

TC Document

I. BASIC INFORMATION FOR TC

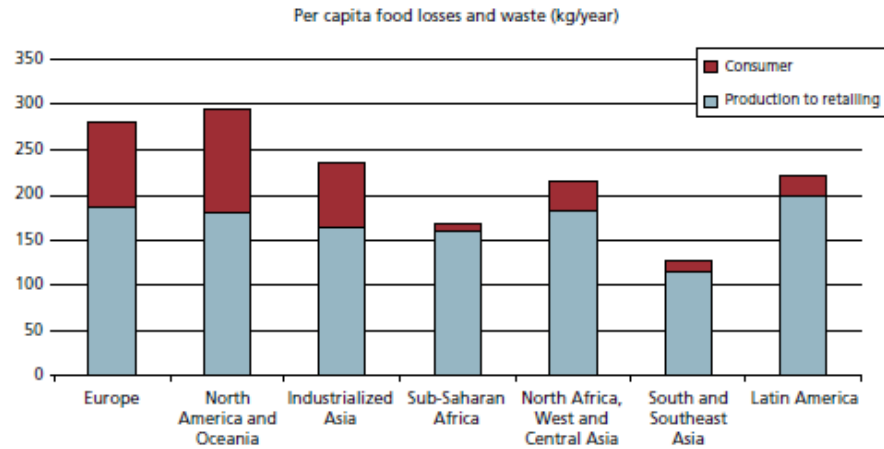
Country/Region:	REGIONAL
TC Name:	A digital social innovation approach to reducing food loss and waste
TC Number:	RG-T3068
Team Leader/Members:	Carlos Guaipatin (IFD/CTI), team leader; Marieke Gottsch (IFD/CTI); Santiago Nicolás Cañete (IFD/CTI); Yohana Gonzalez (IFD/CTI); Ana Rios Galvez (CSD/RND); Javier Jimenez (LEG/SGO)
Taxonomy:	Research and Dissemination
Date of TC Abstract authorization:	August 23, 2017
Beneficiary (countries or entities which are the recipient of the technical assistance):	Countries of Latin America and the Caribbean.
Executing Agency:	Inter-American Development Bank (IDB), through the Competitiveness and Innovation Division (IFD/CTI)
Donors providing funding:	Strategic Development Program for Sustainability (SUS)
IDB Funding Requested:	US\$385,000
Local counterpart funding, if any:	No
Disbursement period (which includes Execution period):	30 months
Required start date:	January 15, 2017
Types of consultants:	Firms and individual consultants
Prepared by Unit:	IFD/CTI
Unit of Disbursement Responsibility:	IFD/CTI
TC Included in Country Strategy (y/n):	n/a
TC included in CPD (y/n):	n/a
Alignment to the Update to the Institutional Strategy 2010-2020:	Yes

II. OBJECTIVES AND JUSTIFICATION OF THE TC

- 2.1 **Background.** Food is lost or wasted throughout the whole food supply chain (FSC), from initial agricultural production down to final household consumption.¹ Usually, experts make a distinction between food loss, which refers to all that edible food mass that does not make it to the distribution and consumption stages, and food waste, which occurs toward the back end of the chain. While food loss is far more prevalent in the developing world, associated mostly with a lack of adequate infrastructure, food waste mostly occurs in developed countries.
- 2.2 In terms of amounts, a 2011 study conducted by the Food and Agriculture Organization of the United Nations (FAO) showed that, by weight, around a third of all food produced for human consumption is lost or wasted. For Latin America and the Caribbean (LAC), the average per person amounts to nearly 225 kg/year. As the figure below shows, out of this amount, more than 85 per cent is lost in the pre-consumption stages.

¹ The FSC of vegetable and animal commodities can be divided into the following five segments: (i) agricultural production, (ii) post-harvest handling and storage, (iii) processing, (iv) distribution, and (v) consumption.

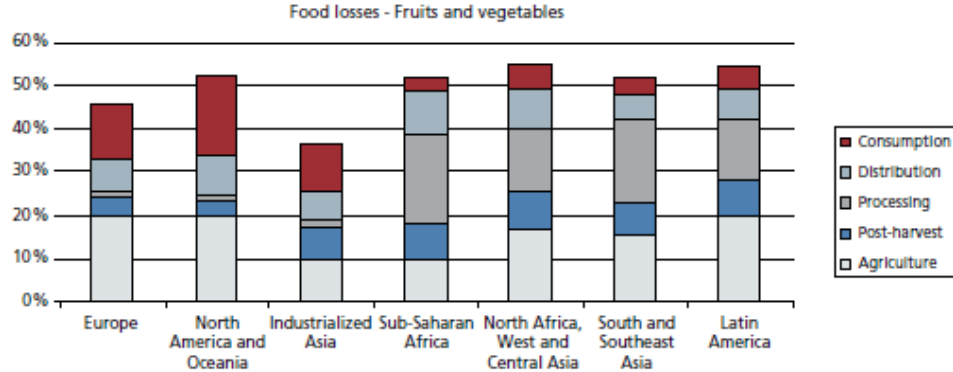
Figure 1: Per capita food losses and waste, at consumption and pre-consumptions stages



