

Implementing Innovative Strategies to Combat Food Poverty in Jalisco, Mexico

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27 June 2018

Summary

In 2016, the population in Jalisco, Mexico living in poverty accounted for 2,560,600 people (31.8 percent of the total population of the state). The population experiencing food poverty in the state was 1.24 million (15.4 percent of the population in Jalisco). Deficiencies in the national social programs to reduce poverty and the lack of collaborative strategies among food banks have failed to substantially reduce food poverty rates in the state of Jalisco and at the national level.

Food banks need scientific and technological support to modernize their operations, deploy new organizational strategies, and promote new public policies that allow them to become more efficient in their process of collecting, storing, and distributing food. This article presents the main strategies identified by government, food banks, and academia to face the challenges to

reducing food poverty in Jalisco State. These strategies are the core of a project (financed by Fondo Mixto CONACYT, Jalisco's state government) that a group of institutions are implementing.

Introduction

Overview on Food Security

According to the definition reached during the World Food Summit held in 1996 in the Food and Agriculture Organization (FAO), "Food security exists when all people, at all times, have physical, social, and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO, 1996).

FAO considers four guiding principles to achieve food security: 1) Food availability, implies enough food of adequate quality supplied through domestic production or through imports; 2) Access to food, namely access to resources, so people have the right to acquire appropriate and nutritious food; 3) Use, which refers to the biological utilization of food, based on adequate food, drinking water, sanitation, and health care, in order to meet all of their physiological needs that are relevant considering the non-food components necessary for safe food; and 4) Stability, implies adequate access of food at all times, without any risk that people run out as a result of sudden crises, this concept includes the axis of the availability

and access (FAO, 2011; Soria-Sánchez and Palacio-Muñoz, 2014).

The most common causes of food insecurity are high prices, environmental degradation, inefficient forms of production and distribution that hurt small farmers, poor planning between food production and the national or international markets, the competition of the bio-fuel production plantations, and cultural reasons for access to certain foods commodities, among the most noteworthy (FAO, 2011).

The latest FAO estimates indicate that global hunger reduction continues: about 795 million people were estimated to be undernourished in 2014-2016, down 167 million over the last decade, and 216 million lower than in 1990-92. In the same period, the prevalence of undernourishment has fallen from 18.6 percent to 10.9 percent globally, and from 23.3 percent to 12.9 percent for developing countries (FAO, IFAD and WFP, 2015).

Hunger reduction requires an integrated approach, which includes: public and private investments to raise agricultural productivity; better access to inputs, land, services, technologies, and markets; measures to promote rural development; social protection for the most vulnerable, including strengthening their resilience to conflicts and natural disasters; and specific nutrition programs, especially to address micronutrient deficiencies in mothers and children under five (FAO,

2014).

One of the strategies that have been contemplated to reduce rates of food poverty in developing countries is to channel surplus food. According to FAO (2012), food losses in industrialized countries are as high as in developing countries, but in the developing countries more than 40 percent of food losses occur in stages of post-harvest and processing, while in the industrialized countries more than 40 percent of food losses occur at the retail and consumption points. Consumers in industrialized countries waste almost as much food (222 million tons) than total net food production of sub-Saharan Africa (230 million tons) (Gustavsson et al., 2011; FAO, 2014).

According with the World Economic Forum, Mexico has a \$1.26 trillion economy, making it the 15th largest economy in the world. This makes Mexico a so-called "middle power," falling just short of being a G7 economy, it is nevertheless an economic power to be reckoned with (WEF, 2016). Nevertheless, there are severe problems of social inequality in its population.

The aim of this article is to discuss a social innovation project focused on reducing food insecurity in the State of Jalisco, Mexico.

Background information

Inequality with Regards to Food Security in Mexico

While dietary energy supplies available in Mexico exceed requirements to meet demand, strong deficiencies in access demonstrate a mixed picture of large gaps that require focused interventions for certain groups of the population and in certain regions (Urquía-Fernández, 2014). An important part of the index of prevalence of undernourishment for Mexico is made up from food supply data, reflected in the food balance sheets, namely, available food produced locally or imported and converted into calories. Energy availability of food for Mexico is 3,145 kilocalories per person per day, a value that is among the highest in the world, compared to 2,362 kilocalories reported previously (Urquía-Fernández, 2014). Although according with FAO (2015), the percentage of prevalence of undernourishment in Mexico is less than five percent, this figure contrasts with the food shortages indicator, which in 2010 reached 24.9 percent, a value which is higher than the food poverty indicator in the same period (18.2 percent) and represents more than twice the level of the extreme poverty percentage, which reached 11 percent in 2010 (Urquía-Fernández 2014).

