

## **Case Study Elaborated With the Outcome Harvesting Methodology**

### **Local Technical Agro-climatic Committees**

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Foto: Kemly Camacho

#### **I. Introduction.**

At the end of 2013, the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) led the implementation of Local Technical Agro-climatic Committees (LTACs) in Colombia. These Committees serve to strengthen climate predictions and agro-climatic information at the local level.

Climate predictions are traditionally made at the national level, generating data that, in the context of high climate variability, is not accurate for decision-making by agricultural producers at the local level. This increases the risk of crop loss and, by extension, affects the quality of life among the country's farming population.

Currently, climate represents one of the greatest risks for agriculture, making it increasingly necessary to address climate variability at the local level and to analyze its impact for each crop in a specific geographical zone. CCAFS believes it is necessary to promote a sustainable, climate-adapted agriculture, with a particular interest in highly vulnerable populations of agricultural producers.

The Local Technical Agro-climatic Committees are places for meeting and dialogue between diverse local actors to understand and analyze climate variability and agro-climatology, as well as to make decisions about risk-reducing adaptation measures. The LTACs are led by local actors and address discussion topics drawn from the specific conditions of the geographical zone where they are located. As such, each Committee is different. CCAFS provides technical support to the Committees by assisting with their organization, training and development of methods.

It is important to take into account two elements that characterize the LTACs: 1) The range of the climate prediction is a fixed local geographical area, and 2) the period of time for the prediction is short-term, preferably no greater than three months.

At the time of writing, five LTACs have been established in Colombia in the following departments: Córdoba, Cauca, Sucre, Magdalena (this area also includes municipalities from the Cesar and La Guajira departments), and a national Committee. To carry out this case study, the authors performed the required review of documents concerning physical and digital resources. Additionally, the authors interviewed key actors and did site visits within the Sucre and Cauca Committees' respective areas of influence.

This case study was developed with the *Outcome Harvesting* methodology, which compiles outcomes from different levels generated in the implementation of a complex intervention. The documentation and organization of the outcomes produces the theory of change, which contributes to desired transformation, as will be shown below.

The outcome harvesting process for the Local Technical Agro-climatic Committees was elaborated between February and March of 2016. As can be seen in Figure 1, the research process generated 35 outcomes that have been organized into four areas of transformation. In accordance with the requirements of the methodological approach, a description has been developed for each outcome. The description includes the importance of the outcome as well as CCAFS's role in achieving it. In addition, evidence has been generated for each outcome through review of documents, triangulation or fieldwork. Finally, some outcomes have been selected for further analysis in the following sections.

## II. Outcome Harvesting Analysis

The results of the outcome harvesting process are presented in their complete and ordered form in Figure 1. The figure also shows the effect that some outcomes had over others by displaying them on a timeline ranging from the end of 2013 to the beginning of 2016. The outcomes are concentrated in four large areas of transformation:

- 1) Transformation of organizations within the territories.

- 2) Transformation of knowledge-construction processes about climate and climate variability in agriculture at the local level.
- 3) Transformation of the local productive practices adapted to local climate variability.
- 4) Transformation of public policy.

***Transformation Area 1: Transformation of organizations to integrate climatic variation within the territories.***

In the territories where Local Technical Agro-climatic Committees have been established, new organizations have been created, and existing ones have been modified as a result of new ways of understanding the topic of climate in local spaces. This outcome has been divided into three parts.

**The LTACs as new local organizational spaces:** The Local Technical Agro-climatic Committees themselves constitute an organizational space within the territories. What began as an intervention motivated by CCAFS has transformed into a relevant meeting space for local actors in the agricultural sector and has become a local organizing space (3) (4) (16) (21). The leading organizations have appropriated the LTACs and have integrated them into their work. This outcome manifests itself as the constant increase, both in terms of quantity and diversity, of organizations and people that participate in the activities of the Committees. The research process shows that one very important consequence of this new local organizing space has been greater interaction between local actors and productive sectors, who have now established permanent communication and support each other with challenges stemming from the climate variability in their geographic zone. The LTACs are not yet independent from CCAFS's technical assistance, especially because expert support is needed. LTACs are in high demand in the territories and local organisations have the leadership and skills to organise the intersectorial meeting spaces.

Parallel to the creation of the local Committees is the creation of the National Committee (35), led by the Ministry of Agriculture and Rural Development. The National Committee gathers the labor unions, higher education institutions and public sector institutions related to agriculture and climate change. This represents a new national organizational body that regularly functions in the country due to the LTAC initiative.

**The incorporation of the climate issue into agricultural producer organizations:** Another area of transformation identified through the harvested outcomes is the integration of new climate-based approaches into agricultural producer organizations, such as indigenous or farming communities.

The evidence of this outcome originates in the site visits to two territories (San Marcos in the case of the Sucre Committee and Cuenca del Río Las Piedras in the case of the Cauca Committee), which focused on compiling outcomes at the local level, especially with the producer organizations and the entities that lead the LTACs. The transformation in organizational structures, as well as the incorporation of new processes and subjects related to climate variability and its risks, are together considered one outcome.

In Cuenca del Río Las Piedras, the Cauca LTAC is led by the Foundation Pro-Cuenca Río Las Piedras<sup>1</sup>. The indigenous and farmer communities there have developed coexistence agreements (where

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<sup>1</sup> The Foundation ProCuenca Río Las Piedras has been working on the topic of climate change and food security in the Cuenca del Río Las Piedras prior to the establishment of the LTACs, and for this reason it is

previously none existed) to define joint adaptation actions to reduce the risk due to climate variability (13).

