THE IMPACTS

6.1 METHODOLOGICAL APPROACH

The objective of this analysis is to identify the main quantitative and qualitative impacts of each suggested option on the various stakeholders, in comparison to the baseline scenario. Therefore, the analysis only considers the incremental costs and benefits of Options 1, 2, and 3 with regard to the baseline scenario. A set of assumptions has been developed for each option, however before describing those specific to each option, it is important to consider the assumptions that are common for every option (Table 8).

Table 8. Macroeconomic variables

Variable	Value	Source
Real discount rate (%)	7.47	National Bank of Georgia (average real interest paid on a 10-year government bond)
Target inflation rate (%)	3	National Bank of Georgia

The timespan for the analysis amounts to 15 years, covering the period of 2023-2037. In each of the options, the impact depends significantly on projections regarding the amount of food to be donated

under different conditions. These projections have been compiled based on figures provided by the Ministry of Finance of Georgia. The major assumption is that if proper incentives are offered to the private sector and the relevant measures are implemented by the public sector and charitable organizations, then a certain share of written off food that meets all food safety requirements can be potentially directed to socially vulnerable groups. The analysis only considers the donation of low-risk foods, and the amount and value of food to be donated in the first year of analysis (starting figures) have been generated based on Table 9 below:

Table 9. Information on food written off by retailers

Year	2015	2016	2017	2018	2019	2020	2021
Value of written off low-risk food (GEL per year)	460,249	668,093	702,047	408,279	1,146,599	1,129,108	787,617
Amount of written off low-risk food (tons per year)	898	866	45,915	1,260	1,584	1,982	1,685

Source: Ministry of Finance of Georgia

The other general assumptions common to all policy options are listed below:

- All variables are real and the prices are constant.
- There are three types of stakeholders in the analysis: the private sector, public sector, and charitable organizations.
- The public sector includes both the central government and municipalities.
- The benefits between the public sector and charitable organizations are shared in proportion to the costs incurred on the provision of free meals for people in need. Based on 2020 data, showing that 75% of total spending on the provision of this food is financed from the public budget and 25% from charitable organizations, it is assumed that 75% of the benefits go to the public sector and 25% to charitable organizations.
- Five new staff members are added to the NFA (one in each self-governing city).
- The cost of application at the Revenue Service is 0.014 GEL[34] per 1 GEL of written off food.

6.2 QUALITATIVE IMPACTS

The qualitative impacts of the selected policy options are summarized in Table 10 below:

Table 10. The qualitative impacts of the policy options

Impact	Option 0. Status quo	Option 1. Tax incentives and other support measures to reduce food waste	Option 2. Tax incentives to reduce food waste	Option 3. Municipal food donations to reduce food waste
Administrative / state budget	Currently, the state budget gains tax revenues from food donations; donations to charitable organizations	This option has both positive and negative effects on the state budget. On the positive side, reduced quantities of food waste lead	The expected positive impacts are similar to Option 1. On the negative side, Option 2 does not	The expected positive impacts are similar to Option 1. On the negative side, there are the following public

[34] This estimate is based on the fact that there were 140,000 applications for writing off goods in 2021, the corresponding value of written off goods was 200,000,000 GEL – resulting in 0.0007 applications per 1 GEL of written off food. One application costs a retailer 20 GEL. Therefore 20x0.0007=0.014 GEL equates to the cost of an application per 1 GEL of written off food.

	(excluding municipalities and state charity organizations that do not operate as LTD companies) by a taxpayer are subject to VAT and also profit tax, if donation exceeds 10% of the net income of that taxpayer in the previous calendar year. There are presently no administrative costs specifically associated with waste management, however greater food waste requires higher waste management costs.	to reduced waste management. In addition, the government might benefit from decreased carbon footprints. On the negative side, there are public administrative costs associated with this policy: • Policy development – there are several activities envisaged by the draft law, including creating and approving guidelines for food waste management and food donation, and developing and implementing state incentive programs to reduce the food waste and loss associated with additional public costs. • Awareness raising campaigns.	envisage any additional costs related to policy development or awareness raising campaigns.	administrative costs associated with Option 3: • Equipment for municipalities – proper storage facilities are required. • Additional human resources – needed to coordinate food donation activities. • Awareness raising campaigns.
Economic	Presently, large quantities of edible food still suitable for consumption are wasted, leading to economic losses. Food waste implies all the inputs that were used during production, processing, transportation, preparation, and storage are also wasted. Furthermore, higher food waste denotes higher disposal costs from retailers. Under the current framework, food donation is not encouraged and is subject to tax if certain conditions are not met.	Option 1 has positive and negative economic impacts. The positive economic impact of the policy option mainly affect the following three groups of actors: • Retailers – who may benefit from improved image and corporate social responsibility • Charitable organizations – providing prepared meals may benefit from the provision of food and a corresponding reduction in food spending. A number of community and charitable organizations, ranging from soup kitchens to community meal programs may receive surplus food to supplement the ingredients for meals prepared for individuals and families. Similar to	The expected economic impacts are qualitatively similar to those discussed in Option 1. However, Option 2 does not envisage increased awareness to reduce food waste, which might encourage households to better plan their grocery shopping and indirectly contribute to a reduction of household food waste. At the same time, since Option 2 is limited to offering tax benefits to the private sector, the magnitude of the positive and negative impacts is likely to be smaller compared to Option 1.	The expected economic impacts are qualitatively similar to those discussed in Option 1, however there are few differences for retailers and charity organizations: • Retailers – might benefit from improved image and corporate social responsibility. • Charitable organizations – as food donations to private charity organizations will still be subject to profit tax and VAT, this policy option might put them at a disadvantage compared to state charities.

