



EGGS

Stud**E**nts fight food and packaging waste
throu**G**h entrepreneurial education and **G**ame-
ba**S**ed learning

Project activity:

**IO1.A4 SOCIAL RETURN ON INVESTMENT MODEL
(accompanying report)**

VERSION 2



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Introduction

Social Return on Investment (SROI) is described by the [Guide to Social Return on Investment](#) as:

"a framework for measuring and accounting for this much broader concept of value; it seeks to reduce inequality and environmental degradation and improve wellbeing by incorporating social, environmental and economic costs and benefits.

SROI measures change in ways that are relevant to the people or organisations that experience or contribute to it. It tells the story of how change is being created by measuring social, environmental and economic outcomes and uses monetary values to represent them. This enables a ratio of benefits to costs to be calculated. For example, a ratio of 3:1 indicates that an investment of £1 delivers £3 of social value.

SROI is about value, rather than money. Money is simply a common unit and as such is a useful and widely accepted way of conveying value."

The SROI Model spreadsheet (and this accompanying report) constitute output IO1. A4 SOCIAL RETURN ON INVESTMENT MODEL.

The SROI Model spreadsheet contains information on outcomes relating to food waste and food packaging waste.

The primary aim of the SROI Model is to provide the basis for the StudEnts fight food and packaging waste through entrepreneurial education and Game-based learning (EGGS) video game by making it possible to estimate the value of environmentally beneficial outcomes (i.e. a reduction in waste, reuse of waste or recycling of waste) and environmentally beneficial activities (e.g. organising a community litter pick).

Overview of data

The information contained within the spreadsheet can broadly be categorised as being either social outcomes or non-social outcomes.

Social outcomes are those experienced directly by the stakeholders (the students) when they feel they have made a positive difference to society and the environment through their actions.

The social outcomes covered by the SROI Model are:

- Average of Making a positive difference to society and the environment by... **reducing** 10kg of **food waste** over a year
- Average of Making a positive difference to society and the environment by... **reusing** 10kg of **food waste** over a year
- Average of Making a positive difference to society and the environment by... **recycling** 10kg of **food waste** over a year
- Average of Making a positive difference to society and the environment by... **reducing** 10kg of **food packaging** over a year
- Average of Making a positive difference to society and the environment by... **reusing** 10kg of **food packaging** over a year
- Average of Making a positive difference to society and the environment by... **recycling** 10kg of **food packaging** over a year

The information on these outcomes was collected from 200 students using the Value Game exercise and the Student Survey Form which constituted IO1. A3 QUIZ GAME.

The short guide which was followed by partners while conducting the Value Game exercise is provided in Annex 2.

The Student Survey Form is provided in Annex 3.

Non-social outcomes are those which have an impact on wider society and the environment (rather than on an individual stakeholder (i.e. a student)).

The non-social outcomes covered by the SROI model are:

- Greenhouse gas emissions avoided by unit of **food packaging waste avoided (or reused)**
- Greenhouse gas emissions avoided by unit of **food packaging waste recycled**
- Greenhouse gas emissions avoided by unit of **food waste avoided (or reused)**
- Greenhouse gas emissions avoided by unit of **food waste recycled (composted)**

The information on these outcomes was collected from various secondary sources (e.g. academic research papers).

The SROI Model also includes an estimate of **Avoided cost of food waste** per unit (based on the retail cost of edible food wasted).

Using the Impact Calculator sheet

This sheet allows the impact of food waste and food packaging waste to be calculated.