Indigenous and farming organizations have included climate variability and climatic risks in their organizational priorities. They have also incorporated information about climate prediction and the adaption recommendations from the LTACs into their decision-making processes to define actions with respect to agricultural plots. As one group's leader indicated: 'we know the climate because we are always working according to how it behaves, but now that there are so many unforeseen changes it is very useful to receive information that predicts what could happen because that way our organizations can make decisions about what we could do as a group in our territories'<sup>2</sup>.

Another one of the outcomes identified as an organizational transformation in the territories, is the creation of a training program for boys and girls that the indigenous and farming organizations are establishing in the territories of Cuenca del Río Las Piedras (26).

An outcome identified on the level of producer organizations is the transformation of communication and information processes, driven by the agro-climatic bulletins generated in the LTACs. This information is passed directly from the LTACs to the local producer organizations, and then to each producer. In the case of Río Las Piedras, the Foundation serves as an information clearinghouse for the material produced by the Committees to improve the communities' access to the information. In the case of San Marcos, there exists a chain based on digital mediums to distribute the information from the Committees to individual producers throughout the territory (18).

**The prioritization of the climate issue in labor union organizations:** Although climate and climate change were already relevant topics in labor union organizations, the LTACs have generated important changes by incorporating new areas of work and bringing new specialists to the teams.

In this sense, changes have been identified in labor union organizations that dedicate resources to research about climate change. They also establish experimental plot programs, designed to test crop varieties and their susceptibility to climate variability (22) (24). Additionally, they employ new professionals specializing in meteorology, climate change and agro-climatology for the producer associations working teams (25). These professionals were hired as a result of the Convention between the Ministry of Agriculture and Rural Development and the CIAT-CCAFS, which has been reinforced by the work of the LTACs, especially the emphasis on the necessity of information at the local scale. This change reflects the new priority that the climate issue has reached in the labor union organizations that lead the LTACs.

**Transformation of other actors in the agricultural ecosystem:** The LTACs, in addition to creating change in the local organizations and the labor union organizations leading the Committees, have generated transformations in what can be defined as the agricultural ecosystem.

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one of the organizations that leads the LTAC initiative. The Committees represent a strong push for local, inter-institutional work in Cauca, as well as providing new tools to work with indigenous and farming communities.

<sup>2</sup> Legal Representative of ASOCAMPO, translation to English by Brian Vadakin

The outcome harvesting process identified a strengthening of the topic of climate change in the University of Cauca and the University of Córdoba (10), both of which have been constant and active actor-participants in the Committees of their regions. They have also begun to create groups of students interested in this material, led by the professor who serves as the University representative on the LTAC.

Additionally, the process identified an important change in the insurance companies of the San Marcos region that have participated in the Committees. These companies have modified their insurance policies based on harvest times, due to the a new understanding of the risk produced by climatic variation and the resulting need to modify the dates of harvest (31). It is important to highlight that this outcome was achieved due to negotiation processes led by the labor union organizations and the producers—both participants in the LTAC of San Marcos.

Another important change is the network of communicators about climate change that has been generated with the leadership of CCAFS and which is made up of communication specialists from the labor unions that participate in the LTACs (23). This network did not previously exist and is based on the process of communication and distribution of the bulletins that are produced in the Committees.

As a result of the harvesting, new work about climate change has been encouraged in CIAT, using a new methodological approach developed by the LTACs (34).

**Contribution of CCAFS:** In this area of transformation, the primary contribution of CCAFS is the construction of the partnerships that make up the structure of the Committees, the methodology of diverse and active participation by all sectors in discussions and the LTAC decision-making process, and the follow-up monitoring of the actor-participants in each Committee. This is a key aspect and a fundamental challenge for the expansion of the LTAC strategy in all of Colombia.

### ***Transformation Area 2: Processes to construct knowledge about climate and climate variability.***

The evaluation process identified an important transformation in how the processes of knowledge construction are developed in the Local Technical Agro-climatic Committees, a paradigm shift that is cemented in the following outcomes:

**Climate prediction and agro-climatic information at the local level:** This is a very important outcome because before this process, climate predictions were made exclusively at the national level, which hindered an understanding of how the climate would vary at the local level. In times of high climate variation it is indispensable to have available local forecasts that permit decision-making for crops in a particular geographic zone (6).

A fundamental outcome of this process is agro-climatic information at the local level, which is generated through climate prediction in each geographic zone and the analysis of how it will affect each crop that is produced in that zone. This information is made available to the actor-participants in each region's LTAC for discussion and to inform decisions about the region's agriculture.

**Climate experts available to local actors:** The access that local actors throughout the agricultural sector have to climate experts is another outcome that this new process of knowledge construction has generated. Furthermore, these experts are committed to explaining climate predictions, agro-

climatic information and climate risks for crops in an accessible manner and with a focus on learning at the local level (6).