		food banks, there is wide variation in the forms these programs take. For these organizations, surplus food reduces the amount they have to spend on food purchases, enabling them to focus on other social activities. • People in need – the most vulnerable part of the population, might benefit from increased food donations. Furthermore, additional provisions might enable people in need to lower their food spending, potentially reducing financial strain significantly and transferring this saving to other needs (including healthcare). Furthermore, awareness increasing campaigns on food waste might encourage households to better plan their grocery shopping and indirectly contribute to the reduction of household waste. On the negative side, there could be opportunity cost associated with the allocation of financial resources for food waste reduction.		
Social	Large amounts of food waste have negative social impacts. Not only is wastage a forgone opportunity to support poor families, but it places upward pressure on food prices and increases food insecurity – especially, for the most vulnerable part of the population, who spend a greater share of their budget on food. Furthermore, the	There are potentially positive social impacts associated with this policy option. Additional food donations would lead to greater access to food for people in need and the undernourished population, and therefore would increase food security. Moreover, further food donations could contribute to alleviating hunger. Increased access to food might also help improve human health.	The expected social impacts are qualitatively similar to those discussed in Option 1.	The expected social impacts are qualitatively similar to those discussed in Option 1.

	existence of significant food waste exacerbates the problem of malnutrition.			
Environmental	The status quo is characterized by a large amount of food wastage, which has negative environmental impacts. These effects are two-fold. Firstly, food production, transportation and handling generate significant carbon dioxide (CO_2). Secondly, when food waste in landfills decomposes, it produces harmful biogenic GHG emissions, such as methane (CH_4) and nitrous oxide (N_2O), even more potent greenhouse gases. Large amounts of such waste pose potential risks of contamination in the ground water and air pollution in surrounding areas. Additionally, when food is wasted, all inputs used in production, processing, transportation, preparation, and storage are also wasted. While higher food waste leads to the over-exploitation of water and land resources, it negatively affects biodiversity, and exacerbates climate change.	This policy option is associated with several positive environmental impacts. Reduced food waste could promote energy and resource (including land and water) conservation. It could also contribute to addressing the challenges posed by climate change, which in turn, could decrease climate change-related shocks to the supply chain. Reduced food waste may additionally help reduce the negative effects on biodiversity associated with food waste management. Consequently, reduced food waste could improve human health.	The expected environmental impacts are qualitatively similar to those discussed in Option 1.	The expected environmental impacts are qualitatively similar to those discussed in Option 1.

6.3 COST-BENEFIT ANALYSIS

The analysis is based on the assumption that economic trends are exogenous to the reform. This allows us to produce more reliable estimates of the costs and benefits associated with the selected options.

Option 0 – Status quo

There are no quantifiable costs or benefits associated with the baseline scenario. Instead, it is important to focus on the quantification of the incremental costs in Options 1, 2, and 3, as assumed on the basis of the information collected.

Option 1 – Tax incentives and other support measures to reduce food waste

This option assumes a comprehensive approach towards reducing food waste, including tax benefits for the private sector, along with the development of the Food Products/Animal Feed Safety, Veterinary and Plant Protection Code; the creation of a database of recognized charitable organizations; the development of guidelines for the management and disposal of food waste; and conducting awareness raising campaigns. In this option, instead of having low-risk food written off, the private sector ensures that this food is transported to charitable organizations, which then store it and provide it to beneficiaries. Donations allow the private sector to avoid the costs associated with writing off and utilizing food. Both procedures entail fixed payments to the state, depending on the amount and value of food that is written off.

This option assumes a 5% growth rate in the quantity of donated food per annum.

QUANTIFIED COSTS

Private sector

- **Transportation.** The capacity of one transportation truck is assumed to be 21.5 tons and the price of transport is 1,200 GEL per truck. The final costs depend on the quantity of food to be transported.

Public sector[35]

- **Conducting awareness raising campaigns.** Since behavioral changes are slow, it is assumed that awareness raising campaigns are to be conducted during the first five years of the analysis, however the budget gradually reduces; from 15,000 GEL per year during the first two years, to 10,000 GEL during the next two years, and 5,000 GEL in the 5th year.
- **Lost Revenue Service income from applications.** Writing off food costing more than 100 GEL per day requires a retailer to file an application at the Revenue Service and pay 20 GEL per application. The final payment is calculated based on the value of the food donated.
- **Lost revenues from food waste utilization payments.** There is a payment of 116 GEL/ton for utilizing food, and this is lost by the state when food is donated instead of being utilized. The final payment is calculated based on the value of the food donated.

[35] It is assumed that a revision of the Food Products/Animal Feed Safety, Veterinary and Plant Protection Code as well as the development of a database of recognized charitable organizations, and the development of guidelines for the management and disposal of food waste will be completed with internal MEPA human resources. If some of these activities are outsourced, public spending would increase.