Section 1. Food waste impact							
Select student type		10kg of	Select food type	Has a total impact of	of which	is value to the student	and is value to the environment/society
An average student	Recycling		Average of all food types	€ 93.36		€ 92.68	€ 0.68
Calculator 1. Recycling food waste							
An average student	Reusing		Average of all food types	€ 141.11		€ 99.41	€ 41.70
Calculator 2. Reusing food waste							
An average student	Reducing		Average of all food types	€ 168.70		€ 127.00	€ 41.70
Calculator 3. Reducing food waste							
Section 2. Food packaging waste impact							
Select student type		10kg of	Select food packaging type	Has a total impact of	of which	is value to the student	and is value to the environment/society
An average student	Recycling		Average of all packaging types	€ 95.30		€ 93.94	€ 1.36
Calculator 4. Recycling food packaging waste							
An average student	Reusing		Average of all packaging types	€ 107.39		€ 103.66	€ 3.73
Calculator 5. Reusing food packaging waste							
An average student	Reducing		Average of all packaging types	€ 121.18		€ 117.46	€ 3.73

Screenshot of the Impact Calculator sheet

This sheet has been included to make it possible to quickly summarise the valuation information included in the other sheets of the spreadsheet. This impact is comprised of **value to the student** (social outcomes) and **value to the environment/society** (non-social outcomes).

By using the drop down menus (highlighted in yellow), the impact of recycling, reusing and reducing waste can be adjusted based on:

- Student type (age, gender or location of student, or an average of all students)
- Food type (e.g. eggs, sugar, or an average of all food types)
- Food packaging waste type (e.g. glass, metals, or an average of all food packaging waste types)

The below screenshot shows a calculation for a student from Poland making a 10kg reduction in apples being wasted:

Select student type		10kg of	Select food type	Has a total impact of	of which	is value to the student	and is value to the environment/society
A student from Poland	Reducing		Apples	€ 118.21		€ 117.81	€ 0.41
Calculator 3. Reducing food waste							

In this example, the total impact of the 10kg reduction in food waste is €118.21, of which €117.81 of value is for the student (how the student feels about making a positive difference to society and the environment), and €0.41 is value for the environment/society (the avoided negative impact of CO2 emissions associated with 10kg of apples being wasted).

Overview of sheets within the SROI Model spreadsheet

The following section gives information on each sheet of the SROI Model spreadsheet

Impact Calculator

This sheet allows you to calculate the impact of food waste and food packaging waste. In total, this sheet has 6 calculators.

Cells highlighted in yellow are drop down menus. These allow you to select the type of student (i.e. The age, location and gender of student), food type and packaging type.

The total impact is comprised of value to the student (social outcomes), and value to the environment/society (non-social outcomes). The below table summarises what information each calculator summarises/displays:

	Value to the student	Value to the environment/society
Calculator 1. Recycling food waste	Making a positive difference to society and the environment by... recycling 10kg of food waste over a year	Value of Greenhouse gas emissions avoided per 10 kg of food waste composted (rather than sent to landfill)
Calculator 2. Reusing food waste	Making a positive difference to society and the environment by... reusing 10kg of food waste over a year	Value of Greenhouse gas emissions per 10 kg of food waste reduced (or reused)
Calculator 3. Reducing food waste	Making a positive difference to society and the environment by... reducing 10kg of food waste over a year	Value of Greenhouse gas emissions per 10 kg of food waste reduced (or reused)
Calculator 4. Recycling food packaging waste	Making a positive difference to society and the environment by... recycling 10kg of food packaging over a year	Value of Greenhouse gas emissions avoided per 10 kg of different types of waste recycled
Calculator 5. Reusing food packaging waste	Making a positive difference to society and the environment by... reusing 10kg of food packaging over a year	Value of Greenhouse gas emissions avoided per 10 kg of different types of waste reduced (or reused)
Calculator 6. Reducing food packaging waste	Making a positive difference to society and the environment by... reducing 10kg of food packaging over a year	Value of Greenhouse gas emissions avoided per 10 kg of different types of waste reduced (or reused)

Outcome and Activity Summary

This sheet displays the valuations and ratings of outcomes and activities. This sheet summarises information from the sheets: "Outcome Ratings and Valuations" and "Activity Ratings and Valuations". Valuations and ratings are segmented by country, gender and age of respondents.

Outcome Ratings and Valuations

This sheet lists student responses to the Student Survey Form (including demographics information), outcome ratings and outcome valuations.

