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Climate policy is a winding road: The example of institutionalizing agro-Climatic Risk Management Expertise in Colombia

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ABSTRACT

One of the main challenges of public policies for adaptation to climate change is the implementation of operational programs that can effectively address climate impacts in different sectors. Agriculture in tropical countries, especially in Equatorial America, is doubly exposed to climate change and El Niño/La Niña events, making this region particularly vulnerable to climate variability. In this context, monthly updates and recommendations from experts have become the preferred standard, implemented through spaces for dialogue between experts and different actors in the agricultural sector. Here, we trace the institutionalization of the transfer of expert climate risk assessment to the agricultural sector in Colombia through the development of expert knowledge exchange spaces '*Mesas Técnicas Agroclimáticas*' (MTA in Spanish) - arguably one of the most successful climate change adaptation tools to date. We identified policy milestones at the international, national and regional levels that have enabled a legal framework for national and regional expert knowledge sharing in the country since 2010. International commitments have driven the adoption of national laws and ministerial decrees in Colombia at an impressively accelerated pace since the Paris Agreement in 2015. The implementation of at least 9 MTAs, covering dry forests, humid forests and Andean mountain ecosystems, is considered a success story of climate change adaptation in the region. This success can be attributed to the parallel development of policies and institutional instruments for risk management in general, organized as decentralized networks or "systems" with flexible links to the central government.

Key policy insights:

- Although climate risks and impacts are local, policies that support coordination at the national level can have a positive impact by providing management feedback that would otherwise be lost.
- International agreements have accelerated the creation of innovative and far-reaching climate change adaptation activities at the local level.
- The main lesson for other countries is that successful climate risk management cannot be separated from national risk and disaster management networks that allow for the optimization of human and institutional resources.

Keywords: Climate risk prevention; expert knowledge; El Niño/La Niña

Introduction

A key aspect of adaptation to climate change in rural areas is the availability of expert teams that can "translate" expert data into understandable facts. Expected impacts of climate change on agricultural systems include increased variability in temperature, precipitation, water availability, and the frequency and intensity of extreme weather events (Fellmann, 2012). These impacts increase uncertainty and can cause whole crop losses, reduce household incomes, and threaten the food security of producers and their families. Currently, meteorological and agricultural extension services in many developing countries have data that could support decision-making to reduce the impact of these risks. However, this meteorological data is not always available, or the technical language makes it impossible for most rural actors to use for decision making, especially small-scale producers.

In Colombia, climate change is expected to have a significant impact on the agricultural sector. Due to its location in northern South America, the country is exposed to climate variability influenced by the intertropical confluence zone and the dynamics of the Pacific and Atlantic oceans and the Amazon and Orinoco basins (Garcia et al., 2012). Moreover, it is well documented that the El Niño and La Niña phenomena have caused declines and losses in production for all equatorial countries in the Americas, either due to prolonged rainy seasons or their absence. For 2050, climate analyses indicate that there will be an average temperature increase of 2.5°C, erratic rainfall and a high prevalence of plagues and diseases, along with greater variability in the El Niño and La Niña phenomena (IPCC).

Since 2012, the "Mesas Técnicas Agro-climáticas" (hereafter MTAs for their acronym in Spanish) have been promoted in Colombia as an initiative for access to agricultural and climatic information (see Loboguerrero et al. 2018 for a detailed summary of their origin). MTAs have been designed as spaces for dialogue between actors from the academic, associative, productive and governmental sectors with meteorological services. The MTAs deal with the management of local agricultural and climatic information in order to make forecasts and formulate recommendations to producers as part of a de facto early warning system (CIAT, 2015). The MTAs meet monthly and prepare bulletins based on climate forecasts provided by the meteorological service and make recommendations to reduce the risks associated with climate variability". Because of their uniqueness, they can be considered a success story in climate change adaptation measures (Giraldo-Mendez, 2021).

The MTAs began as a South-South collaborative initiative of FAO and the Research Program on Climate Change, Agriculture and Food Security (CCAFS), an international consortium for agricultural research that is part of the Consultative Group on International Agricultural Research (CGIAR). The Kaffrine project in Senegal and the MTAs in Colombia shared a common scenario of climate variability in which small-scale producers needed to be supported with effective climate and weather information and support services (Lau et al., 2013; Bonilla-Findji et al., 2019). Based on an exchange through CCAFS, Colombian researchers and government officials visited Senegal in 2010 (Howland et al., 2016; Giraldo-

Mendez et al., 2021). At the time of writing, at least nine MTAs are active in Colombia, with several others in Guatemala, Nicaragua, Costa Rica, and other countries in Latin America.

Here, we revisit the public policy milestones that led to the institutionalization of MTAs in Colombia as an example of the challenges faced by concrete adaptation measures in the agricultural sector. We identify the different public policies at the international, national, and regional levels related to the institutionalization of MTAs and discuss their relationship with the risk management policies developed in parallel and that paved the way for the formal recognition of MTAs.