- **Additional NFA human resources.** In total, five persons are to be hired with a gross monthly salary of 1,000 GEL each.

Charitable organizations

- **Storage.** It is assumed that storage price is 1.25 GEL per square meter per day. While the quantity of donated food requiring storage has been projected in the analysis, it is problematic to estimate the storage area required. It is assumed that 50 square meters of storage would be required throughout the year to store more than 1,000 tons of donated food.

QUANTIFIED BENEFITS

Private sector

- **Avoided applications at the Revenue Service.** Donations of low-risk food that satisfy safety requirements allow the private sector to avoid writing-off products and the aforementioned costs associated with this procedure.
- **Avoided food waste utilization.** Donations of low-risk food that satisfy safety requirements allow the private sector to avoid utilization and the costs associated with this procedure.

Public sector

- **Value of donated food.** The average value of food is estimated at 549 GEL per ton, and it is then multiplied by the quantity of food – 75% of the total value goes to the public sector.

Charitable organizations

- **Value of donated food.** The average value of food is estimated at 549 GEL per ton, and it is then multiplied by the quantity of food – 25% of the total value goes to charitable organizations.

Option 2 – Tax incentives to reduce food waste

This option assumes solely offering tax benefits to the private sector. Given this, the annual growth rate of food donations is lower in this scenario, equaling 2%. As in Option 1, donations allow the private sector to avoid the costs associated with writing-off and utilizing food. Both procedures entail fixed payments to the state depending on the amount and value of the food written off.

QUANTIFIED COSTS

Private sector

- **Transportation.** The capacity of one transportation truck is assumed to be 21.5 tons and the price of transport is 1,200 GEL per truck. The final transportation cost depends on the quantity of food to be transported. In this option, it is less than Option 1 due to a lower growth rate in food donations.

Public sector

- **Lost Revenue Service income from applications.** Writing-off food which costs more than 100 GEL per day requires a retailer to file an application at the Revenue Service and pay 20 GEL per application. The final payment is calculated based on the value of the food donated. This cost is lower than in Option 1 due to a lower growth rate in food donations.

- **Lost revenues from food waste utilization payments.** There is a payment of 116 GEL/ton for utilizing food and this is lost by the state when food is donated instead of being utilized. The final payment is calculated based on the value of the food donated. This cost is lower than in Option 1 due to a lower growth rate in food donations.

Charitable organizations

- **Storage.** It is assumed that the storage price is 1.25 GEL per square meter per day. While the quantity of donated food requiring storage has been projected in the analysis, it is hard to estimate the storage area needed. In year one, it is assumed that 50 square meters of storage would be required throughout the year to store more than 1,000 tons of donated food. For subsequent years of the analysis, storage costs are adjusted based on the lower growth rate in food donations compared to Option 1.

QUANTIFIED BENEFITS

Private sector

- **Avoided applications at the Revenue Service.** Donations of low-risk food that satisfy safety requirements allow the private sector to avoid writing-off products and the costs associated with this procedure. This benefit is lower than in Option 1 due to a lower growth rate in food donations.
- **Avoided food waste utilization.** Donations of low-risk food that satisfy safety requirements allow the private sector to avoid utilization and the costs associated with this procedure. This benefit is lower than in Option 1 due to a lower growth rate in food donations.

Public sector

- **Value of donated food.** The average value of food is estimated at 549 GEL per ton, and it is then multiplied by the quantity of food – 75% of total value goes to the public sector. This benefit is lower than in Option 1 due to a lower growth rate in food donations.

Charitable organizations

- **Value of donated food.** The average value of food is estimated at 549 GEL per ton, and it is then multiplied by the quantity of food – 25% of the total value goes to charitable organizations. This benefit is lower than in Option 1 due to a lower growth rate in food donations.

Option 3 – Municipal food donations to reduce food waste

This option is similar to Option 1, although there are additional features in this option. Namely, donations are accomplished via municipalities, which then provide the donated food either 1) directly to their beneficiaries through municipal, social cafes, or 2) to charitable organizations. Tax benefits are not offered to the private sector in Option 3.

While there are 69 municipalities in Georgia (as of 2019), the analysis only covers 64 municipalities as the remaining five are located in the breakout regions of Abkhazia and Ossetia. It is assumed that additional human resources would be needed in each municipality to ensure the proper management of donated food.

The storage costs in this option are equally divided between municipalities and charitable organizations.

Similar to Option 1, this option assumes a 5% growth rate in the quantity of donated food per annum.

QUANTIFIED COSTS

Private sector

- The same as Option 1.

Public sector

- The same as Option 1, alongside the following:
- **Human resources for municipalities.** It is assumed that one additional staff member is hired in each municipality, with a gross monthly salary of 1,000 GEL.
- **Municipal storage.** It is assumed that the storage price is 1.25 GEL per square meter per day. While the quantity of donated food requiring storage has been projected in the analysis, it is hard to estimate the storage area needed. It is assumed that 50% of these costs are to be incurred by municipalities.

Charitable organizations

- **Storage.** It is assumed that the storage price is 1.25 GEL per square meter per day. While the quantity of donated food requiring storage has been projected in the analysis, it is hard to estimate the storage area needed. It is assumed that 50% of these costs are to be incurred by charitable organizations.

