



2018 SCOPING MISSION IN COLOMBIA

FOOD SYSTEM, STAKEHOLDER ANALYSIS
AND CLIMATE SERVICES ANALYSIS

MARCH 2019

Cover Photo: A coffee farm worker in Cauca, southwestern Colombia.
Credit: Neil Palmer (CIAT)

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*Reference: Reports written by Greyson Cadwell and Kristine Kim during
the summer of 2018 within the framework of Columbia World Project and
ACToday project.*

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INTRODUCTION

As part of the scoping mission of ACToday, Greayson Cadwell and Kristine Kim, two students of the School of International and Public Affairs (SIPA) of Columbia University, traveled to Colombia in the summer of 2018 to analyze the ecosystems of the food chain and the climate services in the country. The objectives of this mission were to assess: 1) the policy landscape and the food system, 2) Climate Services available in the country, 3) the value chain of a staple crop and a cash crop.

The methodology used by the SIPA students included literature review as well as semi-structure interviews with local experts in agriculture, nutrition, food systems, climate services, officials from the Ministry of Environment, members of the Academy in Colombia, international organizations working on the ground, NGOs, farming associations and research organizations.

This document summarizes the key findings and recommendations based on the research and field work developed during the summer in 2018 by the SIPA students.

COUNTRY OVERVIEW

Despite its middle-income status, Colombia has acute inequality. It is the 19th most unequal country in the world¹, with a Gini index of 0.539 and a gender inequality index of 0.429. It is estimated that 43% of Colombians are food insecure, increasing to 57.5% of the population in rural areas². Simultaneously, the rise in urbanization and the increased demand in processed foods has resulted in obesity in Colombia. In rural areas, there is a coexistence of overweight mothers and underweight, stunted children. This nutritional transition has caused a dual malnutritional burden in the country: the presence of underweight and overweight demographics.

One of the main problems related to Colombian food system is the lack of infrastructure required in rural areas to develop agriculturally, which impedes small farmers from reaching markets or improving productivity.³ In essence, investing in technical infrastructure for irrigation and drainage, flood controls, water storage, and soil erosion is needed to make the land suitable for agricultural activity. Further, the lack of property rights, driven by 60 years of armed conflict, has led to suboptimal use of land and compromised the food security and nutrition of vulnerable populations. During the conflict, rural areas were largely controlled by the guerilla forces and had little institutional presence from the state³. The conflict resulted in displacing

1 WFP. WFP Colombia Country Brief. Nov. 2017.

2 WFP. Colombia Country Strategic Plan (2017-2021). 11 July 2017.

3 "OECD Review of Agricultural Policies: Colombia 2015." OECD iLibrary, read.oecd-ilibrary.org/agriculture-and-food/oecd-review-of-agricultural-policies-colombia-2015_9789264227644-en.

nearly 7.5 million people⁴, which is the primary contributor to widespread food insecurity in the rural regions of the country.

From an agribusiness perspective, Colombia has two types of agriculture production systems: commercial agriculture in the form of large modern farms selling to organized markets and small-scale, labor-intensive farms with limited access to markets.³ The current commercial structure heavily invests in vertical supply chain operations. *Gremios*, i.e. producers' associations, exist at the bottom of the value chain and are incredibly influential, monopolizing each individual value chain per commodity. Depending on the crop, the *gremio* is more or less powerful, and similarly, more or less collaborative with others outside of their value chain.

Regarding the insurance sector, the main issues faced by the country are: difficulty to aggregate accurate data (the public data is lacking in coverage and the private information is nearly impossible to acquire), low institutional infrastructure for the insurance market, very high transaction costs, high levels of rural violence, low risk awareness, high premium prices, and an underdeveloped insurance culture.¹⁵ Additionally, government sponsored disaster aid crowds out private insurance sectors. Information asymmetries remain prevalent and the limited amount of insurance providers exacerbates these problems. According to international organizations in Colombia, there is a strong need to update agroclimatic risk maps to help inform the design of functional insurance schemes.⁵

In 2017, the Colombian government developed the *Comisión Nacional de Crédito Agropecuario*, offering a subsidy of 60 percent of insurance premiums for all crops. If certain qualifications are fulfilled (ie: the farm is backed by credit from FINAGRO or the crops cultivated are one of the crops prioritized by the government), the government will finance 70- 80 per cent of the premium price. The policy stipulates the following crops as priority: sugarcane, coffee, palm oil, avocado, pineapple, and banana⁶.