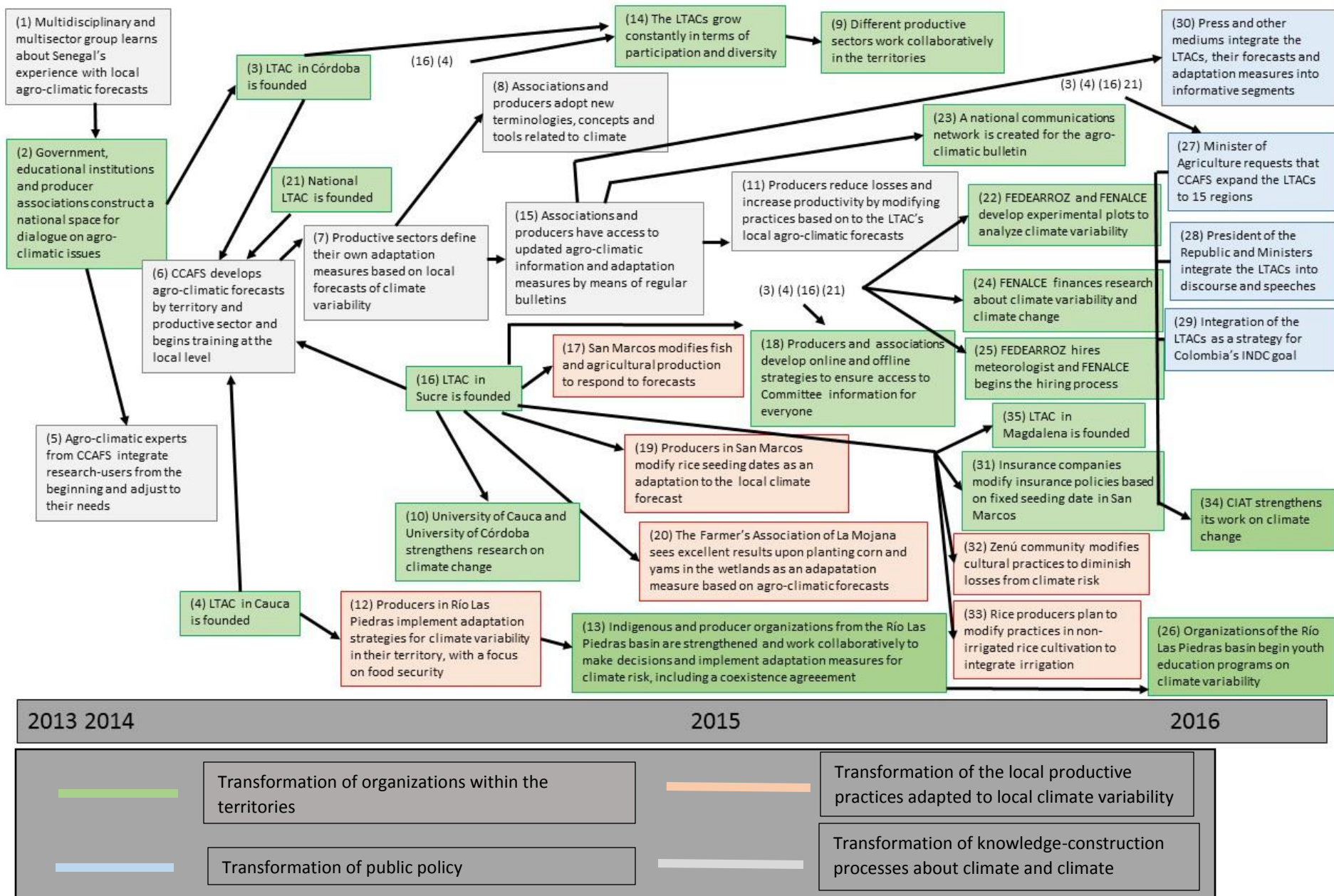
**Productive sectors construct their own adaptation measures:** Another identified outcome is the creation of adaptation scenarios for each crop and region, elaborated through collaboration between diverse actors (7). This is a fundamental change in the process of knowledge construction about climate change, achieved through the integration of diverse sources of knowledge: local, indigenous, academic, or labor union organizations with the producers, or public policy with academics, for example. It is also considered an outcome due to the way agreements on adaptation measures are reached: by integrating the interests of diverse actors and achieving quarterly agreements that influence the decision-making processes for each of the groups and for individuals in the agricultural sector.

**An information medium that is updated, suitable for each region, and useful for local actors:** The local Agro-climatic Bulletins produced by the regional and national LTACs have become a required information medium for all the actors consulted in the outcome harvesting process (15). Previously, no information medium existed in local spaces that could reach all the actors within the agricultural ecosystem and keep them informed, not only with climate predictions, but also with agro-climatic information and recommendations for adaptation measures specific to each geographic zone. It is also a key outcome because it is composed in language that is appropriate and comprehensible for all the groups in the agricultural sector, accompanied with images and diagrams that facilitate access to the information. It has been verified in this evaluation that the Bulletin is an expected and well-used instrument for local decision-making.

This process of knowledge construction, proposed by CCAFS, has produced transformations that express themselves through the use of new concepts, terminologies and tools about climate, climatology, climate variability, climate prediction, agro-climatology, and adaptation measures, between diverse local actors throughout the agricultural value chain (8).



Figure 1: Outcome Mapping for Local Technical Agro-climatic Committees



Knowledge processes have also been transformed and fortified within CCAFS upon the incorporation of all the diverse actors that participate in this new local working paradigm about climate change (5). One of the most relevant outcomes is the reduction of losses and the increase in profitability that producers attribute to making decisions based on the Bulletins (11).