QUANTIFIED BENEFITS

Private sector

- The same as Option 1.

Public sector

- The same as Option 1.

Charitable organizations

- The same as Option 1.

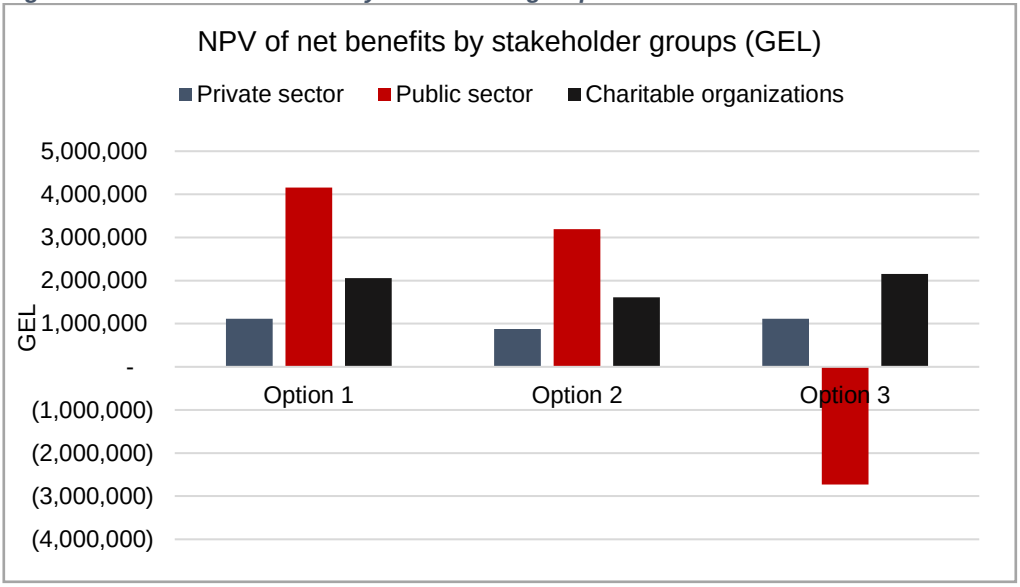
6.4 CBA RESULTS

The results of the CBA have been summarized in Table 11 and Figure 14 below:

Table 11. NPV of net benefits by stakeholder groups

NPV of net benefits by stakeholder groups			
Stakeholder	**Option 1**	**Option 2**	**Option 3**
Private sector (GEL)	1,115,564	876,509	1,115,564
Public sector (GEL)	4,160,648	3,191,509	(2,730,414)
Charitable organizations (GEL)	2,054,975	1,609,208	2,155,823
Total NPV of net benefit (GEL)	**7,331,187**	**5,677,226**	**540,973**

Figure 14. NPV of net benefits by stakeholder groups



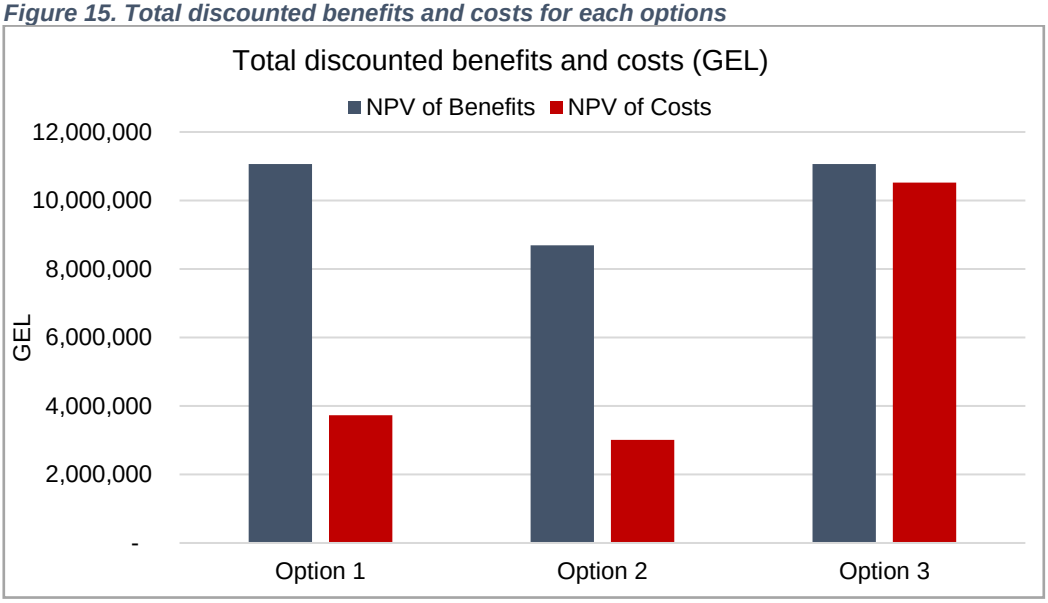
As Figure 14 reveals, the net benefits for the private sector are equivalent in Options 1 and 3. They are slightly lower for the private sector in Option 2, because the growth rate of the quantity of donated food is lower than in the other two options. Therefore, for the private sector, Options 1 and 3 are the most preferable.

Concerning the public sector, the net benefits are negative in every option because each of the alternatives are associated with monetary costs for the state. Option 2 is the least costly for the state, while Option 3 is associated with the highest expenditure.