The legal framework in Colombia has proliferated in the last recent years and the following legislation needs to be considered aligned with ACToday objectives:

- Política Nacional De Cambio Climático 2017⁷: The National Policy for Climate Change was borne out of the Paris Agreement to reduce greenhouse gas emissions by 20% by 2030. The policy covers five strategy areas: rural development, urban development, energy-mining development, development infrastructure, and ecosystem management and conservation.

4 "Nutrition Country Profiles: Colombia Summary." http://www.fao.org/ag/agn/nutrition/co_en.stm.

5 Romero, Helena Garcia, and Adriana Molina. Agriculture and Adaptation to Climate Change:

The Role of Insurance in Risk Management. The Case of Colombia. Inter-American Development Bank,

www.repository.fedesarrollo.org.co/bitstream/handle/11445/330/BID_Agriculture%20and%20Adaptation%20to%20Climate%20Change%20The%20Role%20of%20Insurance%20in%20Risk%20Management%20Colombia.pdf?sequence=2&isAllowed=y.

6 Comisión Nacional de Crédito Agropecuario. República de Colombia, 2017. www.finagro.com.co/sites/default/files/documento1.pdf

7 Política Nacional De Cambio Climático. Ministerio De Ambiente y Desarrollo Sostenible, 2017.

- La Ley de Transparencia y Acceso a la Información 2016⁸: The law for transparency and access to information stipulates that the government has to release primary data gathered from standard government operations (such as climate and weather monitoring) to the public for any form of civic use.
- El Convenio de Cooperación Técnica y Científica 2013⁹: As a response to the El Niño-Southern Oscillation events during 2007-2011, the agriculture sector convened across public, private, and academic sectors in Colombia to discuss future mitigation and adaptation to similar climate catastrophes. The objective of the agreement was to fortify the agriculture sector's adaptation capacity and to improve the efficient use of resources in the productive supply chains.

8 Guia De Datos Abiertos En Colombia. Ministerio De Tecnologías De La Información y Las Comunicaciones De Colombia, 2016, estrategia.gobiernoenlinea.gov.co/623/articles-9407_Guia_Apertura.pdf.

9 MADR-CIAT. Logros y retos de la agricultura colombiana frente al cambio climático. Clima y sector agropecuario Colombiano, 2013, www.aclimatecolombia.org/download/Investigacion%20Uno/Revista%20Final.pdf.

STAKEHOLDER ANALYSIS

Figure 1 is an example of the network map of the key institutions identified and assessed during this scope mission and their connections. We acknowledge that this is not an exhaustive list and that more institutions could be involved in the food system in Colombia, and that the connections might be more complex than the ones represented in this map.