In addition to difficult access to food among large groups of the Mexican population, other problems are added, such as chronic child malnutrition and the high prevalence of overweight and obesity in children, adolescents, and

adults, caused by bad eating habits and poor nutritionally balanced drinks and processed foods called junk foods that dominate a broad sector of the national food market. The double burden of malnutrition prevents proper physical and intellectual development of the individual while at the same time increasing the risk of chronic non-contagious diseases, with large direct and indirect costs to households and society (Aranda Palacios 2014; Urquía-Fernández 2014).

Using the Georeferenced Social Information System (SISGE, 2015), developed by the Ministry of Social Development in Mexico (SEDESOL), it is possible to view at state and municipal levels, the situation of food poverty and extreme poverty in which people in different parts of the country live. In addition, the SISGE (2015) contains the databases on which the biannual reports are built for the National Assessment Council of Social Development Policies in the country (CONEVAL 2015, 2017).

According to CONEVAL (2017⁶), poverty reached 53.4 million people (43.6 percent of the total population) in Mexico in 2016; this percentage has remained relatively stable since at least 2010. Food poverty reached 24.6 million people (20.1 percent), a percentage that has also remained relatively stable during the 2010-2014 period. It is noteworthy to mention that the lack of access to food is the second highest indicator of social underdevelopment, following the lack of access to social security.

Food Waste in Mexico

According to official figures, in Mexico 37 percent of the food produced is wasted, this represents 10 million and 431 thousand tons of food per year (SEDESOL, 2016). The amount of wasted food in the country could eliminate hunger for about seven million Mexicans. There are four main strategies implemented by SEDESOL (2016) to reduce the gap between wasted food and people in food poverty in the country, namely:

- a) To build a technical group focused on food losses and waste with representatives of 16 secretaries of state, AMBA, and FAO.
- b) To create productive chains along the coast of Mexico in order to reduce waste of fish and seafood in 37 municipalities located along the coastlines of the country.
- c) To increase the investment in research, science, and technology to develop technical and practical solutions to the various problems of food losses in different regions of the country and productive chains.
- d) To coordinate work with the AMBA to distribute food to the poorest of the country.

Governmental Programs to Reduce Food Poverty in Mexico

Historically, from 1922 to present day the Mexican

government has implemented an extensive number of programs and policies to support vulnerable populations in food poverty, nevertheless, malnutrition remains one of the challenges of the highest importance for public health in the country (Barquera, Rivera & Gasca, 2001). The most recent six-year program named Cruzada Nacional Sin Hambre (National Crusade Against Hunger) is a strategy of inclusion and social welfare announced by the Mexican Federal Government, which seeks to abate massive poverty, malnutrition, and social marginalization in Mexico (SINHAMBRE, 2015). This is the first massive social policy implemented for the 2012-2018 presidential term (DOF, 2014; SINHAMBRE, 2015). Additionally, the Strategic Project for Food Security (PESA, 2015), implemented by SAGARPA (2015), is a plan that meets the demands of the rural population located in marginal areas. The PESA in Mexico has technical support from FAO (PESA, 2015).

Situation of Food Poverty and Marginalization in Jalisco

In 2014, the economy of Jalisco State contributed 6.3 percent of the national gross domestic product and it was the number one contributor in the agricultural and livestock sector at the national level with 11 percent of the total. Nevertheless, according to CONEVAL (2017), in 2016 the population in poverty in Jalisco accounted for 2,560,600 people, representing 31.8 percent of the total population of the state. This figure has remained constant

with little change from previous years with 37 percent in 2010, 39.8 percent in 2012, and 35.4 percent in 2014. The population facing food poverty in the state was 1,239,900, representing 15.4 percent of the population, this figure is lower than what was reported in 2010 of 22.0 percent and in 2012 of 20.6 percent, thus, this indicator seems to decrease gradually.

According to the population census of the year 2010, 17.5 percent of the Jalisco's population suffers from high to very high degrees of marginalization, representing 1,114,203 inhabitants (CONAPO, 2011). That same year, 16 percent (more than 678,000 people) of Guadalajara's metropolitan area suffered high to very high degrees of marginalization. These figures are very close to the percentage of people identified by CONEVAL (2015, 2017) who faced a lack of access to food.