Source: FAO (2011) Global food losses and food waste – extent, causes and prevention

- 2.3 Having said that, this picture varies greatly depending on the type of food. In the case of cereals, for instance, the study highlights that most losses occur at the consumer level, while the percentage of fish and seafood that gets thrown away in individual households is much lower. More importantly though, as figure 2 below shows, the numbers show that the biggest driver are fruits and vegetables, one of the most nutrient-rich foods at our disposal. While the percentage tends to be high in all regions, the situation in LAC is globally the most acute, with nearly 50 percent of fruits and vegetables not even reaching the final consumer.

Figure 2: Part of the initial production lost or wasted, at different FSC stages, for fruits and vegetables



Source: FAO (2011) Global food losses and food waste – extent, causes and prevention

- 2.4 As referred to above, the causes of food losses and waste in developing countries are said to be mainly linked to financial and technical limitations. This applies to harvesting techniques, but also to storage and cooling facilities that are particularly relevant in the region's humid and warm climate and for easily perishable food types such as the mentioned fruits and vegetables.
- 2.5 But food spoilage also relates to consumer behavior and a lack of coordination between different actors in the supply chain. Food can be wasted due to quality standards, which lead to the rejection of food items not perfect in shape or appearance, and inadequate farmer-buyer sales agreements can lead to direct losses of crops at the farm-level. At the consumer level, insufficient purchase planning and expiring 'best-before-dates' also cause large amounts of waste.

- 2.6 Looking at this issue more in depth is crucial since food loss and waste has serious impacts on personal and national economics. Globally, the FAO estimates that food worth about \$940 billion is lost or wasted each year throughout the entire FSC. For sub-Saharan Africa, one of the world's poorest and most food-insecure regions, the World Bank estimates that just a 1 percent reduction in post-harvest losses could lead to economic gains of \$40 million each year, out of which most of the benefits would go directly to the smallholder farmers growing the food.
- 2.7 On the other hand, in a world where 1 out of 9 people go hungry, food loss and waste are urgent issues for combatting chronic undernourishment and poverty in general. In fact, experts speak of a vicious circle of poverty and hunger. On the one hand, people with little financial resources have limited capabilities of covering their minimum nutritional needs. On the other, hunger and malnourishment are major causes of poverty, creating often irreversible conditions that prevent people from leading a healthy and productive life, some of which are detailed in the box below:

Box 1: The hunger trap

Hunger affects an individual's

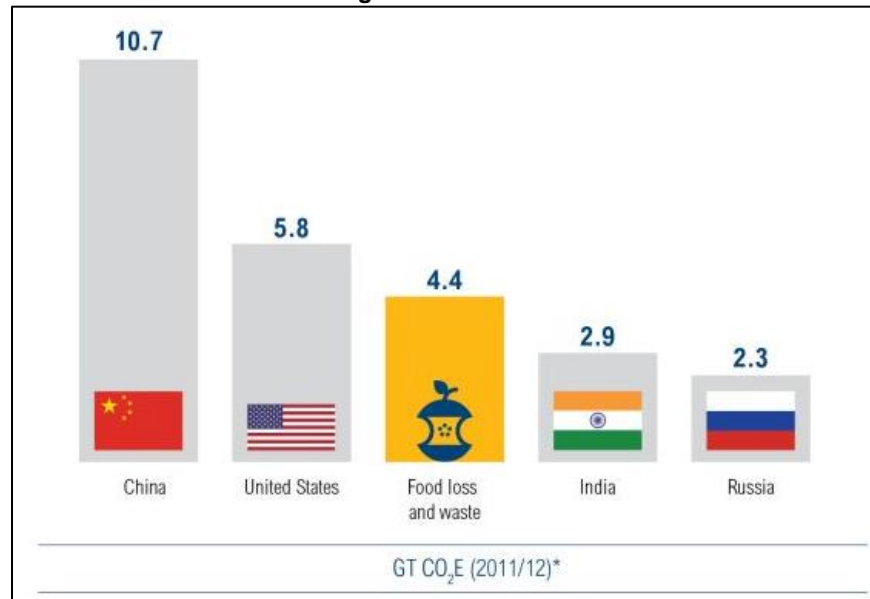
- ability to develop physically and mentally, retarding a child's growth and inhibiting school attendance and performance
- potential to perform physical activities, limiting their ability to participate in the labor force and making an income
- immune system linked to higher rates of disease and premature death
- well-being more in general since food insecurity has been identified as an important factor in the eruption of social and political conflict