Charitable organizations have positive net benefits in all three options, with Option 3 being preferable in monetary terms. This is because storage costs in this scenario are split between each municipality and the respective charities.

The overall monetary impact of the options is presented in Figure 15:

Figure 15. Total discounted benefits and costs for each options



Option 1 has the highest difference between the discounted benefits and costs, and it is the most preferable in monetary terms.

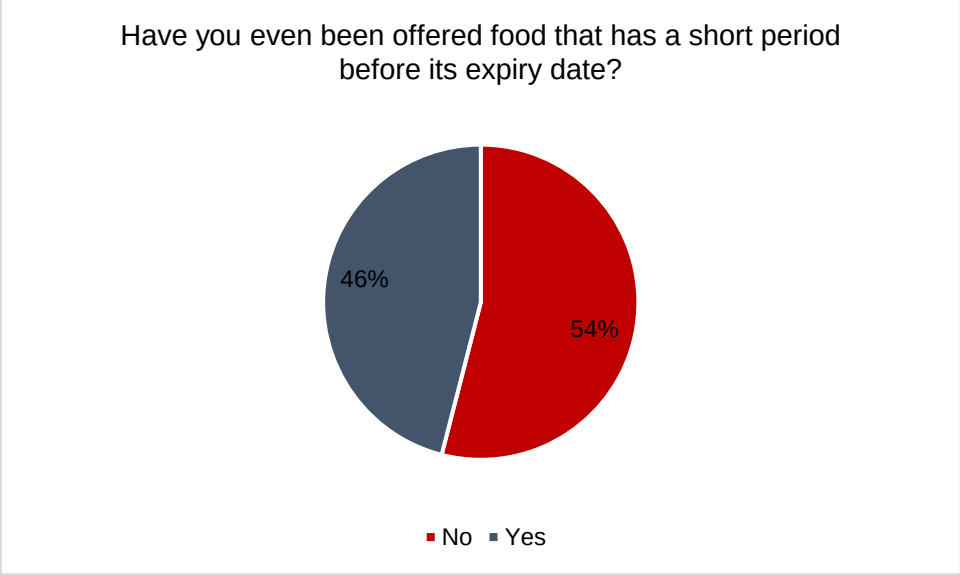
6.5 ASSESSING ACCEPTANCE OF DONATED FOOD

To assess potential readiness to receive donated food, the RIA team conducted a survey on the acceptability of donated food among the beneficiaries of charitable organizations. The suggested sample size for the survey was 383 (via interviews), but ultimately only 111 respondents participated in the survey.[36]

This survey aimed to assess beneficiaries' readiness to accept, and their experience dealing with, food removed from supermarkets with a short period before expiry. The respondents were asked about their preferences regarding the type of food they would like to receive. The survey also checked beneficiaries' understanding of food labeling.

As the results suggest, of the 111 respondents, 54% have never been offered food with little time left before the expiry date, while 46% have had such experiences (Figure 16).

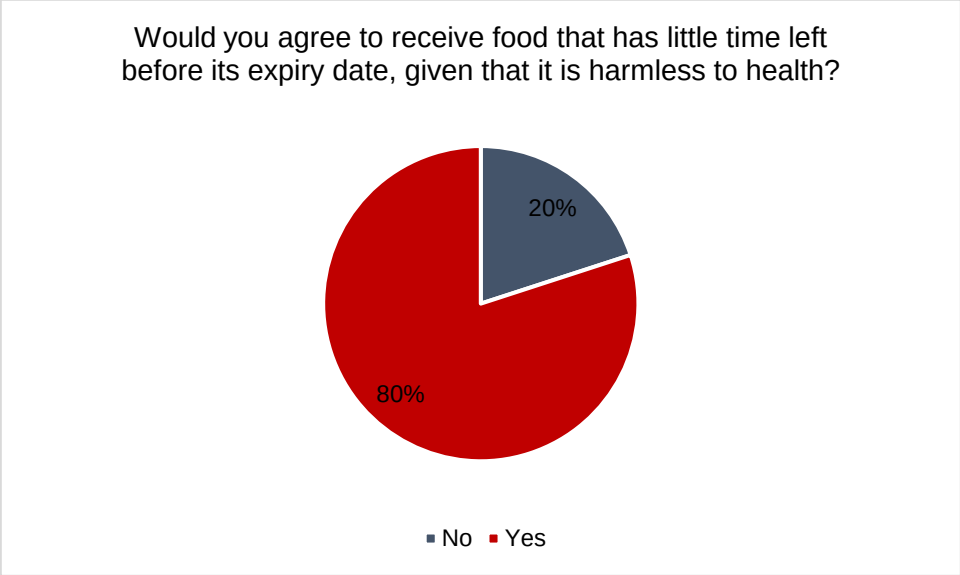
Figure 16. Respondents' experience with donated food



The respondents were then asked about their willingness to receive food close to its expiry date. The majority of beneficiaries are willing to receive such donations (80%), while some (20%) still remain cautious and would refuse food they believe unsafe (Figure 17).

[36] According to Georgian legislation, the contact information of the beneficiaries of charitable organizations is confidential. Due to the pandemic, face-to-face communication with potential beneficiaries of donated food was limited, thus the research team surveyed respondents via charitable organizations. Although the research team contacted 22 charitable organizations, just a few agreed to participate, and given that some organizations work with children (beneficiaries under 15 years of age), it was also not possible to include them in the survey.