There are several governmental efforts to solve the lack of access to food in the state. For example, the Program for Food Security (SEDIS, Jalisco) is a program that has coverage in those municipalities in the state with the highest levels of food poverty (SEDIS, 2015).

Food Banks in Mexico

A food bank is a non-profit, charitable organization that distributes food to those who have difficulty purchasing enough food to avoid hunger. In Mexico, as in several Latin American countries, food banks usually operate on the

warehouse model. They act as food storage and distribution depots for smaller social organizations or they give out food directly to people suffering from hunger.

Food banks are a bridge between those with an abundance of food and those who lack it and they operate by rescuing donated products from food markets, convenience stores, agricultural fields, and the packing and food industry in general, by averting products from becoming waste and unfit for human consumption. More than 60 percent of donations of perishable products come from the central markets (*centrales de abasto*) (AMBA, 2001). As early as 2000, they served more than 400,000 people daily through the distribution of basic food baskets through 43 food banks affiliated to the AMBA and distributed in 27 states (AMBA, 2001).

Food banks in Mexico remain one of the most important actors contributing substantially to various mechanisms of assistance, benefiting the neediest sectors of the country (AMBA, 2001; AMBA, 2016).

Nowadays, the AMBA is the second largest network in the world with 60 food bank affiliates across the country (EXPOK, 2014). In 2012 they rescued a total of almost 116,000 tons of food to constantly support 1,200,000 beneficiaries (EXPOK, 2014). It should be noted that the actions of the AMBA have been strengthened since 2010 with the creation of the Social Fund for Food Rescue (FOSORA, 2016).

Food Banks in Jalisco

Thanks to the social commitment of entrepreneurs and food market traders, presently there are four main food banks in Jalisco: Juanactlán, Tepatitlán, Zapotlanejo, and the Diocesan Food Bank of Guadalajara (BDA for its acronym in Spanish). All of these Food Banks belong to the network of the Mexican Association of Food Banks (AMBA or its acronym in Spanish). In 2015 the food banks of Jalisco managed the collection and distribution of food to benefit more than 50,000 households living in food poverty in the state. Despite the great efforts made by the food banks of Jalisco, they only meet about 10 percent of the need of the population who face a lack of access to food in the state (AMBA, personal communication, 2016).

According to information provided by representatives of the AMBA in Jalisco (personal communication, 2016), the main problems faced by the food banks in Jalisco can be summarized by the following items:

- Limitations on the tax incentives for more and better donations.
- Food donation opportunities are lost daily, and a minimum percentage of total food wasted is captured due to shortcomings in communication between donors and food banks not being promptly notified about the surplus of foods.
- Waste in the food banks can account for up to 40 percent loss due to a lack of infrastructure to

preserve the food.

- The food safety of the distributed food is not assured due to the lack of quality processing within the food banks.
- The food banks model is predominantly social assistance, with a very limited human development component (creation of jobs and micro-entrepreneurship to overcome poverty).
- There is little information and awareness among the population of the Metropolitan Area of Guadalajara about food poverty and there are few social initiatives inviting people to participate.

Materials and Methods

The sources of information to develop this work are the National Council of Population of México (CONAPO, 2015), the official reports of the Secretary of Social Development (SEDESOL, 2016), the National Assessment Council of Social Development Policies in Mexico (CONEVAL, 2015; 2017.), and the statistical resources of the National Institute of Statistics and Geography (INEGI, 2010). Also, various specialized scientific publications on the subject were consulted. The statistical data was processed by using Geographical Information Systems (GIS). Additionally, we have interviewed representatives of the Mexican Association of Food Banks (AMBA, for its acronym in Spanish) and specifically the regional Food Banks in Jalisco State located in the cities of Guadalajara,

Zapotlanejo, and Tepatitlán.

Food banks in Mexico have received support from several higher education institutions and research centers across the country with the purpose of contributing to the improvement of the administrative strategies in the processes of collection, storing, and distributing food to improve diet in terms of both quantity and quality (Austin et al., 2009; López Salazar et al., 2011; Landín-Granvallet et al., 2015). The experiences of shared work among producers, companies, universities, research centers, and nonprofit organizations has proven to be able to yield promising results regarding the fight against food poverty. It is expected that these types of alliances will generate social value and a more equitable society (Austin et al., 2009).