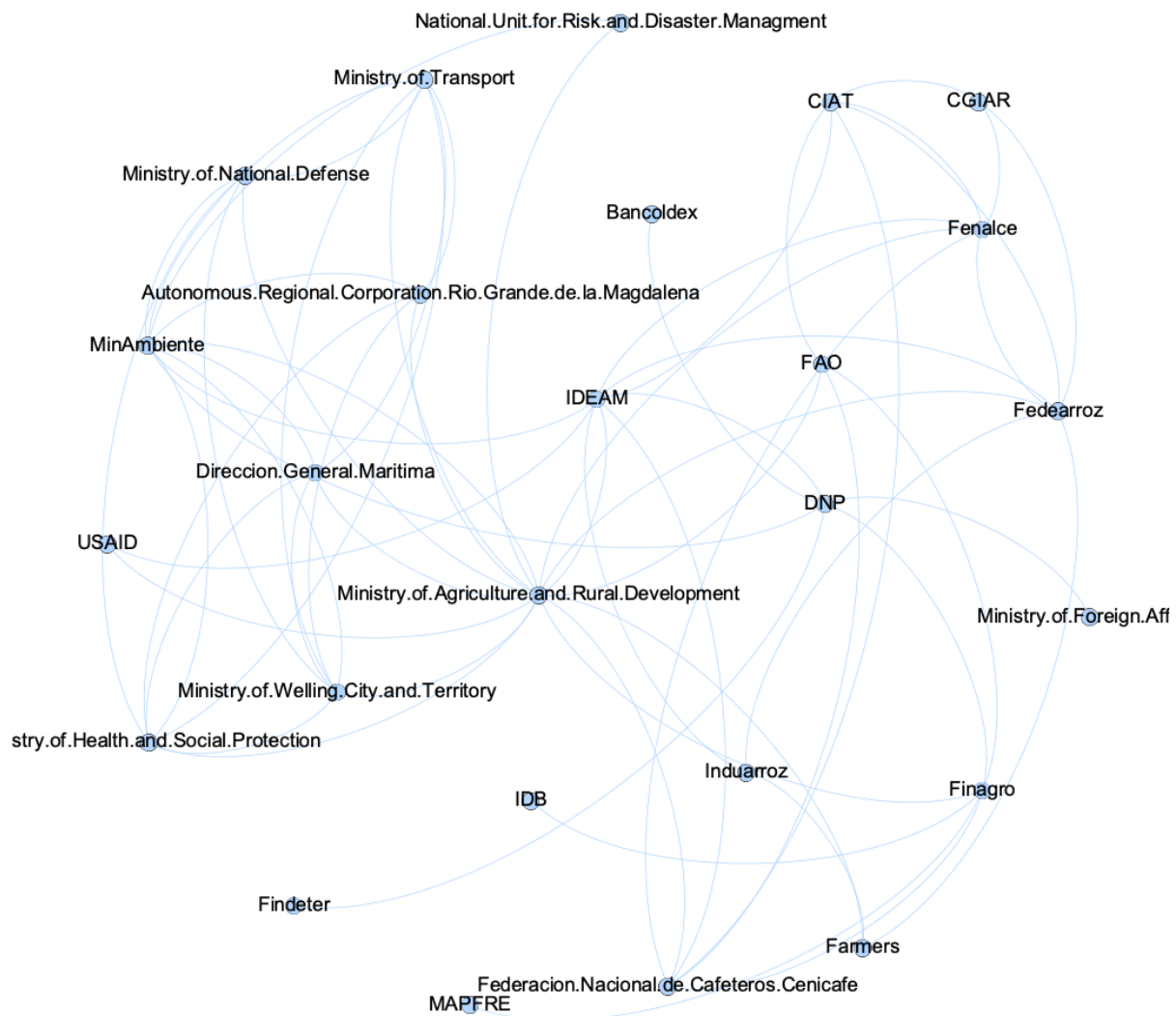


Figure 1: Network map of the relationship between the institutions assessed during the internship

CROP VALUE CHAINS

Coffee value chain analysis

The coffee sector in Colombia is unique as harvesting occurs year-round and is produced in 20 of the 32 provinces. Coffee, accounting for 30 percent of rural employment¹⁰, is the largest employer and source of livelihood in rural areas. The “new coffee belt” is mainly comprised of smallholder farmers (less than 5 hectares of land) and accounts for over 70 percent of national production and 95 percent of coffee producers¹¹. These smallholder farmers are mainly represented by the *Federación Nacional de Cafeteros de Colombia* (FNC), a nonprofit that supports coffee growers and their families and ensures that Colombian coffee is grown in a sustainable way while aiming to best position Colombian coffee at an international level. The most valued service by growers is the Purchase Guarantee. It guarantees the producer the purchase of any quantity of coffee in cash and at the best possible price, according to the conditions of the international price, the quality premium for Colombian coffee, and the current exchange rate.¹²

Coffee farmers have access to financial services from the *Federación*, but also from NGOs, like Root Capital, who loaned out \$40 million USD through 12 different organizations in the last four years, or Governmental Funds. In 2013, *Finagro*, *Mapfre*, and *Cenicafé* tried to develop index-based climate insurance for the coffee sector. In conjunction with UC Davis and eventually IDB, the project created a rain index for the insurance scheme. However, the coffee producers relied less on rain and more on sunshine and temperature and, additionally, the quality of the coffee also relies on other non-climate related factors. The project revealed that yield was not correlated to climate, and as such, the index was not correlated to yield nor the quality of the coffee. Moreover, *Cenicafé* was not entirely forthcoming with their yield and climate information, which resulted in the end of the project.¹³

Cenicafé, the research arm of the FNC, has an agro-climatic team who translates information to the 1300 extensionists who work for the *Federación*. *Cenicafé* has been collecting climate data for over 50 years. Despite having 139 automatic stations, 105 of them funded by the Ministry of Agriculture, seven of them are inactive and some others are irrelevant due to their locations in the “old coffee belt”. *Cenicafé* also participates in the regional agroclimatic roundtables (or MTAs, for their acronym in Spanish), an initiative launched by CIAT and currently managed by FAO to provide up-to-date and actionable climate information to relevant institutions working in the agricultural sector. Its climate platform is an online system that is public but limited to members of FNC and includes early warning systems, recent precipitation, dry/wet periods and when to harvest, and historical modeling. *Cenicafé* has a breadth of information and resources

¹⁰ TechnoServe. 2014. "Colombia: A Business Case for Sustainable Coffee Production."

¹¹ Equal Exchange. n.d. History of Coffee in Colombia. Accessed 05 02, 2018. <http://equalexchange.coop/history-of-coffee-in-colombia>.