**Contribution of CCAFS:** CCAFS supports the new methodological process to approach the issue of climate change at the local level, an approach that constitutes a new working paradigm with the sectors that make up the agricultural ecosystem in each territory. It also provides technical support for modeling climate variability at the local level, as well as for analyzing the results of these models. In addition, a very important aspect of its assistance is making available expert specialists in climatology, agro-climatology and meteorology for exchanges with institutions in different regions of the country.

### ***Transformation Area 3: Productive practices adapted to local climate variability.***

The Local Technical Agro-climatic Committees have influenced the transformation of producers' agricultural practices in the zones where they are operating. As was previously mentioned, this has permitted the anticipation of losses and an increase in profitability. It cannot yet be shown that this transformation of practices has occurred in all the productive processes, or for all producers. However, this harvesting process identified results of these transformations due to the existence of the LTACs. To carry out this outcome harvesting, producers were visited in San Marcos and Río Las Piedras.

Led by indigenous and farming organizations, Cuenca del Río Las Piedras has implemented measures to adapt to climate risk, with a prioritization of food security, including the following: stratified and diversified planting, research and protection of native seeds, local irrigation systems (either drip irrigation or pressurized systems), rain and temperature monitoring, organic crops, prioritizing family consumption, and the creation of organic markets. It should be noted that not all of these transformations can be directly attributed to the LTACs. However, the information generated in the Committees have permitted a more refined decision-making process during the implementation of these adaptation measures (12). It is also important to mention the role that the Foundation Río Las Piedras plays as a catalyst between the results of the LTACs and the producer organizations.

In the case of San Marcos, it has been possible to identify various important changes. Rice producers have modified their seeding dates based on the recommendations of the LTACs and hope to begin in the second semester instead of the first, as they were accustomed to doing (19). They are also making decisions about the rice grown on non-irrigated land—also based on recommendations from the Committees—providing for the possibility that they may have to use irrigation in the upcoming harvests (33).

Due to the participation of the LTACs and the information shared within them, the indigenous community Zenú has also taken the decision to modify its seeding dates, implying an important change in all its cultural practices, which are closely related to the land (32). There has also been a cultural change identified in the community of La Mojana, where the Association of Farmers decided in Assembly (based on information from the Committees) to plant yam and corn in the wetlands as an adaptation measure with excellent results in production and profitability (20).



According to the testimony of the local government of San Marcos, agricultural and fish production has been modified as a response to the climate predictions generated in the Committees. In the case of San Marcos it is important to emphasize the fundamental role of FEDEARROZ in providing technical assistance to producers in the definition and execution of adaptation measures, as well as in serving as a local mediator between Committees, producers and producer organizations.

These are some examples of the outcomes generated in the harvesting process that demonstrate the transformation the LTACs are creating in the local productive processes—a transformation that is allowing them to confront climate risk.

**Contribution of CCAFS:** The contribution of the CCAFS is in the persistence of the LTACs and that they are carrying out an approach of knowledge construction, as presented in the previous section. Additionally, CCAFS maintains constant communication and relationships with the institutions that lead the LTACs to support necessary decisions and technical assistance.

***Transformation Area 4: Public policy integrates the Local Technical Agro-climatic Committees as strategies of adaptation to climate change.***

In 2015, the Local Technical Agro-climatic Committees began to appear in public policy discourse related to change in the Republic of Colombia. In different media and speeches by the President of the Republic of Colombia and his Ministers of Environment and Agriculture, the outcome harvesting process found mention of the LTACs as a successful strategy to generate adaptation measures at the local level. The work of CCAFS and CIAT in the Committees is also mentioned in these speeches.

Another one of the outcomes identified at the moment of this evaluation is the integration of the LTACs as a strategy to reach the compromise that is Colombia's Intended Nationally Determined Contribution (INDC) (29). This is an important achievement, as it has been recognized that the Committees themselves constitute a successful adaptation strategy and they have been integrated into public policy, receiving the support of the sector's institutions.

That outcome is complemented by another, which is the signing of an agreement between the government of Colombia and the CIAT-CCAFS to, among other actions, expand the Committees to 15 new regions (27).

This occurrence in public policy has involved a change in the communication mediums that have begun to give more prominence to the Local Technical Agro-climatic Committees as a fundamental strategy for climate change adaptation in the country (30).

**Contribution of CCAFS:** In this area of transformation, the contribution of CCAFS is in the impact in public policy, the management of relations with the public sector and decision-makers. Additionally, a good relationship with the labor union organizations has been fundamental.