A group of institutions coordinated by the Institute of Technology and (Instituto Tecnológico y de Estudios Superiores de Occidente (ITESO) came with a proposal to answer the call of the Fondo Mixto (CONACYT-Jalisco's State Government) to implement the project Jalisco sin Hambre, which started its first phase (one of three; a total of two years of planned work) in February 2017. The participating institutions are:

- ITESO, in charge of the general coordination and several of the products and services: the socioeconomic and nutrition-focused study of the beneficiaries of the food banks; a training program on

nutrition and the betterment of the food baskets distributed by the food banks; a proposal for a legal reform; advising in food engineering; and grantseeking activities to replicate and assure the continuity of the project;

- The Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM- Guadalajara Campus), in charge of the design of the digital tools to give support to the leave-behind-poverty scheme; the Centro de Investigación y Asistencia en Tecnología y Diseño del Estado de Jalisco AC (CIATEJ), in charge of the design and implementation of a food processing factory to extend the shelf-life of donated fruit and vegetables; and in charge of a training program on how to improve the management of food once it gets donated to the food banks;
- Desarrollo Humano de Jalisco (ProSociedad), in charge of the leave-behind-poverty scheme, the monitoring group on the rights to food and nutrition, and the training program on strategic management; and
- Germinar Capital Social y Desarrollo Sustentable; and AMDOCS, a leading software and services company, which has donated hundreds of hours of highly qualified work to support three of the food banks in the state selected for their ability to make the most of the services provided by the project Jalisco sin Hambre: Banco Diocesano de Alimentos de Guadalajara, Banco Diocesano de Alimentos de Los

Altos (de Tepatitlán), and Banco de alimentos de Zapotlanejo.

The project is focused on the following strategies, oriented towards the improvement of the operation of the food banks in Jalisco:

- Encouraging the improvement, in quantity and quality, of donations to food banks in Jalisco through improving public policies, legislation, and tax benefits.
- Improving the effectiveness and efficiency of the collection, storage, and distribution processes (including logistics, inventory, transportation, etc.)
- Strengthening capacities and professionalization of the operational staff of the food banks.
- Ensuring food safety through training and improvement of infrastructure focused on achieving a safe and swift distribution of food to beneficiaries.
- Added value and increasing the shelf life of food and reducing waste⁷.
- Contributing to improved nutritional practices to achieve a better quality of distributed food packages for beneficiaries.
- Facilitating access to employment opportunities and entrepreneurship among the beneficiaries of the food banks.
- Disseminating information to promote initiatives and action plans among society to strengthen the fundamental human right to food.

To implement these strategies, the social intervention of this interinstitutional group has been focused on three main work areas:

1) The improvement of the overall operation of the food banks.

a. Optimization of the logistics and food safety.

b. A strategy to increase food donations.

c. A small factory to process fruits and vegetables donated to the food banks.

2) Management of the environment:

a. A proposal for legal reform. This proposal is already in the local Congress and in discussion in committees.

b. A monitoring group on the rights to food and nutrition (with the support of a website).

3) Development of the beneficiaries:

a. A scheme to leave behind poverty and have better access to jobs and job creation opportunities.

b. A nutrition plan: better processes to gather nutritional data about the beneficiaries; betterment of the food baskets; and a training program on nutrition.

To discuss the social innovation nature of the project

currently being implemented by a group of institutions, we have assessed its main achievements and challenges as accounted for by the coordinators of the project themselves.

Results and Discussion:

The purpose of the project is twofold: 1) to build a multidimensional model to instill new capabilities in the food banks' staff to go beyond social assistance and support beneficiaries to overcome poverty; 2) to enhance synergies to have a greater impact on the reduction of food insecurity in Jalisco and, eventually, in the country. It is too early to assess if this purpose has been achieved or to what extent it is achievable, because the project is, still, in the implementation phase. Nevertheless, the project has some partial results already:

- An analysis of the strategic orientation was undertaken in each food bank. Based on said analysis, a set of suggestions were made and a training program was implemented to strengthen the operation of the banks.
- Another analysis was the socioeconomic and nutrition-focused study of the beneficiaries of the food banks, using the food banks' databases and a survey on food security conducted by a team of nutritionists. The main findings confirmed that the food banks' attention is highly focused on the poor: the incomes of 95 percent of the beneficiaries was

not enough to meet the basic needs basket. A scenario of "obesity in poverty" (Peña y Bacallao, 2000, quoted by Fuentes, et al., 2017) was also confirmed: 75 percent of the beneficiaries are overweight and 16 percent of the beneficiaries have short stature (Fuentes, et al., 2017).