Figure 17. Respondents' willingness to receive donated food



While the respondents already consume preprepared meals in cafeterias, the survey shows that they would also accept food products that need further preparation (e.g., buckwheat, pasta, etc.); where 80% of respondents agreed to receive these products, with 20% preferring preprepared meals.

Finally, the survey assessed the respondents' knowledge about food labeling – particularly how they perceived best-before labels. The majority (47%) agree that products are not harmful for consumption after the best-before date, although certain features of the product may be degrading, while 38% of respondents believe that the product is safe for consumption and all of its features are preserved after the best-before date. Whereas, 15% consider food no longer suitable for consumption after the best-before date has passed.

7. MULTI-CRITERIA ANALYSIS

The options have been compared based on a set of criteria developed by the research team in accordance with the objectives of the reform listed below:

1. Reduce poverty and increase the food security level by facilitating the efficient allocation of food to the poor - Capability to achieve this objective.
2. Limit the negative effects on the environment and natural resources by reducing food waste and prolonging the lifecycle of food - Capability to achieve this objective.
3. Reduce the costs of actors in the food supply chain by improving food waste prevention and management practices - Capability to achieve this objective.
4. Increase the efficiency of public spending on the provision of food to the poor - Capability to achieve this objective.
5. Increase public awareness on food waste prevention, reduction, management, food recovery, and redistribution - Capability to achieve this objective.
6. Feasibility - The ease of realization and concrete implementation of the option.
7. Minimization of risks.

Table 12 below summarizes the results of the multi-criteria analysis. Plus (+), minus (-), and zero (0) are each used for ranking the three options – where a plus (+) identifies a synergy between a criterion

and the option's impact; a minus (-) when there is a trade-off between the criterion and the impact; and zero (0) is used if there is no impact at all.

Table 12. Multi-Criteria Analysis

Evaluation Criteria	Option 0 – Baseline Scenario	Option 1	Option 2	Option 3
NPV of net benefits (GEL)	-	7,331,187	5,677,226	540,973
Reduce poverty and increase the food security level	-	+++	+	+++
Limit the negative effects on the environment and natural resources by reducing food waste and prolonging the lifecycle of food	0	+++	+	+++
Reduce the costs of actors in the food supply chain by improving food waste prevention and management practices	0	++	+++	+
Increase the efficiency of public spending on the provision of food to the poor	0	0	0	0
Increase public awareness on food waste prevention, reduction, management, food recovery, and redistribution	-	+++	+	+++
Feasibility	0	++	+++	+
Minimization of risks	-	+++	+	++

Reduce poverty and increase the food security level: Options 1 and 3 have the highest scores as they offer a wide range of support measures that address different aspects of food waste. As to Option 2, it only provides tax benefits, which might not be enough to encourage food donation. The quantity of donated food is assumed to have a higher growth rate in Options 1 and 3 and a lower rate in Option 2.

Limit the negative effects on the environment and on natural resources by reducing food waste and prolonging the lifecycle of food: The quantity of donated food is assumed to have a higher growth rate in Options 1 and 3 and a lower growth rate in Option 2. Therefore, the quantity of food waste is likely to decline further in Options 1 and 3, as compared to Option 2 more food is donated rather than wasted.

Reduce the costs of actors in the food supply chain by improving food waste prevention and management practices: Option 2 has the lowest costs compared to the other two options, while Option 3 is the costliest (the lowest score) as it involves additional costs on human resources at the municipal level.

Increase the efficiency of public spending on the provision of food to the poor: The proposed options have no impact on public spending as there is no proposal to replace public spending on food programs with food donations – at least in the short-term, although this might be the case in the long-term. Given that the analysis considers low-risk food donations, certain types of food might still need to be purchased with state funding.

Increase public awareness on food waste prevention, reduction, management, food recovery, and redistribution: Options 1 and 3 have the highest score because they envision the conducting of awareness raising campaigns, while under Option 2 no such campaigns are planned.

Feasibility and ease of realization: Option 2 has an advantage over its counterparts as it only envisions tax benefits. In addition to taxation, Options 1 and 3 cover the following areas: food safety and hygiene, product liability, and awareness raising. Additionally, Option 3 requires further activities to be conducted at the municipal level. Hence why Option 3 has the lowest score in this criterion.

Minimization of risks: All the risks associated with Option 1 remain relevant in Options 2 and 3, while Option 2 has the highest risks (the lowest score) because areas of food safety and hygiene, product liability, and awareness raising are not covered. In Option 3, the inclusion of municipalities creates additional risks associated with the availability of capital and human resources on the municipal level.

Based on the multi-criteria analysis, it can be concluded that Option 1 is the preferrable and associated with the highest monetary and non-monetary benefits.