Figure 2: Outcomes Table

<b>Purpose:</b> <b>Producers of a geographical area ensure good decision-making on adaptation measures to climate change based on the analysis of agro-climatic forecasting and mitigation scenarios developed in conjunction with local actors.</b>							
<b>Inputs</b>	(1) Multidisciplinary and Multisector group learns about Senegal's experience with local agro-climatic forecasts			(6) CCAFS develops agro-climatic forecasts by territory and productive sector and begins training at the local level		(14) The LTACs grow constantly in terms of participation and diversity	
<b>Milestones</b>	(2) Government, educational institutions and producer associations construct a national space for dialogue on agro-climatic issues	(3) LTAC in Córdoba is founded (4) LTAC in Cauca is founded	(16) LTAC in Sucre is founded (35) LTAC in Magdalena is founded (21) National LTAC is founded	(15) Associations and producers have access to updated agro-climatic information and adaptation measures by means of regular bulletins	(23) A national communications network is created for the agro-climatic bulletin	(18) Producers and associations develop online and offline strategies to ensure access to Committee information for everyone	(34) CIAT strengthens its work on climate change
<b>Changes in Behaviour</b>	(5) Agro-climatic experts from CCAFS integrate research-users from the beginning and adjust to their needs	(8) Associations and producers adopt new terminologies, concepts and tools related to climate	(30) Press and other médiums integrate the LTACs, their forecasts and adaptation measures into informative segments	28) President of the Republic and Ministers integrate the LTACs into discourse and speeches (10) University of Cauca and University of Córdoba strengthens research on climate change	(33) Rice producers plan to modify practices in non-irrigated rice cultivation to integrate irrigation	(9) Different productive sectors work collaboratively in the territories	
<b>Institutional changes</b>	(7) Productive sectors define their own adaptation measures based on local forecasts of climate variability  (11) Producers reduce losses and increase productivity by modifying practices based on to the LTAC's local agro-climatic forecasts	(32) Zenú community modifies cultural practices to diminish losses from climate risk  (31) Insurance companies modify insurance policies based on fixed seeding date in San Marcos	(13) Indigenous and producer organizations from the Rio Las Piedras basin are strengthened and work collaboratively to make decisions and implement adaptation measures for climate risk, including a coexistence agreement  (17) San Marcos modifies fish and agricultural production to respond to forecasts	(22) FEDEARROZ and FENALCE develop experimental plots to analyze climate variability (26) Organizations of the Rio Las Piedras basin begin youth education programs on climate variability  (19) Producers in San Marcos modify rice seeding dates as an adaptation to the local climate forecast	(24) FENALCE finances research about climate variability and climate change  (12) Producers in Rio Las Piedras implement adaptation strategies for climate variability in their territory, with a focus on food security	(25) FEDEARROZ hires meteorologist and FENALCE begins the hiring process  (20) The Farmer's Association of La Mojana sees excellent results upon planting corn and yams in the wetlands as an adaptation measure based on agro-climatic forecasts	((27) Minister of Agriculture requests that CCAFS expand the LTACs to 15 regions  (29) Integration of the LTACs as a strategy for Colombia's INDC goal

## I. The Theory of Change

Prior to constructing the theory of change, the identified outcomes were arranged into a table of outcomes, which classifies the type of transformation produced by each outcome. The outcomes have been categorized as entry points, milestones, behavioral changes in actors and structural changes, as is shown in Figure 2.

Using the outcome harvesting methodology, the theory of change emerges from the analysis of the outcomes identified in the research process (Figure 3). The process that has thus far been developed with the Local Technical Agro-climatic Committees has addressed three principal problematics: 1) climate is currently the most important risk factor for the agricultural production sectors, 2) scientific knowledge that is being produced about climate change is not being utilized by the productive sectors, 3) national forecasts do not contribute in a well-defined way to adaptation measures that reduce risks caused by climate variability.

The development goal that was identified in the outcome harvesting process is defined as **“guaranteeing good decision-making on climate change adaptation measures by producers in specific geographical zones, based on analysis of local climate predictions and agro-climatic scenarios produced in conjunction with local actors.”**

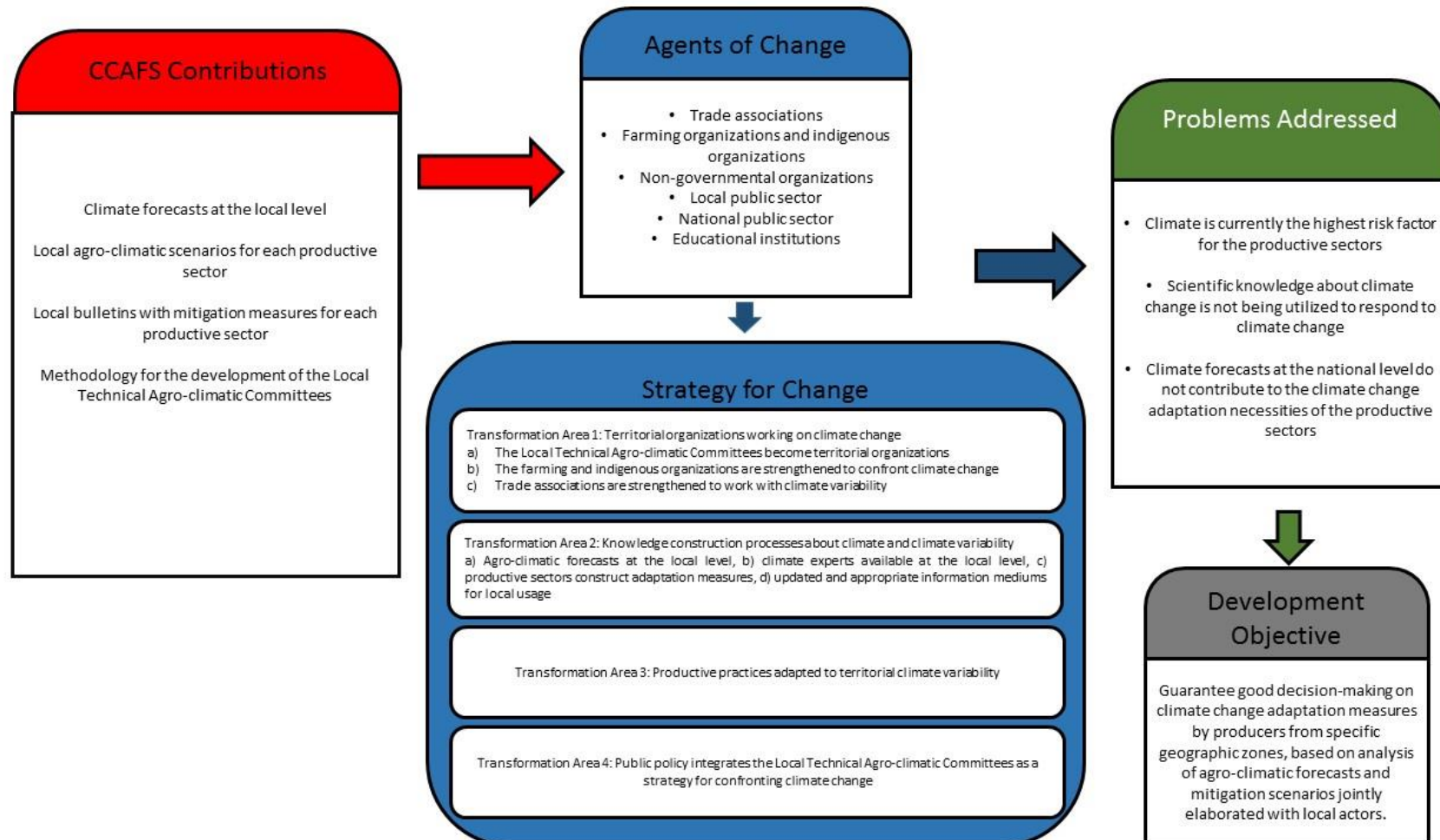
High-impact transformations have been produced in this process, the outcomes harvesting has allowed the identification of four large areas of transformation: 1) at the level of local organizations, 2) at the level of processes of knowledge construction, 3) at the level of productive processes, and 4) at the level of public policy.