- This research also confirmed that there is a high-carb, high-cholesterol, and high-sodium diet in most of the beneficiaries and a low intake of fruits and vegetables; both against what prevailing literature in the field recommends (Fuentes, et al., 2017). Based on these findings, a team of nutritionists drew-up a set of suggestions for the food banks' staff and a training program on nutrition for the beneficiaries.
- An interinstitutional group (ITESO, ITESM, Germinar Capital Social y Desarrollo Sustentable, and Amdocs) was formed to design and implement a digital platform to give support to the food banks' operations.
- Analysis was conducted, and recommendations were also made concerning logistics and food safety.

Is Jalisco sin Hambre: A Social Innovation Project?

In terms of innovation, the relevant products and services are the following:

- A proposal to reform the law. The main purpose of this proposal is to guarantee, by law, a potentially

incremental fund to collect more food in the fields.

The impact of this fund will be twofold: it would sustain and increase the current capacity of the food banks to collect food; and it would stabilize prices and jobs in the fields.

- A strategy to overcome poverty, based on helping the beneficiaries have access to job opportunities and/or start a new micro-business on their own (this may imply the provision of capital, like breeding foot). This strategy is an adjustment of Banerjee's approach to the local context (Banerjee, 2015a; 2015b; et al., 2015).
- A digital platform comprised of the following modules: 1) evaluation of donations, to prioritize the ones with higher quality and to stimulate donors; 2) traceability, to optimize the logistics to collect food; 3) the collection of data from beneficiaries; this would optimize the work of the food banks' staff; it would also keep their work focused on the poorest beneficiaries ; 4) a match-making tool to bring digital support as a strategy to overcome poverty. The digital platform will be available in two formats: responsive web and mobile app.

The social nature (cfr. Phils et al., 2008 y Murray, Caulier-Grice y Mulgan, 2010, ambos cit. en Buckland y Murillo, 2014: 10) of the Project resides in focusing on the reduction of food insecurity in Jalisco and, eventually, other regions of the country. The project envisages the

reproduction of this model in other regions.

Buckland and Murillo (2013, quoted in Buckland and Murillo, 2014: 13) have identified several variables to assess the social innovation nature of a project or initiative: social impact, financial sustainability, the nature of the innovation itself (open/close innovation, incremental, or radical), intersectoral collaboration, scalability, and replicability. They identified the different phases of a social innovation project also: diagnosis and analysis, proposals and ideas, blueprint or mock-up and pilot project, business model, scalability and replicability, and systemic change (Buckland y Murillo, 2013, cit. en Buckland y Murillo, 2014: 15). Several authors quoted by Cajaiba-Santana (2014: 44) stress the importance of social change and new practices as the main features of social innovation.

Jalisco sin Hambre is a project aimed at having social impact (reduction of food insecurity), based on interinstitutional work to develop products and services that constitute a multi-faceted model to increase the efficiency of the food banks and go beyond social assistance and overcome poverty. The project is still in its implementation phase. A thorough assessment of the impact or the social innovation nature of this project will have to wait. However, the persistence of food insecurity and poverty in Jalisco and Mexico is a call for this type of initiative and project.

Acknowledgement

The authors of this article acknowledge and appreciate the valuable contributions of each institution of the project Jalisco sin Hambre (the official name of this project being Modelo logístico para el aprovechamiento, conservación y manejo tecnificado de alimentos: plataforma de alimentos (JAL 2016-01-02-279011)), financed by Fondo Mixto Jalisco:

Instituto Tecnológico y de Estudios Superiores de Occidente (ITESO); Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM-Campus Guadalajara; Centro de Investigación y Asistencia en Tecnología y Diseño del Estado de Jalisco AC (CIATEJ); Desarrollo Humano de Jalisco (ProSociedad); AMDOCS, a software and services provider; Germinar Capital Social y Desarrollo Sustentable; and the food banks of Guadalajara, Zapotlanejo, and Tepatitlan.

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⁶ The 2016 data on poverty reported by the Instituto Nacional de Estadística y Geografía (INEGI) and the Consejo Nacional de Evaluación de la Política de Desarrollo Social (CONEVAL) were the subject of a rebuttal coming from some of the most important researchers in the field (cf. Jaramillo, 2017), who stressed that the 2016 data does not allow comparisons with data previously reported.

⁷ The food Banks will have a small factory to produce puree from fruits and/or vegetables

⁸ An analysis undertaken by a team implementing the Project, found that 95% of the beneficiaries have income below the poverty line (which is equivalent to the basic basket of goods).