- 2.8 Adding to this, the global mismanagement of these types of consumables not only means a missed opportunity for social and economic development, but also a waste of all the natural resources used for growing, processing, packaging, transporting, and marketing the food. In fact, one issue that is often overlooked in the public discourse is that food loss and waste have a direct and very strong link to climate change.
- 2.9 According to figures recently released by the FAO, food loss and waste accounts for about 4.4 gigatons of greenhouse gas emissions per year (figure 3). To put this in perspective, if food loss and waste were its own country, it would be the world's third-largest emitter, surpassed only by China and the United States. When compared to other sectors, food loss and waste generates more than four times as much annual greenhouse gas emissions as aviation, and is comparable to emissions from road transport.
- 2.10 The greenhouse gas emissions associated with food loss and waste come from a variety of sources such as: (i) on-farm agriculture emissions; (ii) the production of electricity and heat used to manufacture and process the food; (iii) the energy used to transport, store, and cook food; (iv) the landfill emissions from decaying food; and (v) the emissions from land use change and deforestation associated with producing food that is ultimately lost or wasted.
- 2.11 While all these facts are generally not news to experts and decision-makers, it is still unclear what the magnitude of these losses is, where exactly they occur along the value chain and how this differs between crops and countries. In addition, there is very limited reliable data on what the concrete causes are for why different commodities are being spoiled at that particular point in time between pre-harvest and consumption.² Collecting this micro-level information is

² Food lost at the beginning of the FSC may, for instance, be caused by a farmer's desperate need for money which leads to premature harvesting, but it can also be the consequence of a lack of adequate post-harvest storage facilities or poor coordination between the farmer and actors responsible for handling and transport.

a complex task, but without it, it is virtually impossible to design targeted national policies and programs to reduce food loss that get to the core of the issues and tackle them efficiently.

Figure 3: Greenhouse gas emissions linked to food loss and waste compared to the largest emitter countries



Source: World Resources Institute (<http://www.wri.org>)

- 2.12 **The Approach.** Summing up, avoiding food loss and waste has an important potential for spurring economic development, poverty reduction, and climate change mitigation. However, targeted policies, programs and products cannot be designed without a thorough understanding of problem. Several initiatives exist to fill this gap and significant improvements have been made over the last years.
- 2.13 However, there are important actors in the FSC whose crucial knowledge about the phenomenon is yet to be tapped into. To ensure that their voices are heard, what we suggest is a consultation mechanism to collect and systematize this first-hand information and a concerted effort of all parties that are on some level involved in food production, handling, processing, distribution, and consumption. It is this type of generation of linkages and dialogue among multi-sectoral stakeholders that lies at the heart of the social innovation methodology promoted by the Innovation Lab (I-Lab).
- 2.14 The I-Lab is a platform that was created in 2008 by the Competitiveness and Innovation Division (CTI) of the Inter-American Development Bank (IDB) and has since worked extensively on promoting innovative solutions with high social impact developed directly with and for the communities that find themselves affected by certain unattended problems. The approach has been successfully applied to address a variety of issues such as access to clean water, renewable energy, disabilities, and early childhood education. The process starts with a call for problems, using technology and social research to reveal these needs, and then engaging universities, the private sector and other actors who have the knowledge and resources to generate new high-impact social innovations based on this actual demand.
- 2.15 By applying the I-Lab's social innovation methodology, this TC will contribute to closing the knowledge gap around the causes of food loss and waste and support the development of innovative ideas on how to tackle them. The specific objectives of this TC are to (i) analyze the policy framework and market failures around the issue in a select number of countries, (ii) gather first-hand information on the causes of food loss and waste, (iii) support the

development of innovative solutions to address the identified problems, and (iv) disseminate the generated knowledge and build capacity in public agencies to subsequently replicate the methodology.