In the territories where fieldwork was carried out, a mix of diverse actors was identified at the local level. These actors have a high grade of participation and their support is constantly growing, both in terms of quantity and quality. The identified agents of change consist of the indigenous and farming organizations, the labor union organizations, the local public sector, non-governmental organizations with local work, educational institutions at the local level and the public sector at the national level. Some businesses and independent citizens participate in the process as well, but they were not identified as agents of change in this evaluation.

The principal contributions of CCAFS to this process have been: a) the production of climatological forecasts at the local level, b) the creation of local agro-climatic scenarios for each productive sector, c) the propagation of local bulletins with mitigation measures for each productive sector, d) the construction and application of a methodology for the development of the Local Technical Agro-climatic Committees, and e) influence in public policy.

Figure 3: Theory of Change

Generated by outcomes harvesting for Local Technical Agro-climatic Committees



## Appendix 1

### Details of Attainments

#### Agro-climatic Technical Committees

2016

	Attainment	Importance	Contribution of CCAFS to the achievement
1	In September 2013, Multidisciplinary and Multi-sector group learns about Senegal's experience with local agro-climatic forecasts.	<p>This is important because based on this trip; the importance of developing local weather alerts to generate adaptation measures for producers is identified from the exchange of experiences with Senegal.</p> <p>It is also important because local strategies get to be known (with emphasis in multi-actor meetings) to work locally with local actors about adaptation to climate variability.</p> <p>It is important because climate variability is currently the most significant risk in the agricultural sector and this trip shows the visitors how climate variability must be handled locally.</p>	It organizes the first visit to Senegal and the subsequent exchange between Colombia and this country contributing to a process of mutual learning from concrete experiences on climate monitoring and adaptation to local agro-climatic risk.
2	Since mid-2014, the government, educational institutions and producer associations construct a national space for dialogue on agro-climatic issues.	<p>This is important because never before the interests and knowledge of these sectors had been integrated to define joint actions in a long-term process.</p> <p>It is also important because the institutions that were working on climate were working independently and from this moment on they start to work together and generate collaborative actions.</p>	<p>CCAFS facilitates the meeting and dialogue process and provides the scientific teams that are willing to participate in interdisciplinary dialogues.</p> <p>CCAFS begins to promote meetings on the subject between unions and academia. Later on it manages to integrate the public sector.</p>
3	In November 2014, LTAC in Córdoba is founded.	This is important because the first Technical Agro-climatic Committee is established which is demonstrating success in its operation.	<p>CCAFS puts together the process of the Technical Agro-climatic Committees.</p> <p>It develops the work methodologies and the tools for local agro-climatic forecast.</p>

			It provides with the expert meteorologists and agroclimatologists
4	In November 2014, LTAC in Cauca is founded.	<p>It is important because the different actors in the area are integrated. All the committees have different actors and the specific case of each geographical area is analyzed with the unions and relevant institutions of the zone such as the University of Cauca.</p> <p>Combination of scientific and technical and community knowledge.</p>	<p>CCAFS plays a tacking role in the local processes.</p> <p>It provides climatologists, meteorologists and agroclimatologists.</p> <p>CCAFS provides educational and training processes.</p>
5	At the end of 2014, Agro-climatic experts from CCAFS integrate research-users from the beginning and adjust to their needs.	<p>This is important because there is an emphasis on ability development of the productive sectors, public institutions and producer organizations which transforms the way of doing science.</p> <p>It is also very important because the relationship between scientists and, public and productive actors is redefined generating that the scientific production turns into more useful and used.</p>	CCAFS has agro-climate and climate experts willing to integrate as users in the process of scientific production.
6	Since mid- 2014, CCAFS develops agro-climatic forecasts by territory and productive sector and begins training at the local level.	This is important because local weather forecasts are provided for the first time for Colombia.	CCAFS provides the scientific models and the local climate forecast modeling as well as the agro-climatic analysis by sectors.
7	Since the end of 2014, Productive sectors define their own adaptation measures based on local forecasts of climate variability.	<p>This is important because each geographical area and each crop must generate specific adaptive measures depending on specific conditions.</p> <p>It is also important because scientific knowledge is integrated with local knowledge for defining these adaptive measures.</p>	<p>CCAFS provides the local agro-climatic forecasts.</p> <p>CCAFS provides insights into the measures of adaptation to local processes.</p>
8	Since the end of 2014, Associations and producers adopt new terminologies, concepts and tools related	It is important that producers take ownership of new knowledge that mixed with their own will allow them to develop better adaptation strategies. In addition, this new knowledge gets expanded to other local actors,	CCAFS generates the training processes on climate, agro-climate, climate variability and forecasts, locally.