Outcome valuations on this sheet are given based on an anchor valuation of €14.79. This anchor value is the average value of a social outcome reached by groups during the Value Game exercise

(€147.93), divided by 10. The anchor value is then multiplied by the rating given to the outcome or activity by the student when they completed the Student Survey Form.

For example, if a student gave the outcome "Making a positive difference to society and the environment by reducing 10kg of food packaging over a year" a rating of 5 out of 10, this outcome would be valued at €73.97 (the anchor value of €14.79 multiplied by 5).

The valuations used on the Impact Calculator sheet and the Outcome and Activity Summary sheet are based on this valuation method.

N.B. A record of outcome valuations which were reached by groups during the Value Game exercise are listed in the hidden columns O to U. These valuations have been used to calculate the anchor value (as described above), but are not used elsewhere in the SROI Model.

Activity Ratings and Valuations

This sheet lists student responses to the Student Survey Form (including demographics information), activity ratings and activity valuations.

Activity valuations are given based on an anchor valuation (the average value of all outcomes reached by the value game groups), adjusted by activity rating.

Food Waste Impact

This sheet lists the greenhouse gas emissions avoided per unit of food waste avoided (or reused), or recycled (composted). Greenhouse gas emissions per unit of food have been sourced from [Reducing food's environmental impacts through producers and consumers](#). Greenhouse gas emissions per unit of food waste have been sourced from [Comparing Greenhouse Gases from Composting and Landfilling](#).

Valuations are calculated based on an estimate of the social cost of carbon. The social cost of carbon has been sourced from [Estimates of the social cost of carbon: A review based on meta-analysis](#), representing the negative impact of CO2 emissions.

Packaging Waste Impact

This sheet lists the greenhouse gas emissions avoided per unit of packaging waste avoided (or reused), or recycled. Greenhouse gas emissions per unit of packaging waste have been sourced from [Towards a circular economy–Waste management in the EU](#).

Valuations are calculated based on an estimate of the social cost of carbon. The social cost of carbon has been sourced from [Estimates of the social cost of carbon: A review based on meta-analysis](#) and represents the negative impact of CO2 emissions.

Unit Cost of Food Waste

This sheet lists the avoided cost of food waste per unit. Value is calculated based on the retail value of edible household food waste. Avoided cost of food waste has been sourced from [Estimates of European food waste levels](#).

Annex 1: Assumptions made

Food and food packaging waste data:

In terms of greenhouse gas emissions, we have assumed that reusing food or packaging waste is equal in impact to avoiding it (i.e. reusing 10kg of food waste would negate the need to purchase more food, and would therefore be equal to 10kg of food waste being avoided).

We have assumed that recycling food waste is in the form of composting.

Where valuations from secondary sources were originally calculated in USD, these have been converted to Euros using an exchange rate of 1USD = 0.901595 EURO.

Value game data:

Midpoint values have been used to value outcomes - i.e. an outcome which stakeholders have indicated falls in order of importance between a product card worth €100 and a product card worth €125 would be valued at €112.5.

Where stakeholders indicate that they consider an outcome to be more important than the highest valued product card (e.g. valued at more than €400), the value of the outcome is assumed to be equal in value to this (to avoid over-claiming).

Where stakeholders indicate that they consider an outcome to be less important than the least valued product card (e.g. valued at less than €26), the value of the outcome is assumed to be worth €0 to avoid over-claiming.

Where stakeholders indicate that two outcomes both fall between two product cards (for example, the outcomes "Making a positive difference to society and the environment by... recycling 10kg of food waste over a year" and "Making a positive difference to society and the environment by... recycling 10kg of food packaging over a year" both fall between the product cards "A can of soft drink (once a week for a year)" and "Cinema (once a month for a year)"), it is assumed that both of the outcomes are valued equally.

The value of the outcome "Making a positive difference to society and the environment by... reducing 10kg of food packaging over a year" for Group 3 of FBO has been omitted from the data set, as the outcome card appeared twice in the sequence (in different positions).