8. MONITORING AND EVALUATION PLAN

To track the performance of the reform during its implementation, to assess its impacts, and to modify the interventions in the case of deviations from the planned path, it is important to establish a proper monitoring and evaluation plan (Table 13). This monitoring and evaluation plan should allow for an assessment of how well the actions and the associated outcomes match the policy objectives, as defined in Section IV. The indicators that have been suggested for evaluating the performance of the draft law have been divided into five categories based on the objectives listed below:

1. Reduce poverty and increase food security by facilitating the efficient allocation of food to the poor.

2. Limit the negative effects on the environment and on natural resources by reducing food waste and prolonging the lifecycle of food.
3. Reduce the costs of actors in the food supply chain by improving food waste prevention and management practices.
4. Increase the efficiency of public spending on the provision of food to the poor.
5. Increase public awareness on food waste prevention, reduction, management, food recovery, and redistribution.

Table 13. Progress indicators of the objectives

Indicator	Frequency of evaluation	Responsibility for monitoring
Specific Objective 1. Reduce poverty and increase food security by facilitating the efficient allocation of food to the poor		
Operational Objective 1.1. Increased redistribution of food through donations to the poor		
Share of donated food in charitable organizations	Yearly	Charity organizations & the Ministry responsible for Environmental Protection and Agriculture
Share of donated food in municipality cafeterias	Yearly	Municipalities
Amount of donated food from retail business to the poor	Yearly	Revenue Service
Quantity of food received by intermediary operators handling donations	Yearly	Intermediary operators (e.g., charity organizations)
Operational Objective 1.2. Reduce the prevalence of severe food insecurity		
Average dietary energy supply adequacy (%)	Yearly	Geostat
Prevalence of undernutrition in the population (%)	Yearly	Ministry of Health, Labour and Social Affairs of Georgia
Operational Objective 1.3. Ease the burden on food expenditure for poor families		
Share of beneficiaries in extreme poverty receiving food through charitable organizations and municipal cafeterias	Yearly	TBD
Share of family budget spent on food by vulnerable families	Yearly	TBD
Satisfaction level of beneficiaries receiving food through charity organizations, municipal cafeterias, or other intermediaries	Once in three years	TBD
Share of food expenditure in total expenditure over years (source: survey of beneficiaries)	Yearly	TBD
Composition of the target group by age, gender, region	Yearly	TBD
Specific Objective 2. Limit the negative effects on the environment and on natural resources by reducing food waste and prolonging the lifecycle of food		
Operational Objective 2.1. Reduce food waste and associated greenhouse gas (GHG) emissions		
Per capita food waste	Yearly	MEPA
Per capita food waste by source of waste (HoReCa, household, retail etc.)		
Food waste share in total waste	Yearly	MEPA

Greenhouse gas (GHG) emissions associated with food waste	Yearly	MEPA
Morphological composition of food waste	Once in every three years	MEPA
Operational Objective 2.2. Reduce water, land occupation/degradation, and potential biodiversity footprint		
The cultivated area producing domestically sold food	Once in every three years	MEPA
A measure of the general impact on biodiversity from cultivation in such areas	Once in every three years	MEPA
A measure of the general impact on water quality from cultivation in such areas	Once in every three years	MEPA
A measure of the general impact on land quality from cultivation in such areas	Once in every three years	MEPA
Operational Objective 2.3. Reduce waste generation through improved food packaging and shelf life		
Elaboration of detailed guidelines for packaging and labeling	One time	MEPA
Share of companies fully or partially complying with the guidelines for packaging and labeling	Yearly	MEPA
Specific Objective 3. Reduce the costs of actors in the food supply chain by improving food waste prevention and management practices		
Operational Objective 3.1. Incentivize food donations for retail organizations		
Amendment in the respective legislation to make food donation cheaper compared to food disposal in the retail sector	One time	GoG & Parliament
Development of a detailed guideline for food donations	One time	MEPA & NFA
The share of potentially affected companies that fully pay taxes or receive subsidies regarding food donation	Yearly	Revenue Service
Total taxes and subsidies associated with food donation	Yearly	Revenue Service
Evolution of the indicator of policy change (change in taxation regime/subsidies) over time	Yearly	Ministry of Finance
Ratio of donated food to food waste	Yearly	Revenue Service
Operational Objective 3.2. Encourage companies to adopt sustainable practices for food waste management		
Number of companies using innovative approaches for food waste management (e.g., intelligent trashcans, self-service equipment, commercial composting, etc.)	Yearly	MEPA
Share of companies with declining quantities of food waste	Yearly	MEPA & Revenue Service
Specific Objective 4. Increase the efficiency of public spending on the provision of food to the poor		
Operational Objective 4.1. Increase the quality and cost effectiveness of public food donation services		

Cost to the public budget per actual beneficiary	Yearly	Ministry of Finance
Number of actual beneficiaries	Yearly	Municipalities
Number of potential beneficiaries	Yearly	Municipalities
Nutrient composition of daily food in public cafeterias	Yearly	Municipalities
Number of cafeterias, their capacity, and their regional distribution	Yearly	Municipalities
The degree of satisfaction and the quality/level of nutrition of distributed food	Yearly	MEPA & Municipalities
Specific Objective 5. Increase public awareness on food waste prevention, reduction, management, food recovery, and redistribution		
Operational Objective 5.1. Ensure that broader society has relevant information and awareness about sustainable food waste prevention, reduction, management, and food recovery and redistribution		
Information for sustainable food waste management mainstreamed in (a) national education policies; (b) curricula; and (c) teacher training	First five years annually	MEPA & Ministry Education and Science of Georgia
Organization of campaigns for raising awareness around the importance of food waste management	First five years annually	MEPA
Consumer awareness levels on the importance and methods of reducing food waste, and its damage and costs (estimates based on surveys)	First five years annually	MEPA
Number of companies applying sustainable food management practices	Yearly	MEPA

References

Akwii, E., Broad Leib, E. M., Shapiro, M., & Paparo, R. (2021). *Promoting Food Donation: Liability Protection Law and Policy.* Retrieved from https://www.foodbanking.org/wp-content/uploads/2021/12/Liability-Protections.pdf.