¹² Federacion de Cafeteros. 2015. Cooperatives Bought Coffee Worth \$1 Billion in 2014. May. Accessed 05 02, 2018. https://www.federaciondecateros.org/algrano-fnc-en/index.php/comments/cooperatives_bought_coffee_worth_1_billion_in_2014/.

¹³ Knowledge obtained from meeting with FinAgro 07 31, 2018.

however, and until now, due to tradition and historical and political reasons, this information has not openly been shared with other agricultural entities¹⁴.

Rice value chain analysis

Rice occupies the first place in terms of economic value among short-cycle crops and also a major part of the Colombian consumer's plate. Colombia is the second largest rice producer in Latin America and the Caribbean and rice is the third most exported agricultural commodity in the country. Rice represents around 11 percent of agriculture territory in the country and 5.2 percent of GDP and the sector employs roughly 500,000 people across 215 municipalities.¹⁵

Colombia has two distinct production systems: mechanized and traditional (or manual). Mechanized rice, with large and good production facilities, represents 95 percent of the rice area and 98 percent of production and it is mainly located in the region of Los Llanos (flatlands). Colombia is able to cultivate rice biannually with the main rice seasons running from March-April to July-August and the second season from August-October to January-February. There has been a decrease in the rice production over the past few years as a result of free trade agreements. As a consequence, farmers are seeing the need of increasing productivity and differentiating their products in the market.

According to the National Rice Census IV, 67% of rice producers are small farmers, with land less than 10 hectares. These are represented by Fedearroz, a trade union that provides technical support, research (grain quality and seeds productivity) and market services. In terms of climate information, Fedearroz receives the vast majority of their data from IDEAM. Fedearroz is trying to develop more accurate meteorological data in all of the rice growing zones and to identify how climate affects rice production today, and how to incorporate this climate information into their decision-making process. They distribute the climate information through a bulletin, along with monthly email updates and alerts. The period of 2007-2011 was remarkably bad for rice cultivation, and as such, Fedearroz is working with CIAT to better understand and adapt to future climate related phenomena. Additionally, the federation is also collaborating with Agriculture for Nutrition and Health (A4NH), to develop their own line of biofortified seeds.

In 2015, MADR and Fedearroz created an index-based insurance pilot with the government of Quebec, Canada, called PASAC. The pilot relies on the data from Fedearroz's production technology platform, AMTEC, and also uses first-hand field data collection to inform the project. This program is still in the pilot phase.

Lastly, Fedearroz is in the process of developing a user interface, meant for extensionists, agronomists, and end users/farmers alike. The federation is developing a user survey to address the big challenge of developing a communication strategy for relatively technical climate information.

¹⁴ Knowledge obtained from meeting with Cenicafé 07 27, 2018.

¹⁵ IYR 2004: All about Rice: Colombia." International Rice Commission Newsletter Vol. 48, FAO of the UN, 2004, www.fao.org/rice2004/en/p3.htm

CLIMATE SERVICES ANALYSIS

Agrosavia (Colombian corporation for farming investigation). Modelos de Adaptación y Prevención Agroclimática (MAPA) is a tool created by Agrosavia to develop strategies for the prevention and adaptation for extreme climate events in 18 departments in Colombia. In the execution of the project, Agrosavia installed its own climate stations. The funding of MAPA has ended and Agrosavia is currently working on its own five-year investigation program.

Clima y Sector Agropecuario Colombiano¹⁶. Developed by CIAT, MADR, IDEAM, Fedearroz, FNC/Cenicafe, Fenalce, and USAID, this online platform offers climate prediction and prognostics for rice and corn. This is the primary climate tool offered to rice and corn producers.

Dirección Nacional de Planeación (DNP). DNP helps to promote and coordinate the National Board for Economic and Social Policy, CONPES (Consejo Nacional de Política Económica y Social) for more specific policy plans. The DNP is interested in generating a calendar for climate and nutrition as part of the program "Colombia Siembra" that can be distributed among different farmers and stakeholders within the agriculture sector.

IDEAM is the national agency responsible for managing climate information and data for all of Colombia, it has 2916 rainfall stations, another 538 conventional stations, 509 automatic stations with real data and 760 stations providing daily data. The coverage of the IDEAM stations is limited and often concentrated in more developed areas. IDEAM has an interactive online platform for users to access for climate information and releases a monthly bulletin report on climate predictions for the next month. Most of the language is relatively technical and meant more for extensionists rather than end users. IDEAM coordinates the National MTA (MTAN).