Averages have been calculated based on available data. For example, where a group has not valued an outcome (i.e. it does not appear within the sequence of outcome cards and product cards), this does not affect the average for the entire population (i.e. the valuation has been discounted from the averaging calculation rather than being given a value of €0).

Annex 2: Short Guide to Conducting the Value Game

Step 1: Educating students on food and food packaging waste

The first step to the Value Game is to educate your students on the impacts of food and food packaging waste. The students must also be made aware of how they can create a positive difference through reducing, reusing and recycling (where reducing is the best option, and recycling the worst).

Education is essential to ensure the students are making informed decisions while playing the Value Game.

Step 2: Gather your students who have been educated on food and food packaging waste

Gather your students and explain to them the purpose and importance of this task.

Organise your students into groups of 5 to 10 (smaller groups are better). It is best to group similar students together, as this makes it easier for them to reach a consensus. Assign each group a number (e.g. Group 1, Group 2, and so on).

Step 3: Have your students complete the survey form

Survey form	
Background information	
Name:	
Age:	
Nationality:	
Gender:	<input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Other/Prefer not to say
Group:	
Importance of outcomes	
Options for making a positive difference to society and the environment	Rate the options in order of importance (1 being most important and 10 being least)
Reducing 10kg of food packaging over a year	
Reducing 10kg of food packaging over a year	
Reducing 10kg of food packaging over a year	
Reducing 10kg of food waste over a year	
Reducing 10kg of food waste over a year	
Reducing 10kg of food waste over a year	
Effectiveness of activities	
Activity	Rate the activity in order of effectiveness (1 being most effective and 10 being least)
Writing a blog	
Writing a letter to a newspaper	
Writing a letter to a local representative	
Organising a community clean-up	
Starting a community compost heap	
Other activity (please state below)	
Other activity (please state below)	
Other activity (please state below)	

Students should be asked to give background information (name, age, gender, nationality and their group) on the survey form.

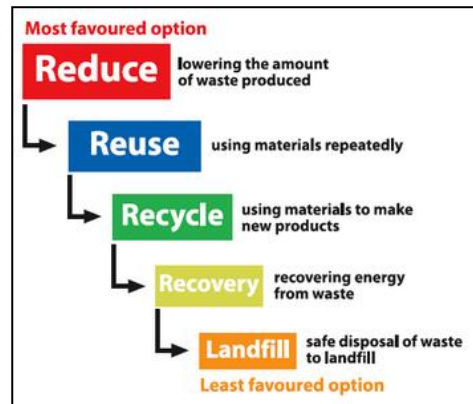
Students should also be asked rate how important different outcomes are to them (e.g. making a positive difference to society and the environment by reducing 10kg of food packaging over a year), and how effective they think different activities will be (e.g. writing a blog).

Students also have the option to suggest their own activities (e.g. those you have given them information on during your lessons), and rate how effective they think these are.

Students can rate outcomes or activities as being equally important (e.g. two different outcomes could be rated as 5 out of 10), but teachers should provide the time for students to discuss their reasoning for this - ideally they would be rated differently (reflecting the hierarchy of reduce > reuse > recycle).

Step 4: Introduce students to the Product Cards

Introduce your students to the Product Cards. The students must understand that these cards do not represent the monetary cost of the item, but the experience of having this product. All Product Cards have the same time period of 1 year. For example, the television will last for one year.



Product Cards should be arranged on the table in number order (1 to 8).

Step 5: Introduce students to the Outcome Cards



Introduce your students to the 6 Outcome Cards. Cards with blue circles are about food packaging waste, and those with green circles are about food waste.

The students must understand that these Outcome Cards do not represent the cost of achieving the outcome, but the experience of achieving it (e.g. how they would feel if they helped society and the environment by recycling 10kg of food waste in one year).

Step 6: Valuing the outcomes

Have each group of students take one Outcome Card at a time and indicate where they would place this in the sequence/list of Product Cards. Product Cards should be kept ordered from 1 to 8.