Broad Leib, E. M., Shapiro, M., Jagdagdorj, N., & Hill, J. (2021). *Food Donation Law and Policy: Peru Recommendations.* The Global FoodBanking Network. Retrieved from https://www.foodbanking.org/wp-content/uploads/2021/01/Peru-Policy-Recommendations.pdf.

Colombo de Moraes, C., Costa, F. H., Pereira, C. R., Da Silva, A. L., & Delai, I. (2020). Retail Food Waste: Mapping Causes and Reduction Practices. *Journal of Cleaner Production, 256*(3). Retrieved from https://www.researchgate.net/publication/339081530_Retail_food_waste_Mapping_causes_and_reduction_practices.

FAO. (2011). *Global Food Losses and Food Waste – Extent, Causes and Prevention.* Rome.

FAO. (2013). *Food Wastage Footprint - Impacts on Natural resources.* FAO.

FAO. (2014). *Food Wastage Foorprint: Full-Cost Accounting.* Rome.

FAO. (2015). *Post-2015 and SDGs – Nourishing People, Nurturing the Planet.* Food and Agriculture Organization of the United Nations. Retrieved from http://www.fao.org/fileadmin/user_upload/mdg/doc/14_themes-en.pdf.

FAO. (2018). *Publication Regional Overview of Food Security and Nutrition in Europe and Central Asia 2018.* Budapest. 110 pp. Licence: CC BY-NC-SA 3.0 IGO.

FAO. (2019a). *Food Recovery and Redistribution: A Practical Guide for Favourable Policies and Legal Frameworks.* Working Paper. Retrieved from https://www.fao.org/uploads/media/Food_recovery_and_redistribution_guide.pdf.

FAO. (2019b). *National Legal Report: Comparative Analysis of the Legislative and Policy Framework of Food Loss, Waste and Donation in Georgia.*

Grewal, L., Hmurovic, J., Lamberton, C., & Reczek, R. W. (2018). The Self-Perception Connection: Why Consumers Devalue Unattractive Produce. *Journal of Marketing*. Retrieved from https://journals.sagepub.com/doi/10.1177/0022242918816319.

Gruber, V., Holweg, C., & Teller, C. (2015). What a Waste! Exploring the Human Reality of Food Waste from the Store Manager's Perspective. *Journal of Public Policy & Marketing, 35*(1). Retrieved from https://www.researchgate.net/publication/283841042_What_a_Waste_Exploring_the_Human_Reality_of_Food_Waste_from_the_Store_Manager's_Perspective.

HLPE. (2014). *Food Losses and Waste in the Context of Sustainable Food Systems.* Report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security. Rome: High Level Panel of Experts on Food Security and Nutrition. Retrieved from http://www.un.org/en/zerohunger/pdfs/HLPE_FLW_Report-8_EN.pdf.

Huang, I. Y., Manning, L., James, K. L., Grigoriadis, V., Millington, A., Wood, V., & Ward, S. (2021). Food Waste Management: A Review of Retailers' Business Practices and Their Implications

for Sustainable Value. *Journal of Cleaner Production*. Retrieved from https://www.researchgate.net/publication/347247668_Food_waste_management_A_review_of_retailers'_business_practices_and_their_implications_for_sustainable_value.

Killeen Davis, E. G. (2015). *Food Waste at Retail.* Theses and Dissertations. Retrieved from https://scholarworks.uark.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=2282&context=etd.

Schneider, F., & Eriksson, M. (2020). *Food Waste (And Loss) at the Retail Level*. Retrieved from https://www.taylorfrancis.com/chapters/edit/10.4324/9780429462795-10/food-waste-loss-retail-level-felicitas-schneider-mattias-eriksson.

Seberini, A. (2020). Economic, Social and Environmental World Impacts of Food Waste on Society and Zero Waste as a Global Approach to their Elimination. *Globalization and its Socio-Economic Consequences 2019.* SHS Web of Conferences 74, 03010. doi:https://doi.org/10.1051/shsconf/20207403010.

Takvarelia, N. (2021). What Georgia Stands to Gain from Ending Food Waste. *Investor.ge*. Retrieved from http://www.investor.ge/2021/04/22/what-georgia-stands-to-gain-from-ending-food-waste/.

United Nations Environment Programme. (2021). *Food Waste Index Report 2021.* Nairobi.

Wieben, E. (2015). *The Post-2015 Deveopment Agenda: How Food Loss and Waste (FLW) Reduction Can Contribute Towards Environmental Sustainability and the Achievement of the Sustainable Development Goals.* Rome: Food and Agriculture Organization of the United Nations (FAO).

World Bank. (2021). *Georgia - Solid Waste Sector Assessment Report.* Washington DC: World Bank.