	to climate.	generating new ways of understanding the weather and also new practices.	
9	Since the end of 2014, different productive sectors work collaboratively in the territories.	This is important because previously there was no connection between productive sectors, and now there are identification and constant interaction that fosters common action.	CCAFS organizes and coordinates the Technical Agro-climatic Committees calling together multiple actors.
10	Since the beginning of 2015, University of Cauca and University of Córdoba strengthens research on climate change.	This is important because University of Cauca's participation in the MTA has been constant and has allowed the incorporation of the local academia in the processes taking place in the Committees. It is also a guarantee of sustainability for the Committees with such an important local actor.	CCAFS brings the methodological process to involve various actors including the academia and also shares its methodologies that may be taken over by the local universities.
11	Since the beginning of 2015, Producers reduce losses and increase productivity by modifying practices based on to the LTAC's local agro-climatic forecasts.	<p>This is important because by reducing losses and increasing productivity, it is expected to perceive increased incomes for farmers and producers and their families.</p> <p>In addition, food security, food diversity and family health are strengthened.</p>	CCAFS provides the local agro-climatic forecasting and contributes to the construction of adaptation measures for crops and areas.
12	Since the end of 2014, Producers in Río Las Piedras implement adaptation strategies for climate variability in their territory, with a focus on food security.	<p>This is important because the Agro-climatic Committees have been complemented or given continuity to other previous projects that have been developed on food safety, seeds, risk management and climate. These are driven by other actors or the same CCAFS through initiatives that belong to Sustainable Agriculture adapted to the climate (ASAC), like TESAC (sustainable territories adapted to climate).</p> <p>It is important because communities are previously monitoring rainfall and temperature, and these data are added to the analysis of local climate variability allowing more accurate projections and simulations.</p>	CCAFS includes local monitoring data in Cauca's.
13	Since the end of 2014, indigenous and producer organizations from the Río Las Piedras basin are strengthened and	This is important because the response to climate risk has been the consolidation of community action.	CCAFS provides local agro-climatic forecasts for decision making of organized groups of producers.

	work collaboratively to make decisions and implement adaptation measures for climate risk, including a coexistence agreement.		
14	Since the end of 2014, The LTACs grow constantly in terms of participation and diversity.	<p>This is important because it reflects a growing interest in Agro-climatic Committees.</p> <p>It is also important because as the people consulted manifested, it is not a common situation to perceive persistence in the participation and diversity of actors in similar processes.</p> <p>It is also very important because it begins to work locally on climate together with multiple actors.</p>	CCAFS contributes with the call to the Agro-climatic Committees.
15	Since the end of 2014, Associations and producers have access to updated agro-climatic information and adaptation measures by means of regular bulletins.	This is important because it allows farmers to be better prepared, handle information and be able to make decisions in advance.	CCAFS designs the agro-climatic bulletins made as a result of the Committees.
16	In April 2015, LTAC in Sucre is founded.	<p>It is important because the various actors in the area are integrated. It is a new experience of joint work.</p> <p>All tables have different actors and the specific case of the geographical area is analyzed with the unions and relevant institutions of the place.</p> <p>It is very relevant because the unions have field experience but this is now complemented by scientific knowledge; and it is achieved that farmers understand climate and its influence on agriculture.</p>	<p>CCAFS plays a tacking role of local processes.</p> <p>It provides meteorologists and agroclimatologists.</p> <p>It prepares local forecasts, makes the interpretation and presents the results in an appropriate language to be understood by all participants at the Committees.</p>
17	Since mid-2015, San Marcos modifies	This is important because San Marcos' institutionality which is very strong has	CCAFS organizes San Marcos' Agro-climatic Committees