You can start by asking students whether they would value a certain Outcome more than the lowest valued Product Card. For example, you could ask a student which they would value more - "Making a positive difference to society and the environment by reducing 10kg of food packaging over a year" or "A can of soft drink (once a week for a year)". If a student values the Outcome as more than the can of soft drink, then you would ask them whether they would value it more than the next Product Card, i.e. "Which do you value more, the Outcome or going to the cinema once a month for a year?". In this way (comparing the Outcome to more and more valuable Products, and asking students to discuss their decisions) you can determine the value they would place on the Outcome. Students can indicate that an Outcome is of higher or lower value than a Product, or that it is of equal value.

It is important to remind the students that they are comparing products with outcomes over the same time period of 1 year. So, when they compare the value of recycling 10kg of food waste to a pair of new trainers, they both last for the same time period. Students may ask if this would mean they will not be able to wear the pair of trainers (or whatever the Product Card relates to) after 1 year. The answer is that they would still be able to wear the pair of trainers, but to imagine how they would value the importance of being able to wear them for a year.

Encourage the students to discuss why they feel an Outcome Card should be placed where, and remind them that they are not assessing the monetary value of the Outcome and Product Cards, but how they would feel about having/achieving these. Ideally, Outcome Cards would fall within the sequence of Product Cards (i.e. not below the lowest valued Product Card or above the highest valued Product Card).

If a student has a very strong objection to a Product Card, they can replace it with a product of equal monetary value. As a last resort, a student can complete the Value Game as an individual and be recorded as their own

group (e.g. Group 11). Please note that this will make the task take longer, and that the survey form of that student will need to be updated with their new group number.

Once all Outcome Cards have been placed within the sequence/list of Product Cards and the groups are in agreement, the Value Game has been completed. An example of how the completed sequence/list of cards could look is below:



Make a record of how each group ordered the Outcome Cards and Product Cards by taking a photograph.

Step 7: Fill out the information collection template

After completing the Value Game, you must record the information in the information collection template spreadsheet.

Information from the survey forms completed by students is recorded on the tab "Survey form answers", and the results of the Value Game are recorded on the tab "Value Game answers". On the "Value Game answers" tab, you must rearrange the cells to correspond with the order your students placed the Outcome Cards and Product Cards (example below).

Product card 1
Making a positive difference to society and the environment by... recycling 10kg of food waste over a year
Making a positive difference to society and the environment by... recycling 10kg of food packaging over a year
Product card 2
Product card 3
Making a positive difference to society and the environment by... reusing 10kg of food waste over a year
Product card 4
Product card 5
Making a positive difference to society and the environment by... reusing 10kg of food packaging over a year
Making a positive difference to society and the environment by... reducing 10kg of food packaging over a year
Product card 6
Making a positive difference to society and the environment by... reducing 10kg of food waste over a year
Product card 7
Product card 8

After collecting all the information, please send the completed spreadsheet and your photographs of the ordering of Outcome and Product Cards to Social Value UK.

Annex 3: Student Survey Form

Survey form

Background information

Name:			
Age:			
Nationality:			
Gender:	<input type="checkbox"/> Male	<input type="checkbox"/> Female	<input type="checkbox"/> Other/Prefer not to say
Group:			

Importance of outcomes

Options for making a positive difference to society and the environment:	Rate the options in order of importance (1 being least important and 10 being most)
Reducing 10kg of food packaging over a year	
Reusing 10kg of food packaging over a year	
Recycling 10kg of food packaging over a year	
Reducing 10kg of food waste over a year	
Reusing 10kg of food waste over a year	
Recycling 10kg of food waste over a year	

Effectiveness of activities

Activity	Rate the activity in order of effectiveness (1 being least effective and 10 being most)
Writing a blog	
Writing a letter to a newspaper	
Writing a letter to a local representative	
Organising a community litter pick	
Starting a community compost heap	
Other activity (please state below):	
Other activity (please state below):	
Other activity (please state below):	