- 2.16 The activities will be implemented in the form of pilot projects in territories in at least two different countries of the region, to be selected based on a set of criteria detailed in the section below, and also one regional call to identify overarching challenges. The knowledge generated through these pilot projects could ultimately be applied in other countries and adapted for other thematic areas, such as solid waste management or recycling.
- 2.17 **Strategic Alignment.** The TC is fully aligned with the Institutional Strategy of the Bank given its focus on social policy, environment, climate change, and food security which are central to the regional development goals. The proposed project is also aligned with the strategic objectives of the SUS. This applies particularly to the objectives 1 (strengthening the climate knowledge base), 3 (generation of opportunities for the agricultural sector) and 4 (support municipal governments to prepare for challenges related to rapid urban growth).

III. DESCRIPTION OF ACTIVITIES

- 3.1 **Component 1: Policy framework and market failure analysis (US\$22.500).** Food waste is a global problem of staggering proportions, but the underlying reasons are very different from one region and city to the other. Therefore, this component will start with the selection of a minimum of two countries taking into account the following criteria: (i) identification of a relevant³ and regionally representative beneficiary group; (ii) commitment of at least one public counterpart to support the implementation of the initiative; and (iii) geographical representativeness.
- 3.2 Once identified, this component will finance an assessment of the existing food supply and distribution systems as well as policy frameworks, quality standards, and sector development strategies. The analysis will also distill some initial information on market failures that prevent a more sustainable production, processing, and consumption of food.
- 3.3 **Component 2: “Call for Problems” to identify challenges around food loss and waste (US\$74.500).** This component will apply the first stage of the I-Lab social innovation methodology by launching interactive technology platforms and, depending on the target group, more traditional field-based knowledge collection methodologies, to reach out to direct beneficiaries. These could include, among others, farmers, logistics providers, restaurant managers, and final consumer households.
- 3.4 The objective is to make beneficiaries part of the innovation process, validate the information collected under Component 1 and gain a better understanding of what the main problems are that lead to food loss and waste at the various levels. Out of the all the problems identified through this consultative mechanism, those issues will be prioritized that can potentially be tackled through the application of innovative technologies⁴ and inform the implementation of the third component – the call for solutions.
- 3.5 **Component 3: “Call for Solutions” to develop innovative, high-impact technological solutions (US\$222.000).** This component will launch a crowdsourcing process to invite multidisciplinary stakeholders from the public and the private sector as well as academic institutions and civil society to propose solutions for the prioritized problems. Each call will

³ Relevant actors are primarily those chain actors that would benefit from a reduction of food loss and waste in terms of income and livelihood.

⁴ The beneficiaries will participate in this prioritization exercise through the platform deemed most adequate to structure the demand. The topics will also be validated with experts from fields such as agriculture, climate change, sustainable development, and technology to ensure their relevance and suitability for this approach.

focus primarily on scalable innovative solutions out of which up to five most innovative and relevant proposals, selected by a panel of experts, will be financed in their pilot-phase.

- 3.6 The panel will be composed of specialists on the topic from inside and outside the IDB, as well as representatives of relevant government entities and private investors who will evaluate the pilot solutions' technical viability and scalability. In addition, there will be a feedback mechanism to ensure that beneficiaries who were consulted in the call for problems also participate in the development of the solutions. The winners of this contest will receive personalized mentoring and their solutions will be financed in their pilot phase.⁵
- 3.7 **Component 4: Dissemination of results, partnerships, and capacity building (US\$66,000).** Since very little is known about the coordination failures that occur throughout the FSC, it is crucial to develop a solid communication strategy to disseminate the knowledge generated by this initiative. Therefore, this component will generate a number of communication products, from publications to audiovisual materials, and organize dissemination events to ensure that the lessons learned reach decision makers and also raise awareness in society. Conditional on the success of attracting co-financing for the solution development and the respective liberation of funds, one of the pilot projects would be selected for a case study to produce robust quantitative data on the impact of the solutions.
- 3.8 This component will also finance consulting activities oriented at identifying and engaging potential collaborators in the process, as well as to leverage additional funds from private enterprises, NGOs, and public institutions to finance the pilot projects and scale up the social innovations. Furthermore, it will support training events (e.g. workshops, seminars, webinars) to consolidate local capacity to independently replicate the process.
- 3.9 All the activities of this TC will be closely coordinated with Country Offices and a more detailed outline of the stages of the process can be found in [Here](#). An indicative Results Matrix of the TC can be found in [Annex I](#).