	fish and agricultural production to respond to forecasts.	participated in the Committees and has changed production processes taking into account local agro-climatic forecasts.	calling multiple and diverse actors.  CCAFS share local agro-climatic forecasts and contributes to the discussion of adaptation measures.
18	Since May 2015, Producers and associations develop online and offline strategies to ensure access to Committee information for everyone.	A process of agile and timely information is sustained; this is adjusted to the context and the needs of production processes in the area, facilitating decision making.  It is also important because farmers and institutions send information in the same way to their networks generating an information chain that covers an important part of the region and the production.	CCAFS designs bulletins as a result of the Agro-climatic Committees.
19	Since mid-2015, Producers in San Marcos modify rice seeding dates as an adaptation to the local climate forecast.	This is important because it reduces the risk of loss of farmers.  It is also important because it reflects a better understanding of the direct relationship that exists between climate and agriculture and the risks that climate variability represents.  It is also important because producers scientifically confirm some things that they were already seeing in the weather, such as decreased precipitations.	CCFAS provides appropriate methodologies for farmers to facilitate their understanding of the climate which is a complex issue.  CCAFS has facilitators who are very clear and close to the diversity of actors in the Committees.
20	In mid- 2015, the Farmer's Association of La Mojana sees excellent results upon planting corn and yams in the wetlands as an adaptation measure based on agro-climatic forecasts	This is important because it shows how knowledge and information generated in the Committees reaches the producer organizations which make decisions to reduce their climate risk.	CCAFS organizes the Committees where the Farmers Association of Mojana participates; it gives the agro-climatic forecasts and together define mitigation measures.
21	In September 2015 National LTAC is founded.	It started with five institutions and currently 20 entities of various kinds are already involved (associations, public institutions, academia, producer organizations)	CCAFS participates in the national committee.  It provides climate and agro-climate experts.

			It provides models, local weather forecasts, agro-climatic forecasts and mitigation and adaptation measures.
22	Since mid-2015, FEDEARROZ and FENALCE develop experimental plots to analyze climate variability.	This is important on the one hand because the unions invest in processes of experimentation and development related to climate change and on the other hand, because of the research conducted from CCFAS applied together with the unions, making it useful and used research.	The CCFAS contributes with the design of the experimentation and with analysis of results together with unions.
23	In mid-2015, a national communications network is created for the agro-climatic bulletin.	<p>This is important because it integrates the communicators of the unions and associations with the issue of climate variability.</p> <p>It is also important because it contributes to the distribution of the information generated in the Committees and Bulletins.</p>	CCAFS organizes the communicator network and provides follow ups.
24	In October 2015, FENALCE finances research about climate variability and climate change.	This is important because it is the first time FENALCE intends resources provided for research on climate variability with a local focus to the University of Cordoba.	CCAFS incorporates the importance of analyzing locally the issues of prediction and agro-climatic variability and risk locally inside the guilds.
25	In the end of 2015, FEDEARROZ hires meteorologist and FENALCE begins the hiring process.	This is important because it exemplifies the importance that unions are giving to the issue of climate and climate change.	CCAFS incorporates the topic of climate and climate change as a major risk in the agricultural sector based on the organized Committees.
26	At the end of 2015 Organizations of the Río Las Piedras basin begin youth education programs on climate variability.	This is important for the knowledge for new generations about the conservation of territories and local cultures as well as the strengthening of the generational change of farmers and indigenous organizations.	CCAFS provides knowledge on climate variability and climate risk to institutions that in turn share it with indigenous organizations.
27	For the end of 2015, Minister of Agriculture requests that CCAFS expand the LTACs to 15 regions.	<p>This is important because it shows the impact that the Committees have had in the 4 places where they operate currently.</p> <p>In addition, several local actors have already expressed their interest in leading the Committees; this is the case of the Cane Research Center in Tolima and Caldas government.</p>	CCFAS will continue to support technically the process, generating evidence for each region and developing methodologies and proper modeling to each context, crop and climate risk.

28	Since the end of 2015, President of the Republic and Ministers integrate the LTACs into discourse and speeches.	This is important because the political commitment to Agro-climatic Committees is shown.	CCAFS leads calls and organizes the Agro-climatic Committees.
29	In December 2015, Integration of the LTACs as a strategy for Colombia's INDC goal.	This is important because it connects the two strategies INDC with Agro-climatic Committees.	Agro-climatic Committees have been led by CCAFS which has designed, tested and improved the methodology and tools they use.
30	Since the end of 2015, Press and other mediums integrate the LTACs, their forecasts and adaptation measures into informative segments.	This is important because the media contribute to the dissemination of the Committees' work nationwide.	CCAFS provides permanent and updated information on the results of the Agro-climatic Committees.
31	In January 2016, insurance companies modify insurance policies based on fixed seeding date in San Marcos.	This is important because after this action the insurance companies are integrated to the Agro-climatic Committees.	CCAFS organizes the Agro-climatic Committees in Sucre where producer organizations and associations participate looking forward to strengthening their arguments on climate variability to negotiate with insurers.
32	In January 2016, Zenú community modifies cultural practices to diminish losses from climate risk.	This is important because it shows how knowledge and information generated in the Committees reaches the producer organizations which make decisions on reducing their climate risk.	CCAFS organizes the Committees where representatives from the Zenú community participate; it provides the agro-climatic forecasts, and together they define mitigation measures.
33	Since January 2016, rice producers plan to modify practices in non-irrigated rice cultivation to integrate irrigation.	<p>This is important because it shows how knowledge and information generated at the Committees reaches producers that make decisions to reduce their climate risk.</p> <p>This is also important for the leadership of FEDEARROZ in the process of adaptation to climate variability.</p>	CCAFS organizes the Committees where rice farmers and FEDEARROZ are involved, it gives agro-climatic forecasts and define together the mitigation measures.

34	Since the beginning of 2016, CIAT strengthens its work on climate change.	This is important because it reflects the work that has been done in the Agro-climatic Committees where the importance of research results in local spaces has been demonstrated.	CCAFS has promoted this research approach in the CIA.
35	In September 2015, LTAC in Magdalena is founded	This is important because it is developed in a new area and this confirms that the methodology is adjustable to each regional situation.	CCAFS brings agro-climatic forecasts for a new area.