Fedearroz. From the MTA, Fedearroz distributes the climate information through a bulletin, along with monthly email updates and alerts. Fedearroz is working with CIAT to better understand and adapt to future climate-related phenomena. They are trying to identify how climate affects rice production today, how to incorporate this climate information into their decision making and how to develop more accurate meteorological data in all of the rice growing zones. The federation is in the process of developing a user interface, targeting extensionists, engineers, end users and farmers alike. A big challenge they are facing is how to develop a communication strategy for relatively technical climate information. Fedearroz also offers insurance to its members and pays a portion of the premium, -the government offers an additional subsidy. They are very interested in developing a more robust insurance scheme for rice, particularly as it relates to weather-based index insurance. They identify the lack of participative processes among the stakeholders as one of the main obstacles to develop such an index. Fedearroz has asked ACToday to help them co-design an index-based insurance pilot for rice, with the support of MADR, FINAGRO and other partners.

Federación Nacional de Cafeteros- Cenicafé. Cenicafé is the research arm of the Federación Nacional de Cafeteros. The coffee sector has their own network of stations (332), located in

¹⁶ Clima y Sector Agropecuario Colombiano, pronosticos.aclimatecolombia.org/Home/AcercaDe.

coffee producing areas of the country. Cenicafé has been collecting climate data for over 50 years, being the most important variables to Cenicafé: 1) dry periods; 2) humidity; and 3) sunshine. They participate in the national MTA, but not in the regional roundtables, where they analyze the situation at a national level with researches from different disciplines and representatives from the Extension Service. They have an agreement with IDEAM to share data but in order to share data with other institutions they require a special agreement. Cenicafé has a platform for climate that is only accessible by members of the Federación, called AgroClima. The platform includes early warning systems, recent precipitation, dry/wet periods and when to harvest, and an El Niño/La Niña index. Cenicafé also has a mobile app for plant diseases, such that users can receive recommendations on how to treat them. They have expressed a concrete interest in working with ACToday regarding the provision of better forecasts for their users.

Fenalce. The National Federation of Agriculture Farmers was part of an important, multi-year institutional agreement signed in 2013 between them, CIAT, IDEAM, and Fedearroz to develop agroclimatic services. It only has 5 climate stations in the country, being los Llanos Orientales a major point of vulnerability in terms of climate coverage. Not only is there a very limited weather network, but the area also lacks general infrastructure. The vast majority of the gremio's producers are small and subsistence farmers, and considerable percentage of Fenalce's crops are self-consumed by the producers. Fenalce does not have a lot of leverage power with the government, as the majority of their crops are imported due to various free trade and bilateral agreements. However, their crops are directly linked to the food security of their producers. Because they do not represent major export commodities, they do not tend to receive a lot of financial support from the government. They are interested in developing weather index-based insurance and working with ACToday to further develop their climate platform.

Ministry of Agriculture and Rural Development (MADR). It is a priority of this government to advance in agriculture by contract to minimize defaults and to increase financial access to the rural population. MADR is interested in providing climate information and training and climate risk to vulnerable rural populations. Its vision of smart agriculture involves a "360 degrees strategy" that incorporates optimal administration of the farm and risk management instruments (e.g. income and insurance for farmers).

CONCLUSIONS

Based on the previous analysis, the following eleven opportunities have been identified for ACToday in Colombia for the following year.

- **Promote sustainable agriculture** and tackle food insecurity by supporting the MTAs (agroclimatic round tables).
- **Lay foundation for success** in achieving SDG2, and other SDGs, by supporting development of Colombia's National Framework for Climate Services.
- **Provide economic safety nets** to build economic livelihoods and thus food security by co-developing index insurance for rice with FEDEARROZ and MADR.
- **Reduce the impact** of drought on food and agriculture through preparedness enabled by Forecast-based Financing.
- **Enhance a common institutional culture** of knowledge-to-action strategies related to climate services by establishing the Colombian Climate Service Academy
- **Support FAO's goal** of developing preparedness, mitigation and response plans for agricultural drought through the implementation of the forecast component of its Agriculture Stress Index System (ASIS)
- **Provide decision makers** with tailored tools that show concrete agro-climate adaptation strategies to increase food production
- **Co-identify** with DNP, MADR and other governmental institutes, strategies for increased access to sufficient and nutritious food, based on national, regional and global trade/market patterns
- **Reduce food insecurity** by establishing an early warning system that allows decision makers to diminish the impact of climate in agriculture production.
- **Collaborate with ministries** and other local institutions to help embed the new climate services developed during ACToday in decision-making frameworks
- **Promote climate services** in vulnerable communities living in the swamp-wetland areas of Cartagena to increase their resilience to climate shocks and to increase food security.