INDICATIVE BUDGET (US\$)

Activity/ Component	Description	IDB Funding
Component 1	Policy framework and market failure analysis	22,500
Component 2	"Call for Problems" to identify challenges around food loss and waste among direct beneficiaries	74,500
Component 3	"Call for Solutions" to develop innovative, high-impact technological solutions	222,000
Component 4	Dissemination of results, partnerships, and capacity building	66,000
Total		385,000

IV. EXECUTING AGENCY

- 4.1 The executing agency of this technical cooperation will be the Inter-American Development Bank through the Competitiveness and Innovation Division (IFD/CTI) with cross-support from other sectoral divisions in the Bank. This is consistent with the TC's specific objective, and aims at completing the tasks at hand in a cost-efficient manner and ensuring the quality of the outputs. In line with the updated guidelines GN-2470-2, this arrangement will also facilitate the transfer of technical knowledge and qualified experience of the Bank's project team.

⁵ Depending on the availability of partners and co-financing, this TC would either finance the technical assistance only, to be delivered by a third party specialized in incubation programs, or both the incubation and the seed funding. The latter would be done through contracts between the Bank and the selected developers of the solutions.

- 4.2 Initial conversations have been started with colleagues in the Climate Change and Sustainable Development Sector (CSD) and the Multilateral Investment Fund (MIF) working on similar topics to ensure coordination and explore synergies and areas for collaboration. Furthermore, as this initiative is conceived as a pilot, it will serve as a learning exercise for future projects on the topic throughout the whole IDB. The knowledge generated by this experience will also be disseminated in other LAC countries since challenges will most likely repeat themselves among similar beneficiary groups (e.g. small farmers, poor households), therefore benefitting a broader range of stakeholders beyond the national limits.
- 4.3 The goods, works and consulting services will be acquired following the policies of the Bank. The activities to be carried out under this operation have been included in the Procurement Plan ([Annex III](#)) and will be executed in accordance with established procurement methods, namely: (a) Recruitment of individual consultants, as established in AM-650; (b) Contracting of consulting firms for services of an intellectual nature according to GN-2765-1 and its associated operational guides (OP-1155-4); and (c) Procurement of logistics services and purchase of goods in accordance with GN-2303-20.

V. MAJOR ISSUES

- 5.1 Given the complexity of issues in the FSC management and the challenging nature of fostering collaboration between public, private, and civil society stakeholders, finding synergies between their perspectives and interests is certainly a challenge. This risk will be mitigated by involving each of them early in the process to reflect their views in project design, identify areas for collaboration, and develop incentives that would motivate their participation.
- 5.2 It is also important to start out with some aspect of the FSC disconnect that is particularly striking in the respective national or local context, a topic that would be identified by the market failure analysis. One option would be to focus on a particular commodity, such as vegetables and fruits, or on a specific type of consumer groups and their dietary habits. This will narrow down the focus of the pilot projects and facilitate the stakeholder mapping exercise.

VI. EXCEPTIONS TO BANK POLICY

- 6.1 There are not exceptions to Bank policies in order to execute this TC.

VII. ENVIRONMENTAL AND SOCIAL STRATEGY

- 7.1 Given the nature of the program, there are no associated environmental or social risks. Based on the Environment and Safeguards Compliance Policy (OP-703) this operation is classified as "C." (See [Safeguards Policy Filter Report](#) and the [Screening Form](#)).

ANNEXES

Annex I: [Indicative Results Matrix](#)

Annex II [Terms of Reference](#)

Annex III: [Procurement Plan](#)

A DIGITAL SOCIAL INNOVATION APPROACH TO REDUCING FOOD LOSS AND WASTE

RG-T3068

CERTIFICATION

I hereby certify that this operation was approved for financing under **Ordinary Capital Strategic Development Program for Sustainability (SUS)** through a communication dated August 23, 2017 and signed by Felipe Caicedo (ORP/GCM). Also, I certify that resources from said fund are available for up to **US\$385,000** in order to finance the activities described and budgeted in this document. This certification reserves resource for the referenced project until December 13th, 2017. If the project is not approved by the IDB within that period, the reserve of resources will be cancelled, except in the case a new certification is granted. The commitment and disbursement of these resources shall be made only by the Bank in US dollars. The same currency shall be used to stipulate the remuneration and payments to consultants, except in the case of local consultants working in their own borrowing member country who shall have their remuneration defined and paid in the currency of such country. No resources of the Fund shall be made available to cover amounts greater than the amount certified herein above for the implementation of this operation. Amounts greater than the certified amount may arise from commitments on contracts denominated in a currency other than the Fund currency, resulting in currency exchange rate differences, represent a risk that will not be absorbed by the Fund.

CERTIFIED BY:

Original Signed

11/20/2017

Sonia M. Rivera

Date

Division Chief

Grants and Co-Financing Management Unit

ORP/GCM

APPROVED BY:

Original Signed

11/20/2017

Carlos Rivas Gomez

Date

Division Chief

Competitiveness, Technology and Innovation

Division

IFD/CTI