Colombia's approach to climate change adaptation policies

In general, decision-making in Colombia on climate change is based on the acquisition of compromises at the international level (Melo, 2014). The United Nations Framework Convention on Climate Change (UNFCCC) in Colombia marked the beginning of regulatory changes and the production of plans or strategies, economic instruments, agreements and, to a lesser extent, institutional changes (Tompkins and Amudsen, 2008). A second normative boom was marked by the Paris Agreement in 2015, when Colombia included the diffusion of MTAs in its international commitments. In fact, the normative antecedents and changes promoted for the Paris Agreement in 2015 have contributed to the creation and dissemination of MTAs in the country, but their institutionalization is a process that concerns the last two years at the time of writing (2021-2023). Melo (op. cit.) has identified two phases of agricultural and climatic risk management in Colombia: (i) the period 1994-2010, oriented towards compliance with international compromises, and (ii) the period 2010-2015, marked by the La Niña event of 2010-2011 and a greater engagement with local issues. Our analysis allowed us to update the findings of Melo (op. cit.) and identify a third period (2015 - 2023), which includes the creation of the first MTAs in 2014 and their institutionalization. This third period, marked by the El Niño of 2015-2016, is characterized by the search for greater coordination between national and regional climate risk management systems, as we will discuss next.

Managing international agreements (1994-2010)

Since the adoption of the UNFCCC in 1994, the Colombian State has submitted a series of National Communications to the Secretariat of the Convention and has reached compromises for the creation of groups dedicated to climate change mitigation. In 2002, the National Planning Department (DNP) and the Ministry of the Environment published the Guidelines for Climate Change Policy in Colombia and created the Colombian Office for Climate Change Mitigation within the Ministry of the Environment (Figure 1). This office lasted until 2005, when it was replaced by a more ambitious Climate Change Mitigation Group. The aim of these first guidelines was to establish strategies for dealing with climate change within the framework of international instruments. These guidelines identified rice, tree

tomato, wheat and potato as the most vulnerable crops. They also highlighted the potential impacts of climate change on the agricultural sector, such as reduced edaphic supply, increased desertification and loss of soil productivity (Ministry of the Environment and DNP, 2002).

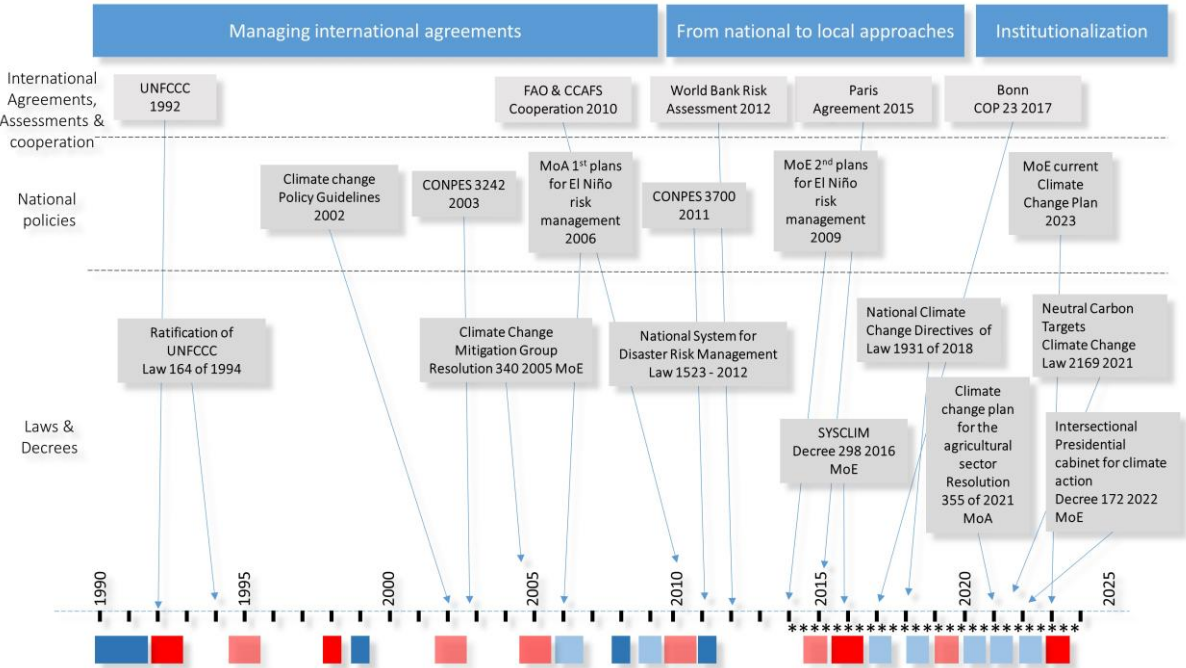


Figure 1. Public policy milestones that have directly and indirectly led to the creation of spaces for expert knowledge transfer for the agricultural sector to address the impacts of climate change. The rectangles roughly represent the extent and magnitude of El Niño (red tones) and La Niña events (blue tones), which are particularly strong in equatorial countries such as Colombia. MoE refers to the ministry of the Environment and MoA to the ministry of Agriculture. For the reader is referred to the text.

The same orientations were followed in 2003 by the National Economic and Social Policy Council¹ document 3242 (Figure 1), with recommendations for the regulation of Clean Development Mechanism projects (Melo, 2014). However, this policy document makes almost no mention of the agricultural sector, providing only general provisions on the role of the Ministry of Agriculture in intersectoral coordination, identifying potential synergies and regulatory barriers.

In 2006, the Ministry of Agriculture published the Plan for the Prevention and Mitigation of the Effects of the El Niño Phenomenon in the Agricultural Sector (Figure 1). The main impacts identified in this plan were reduced river flows, soil moisture deficits, increased likelihood of forest fires, and yield reductions of 5.5% for permanent crops and 4.4% for non-permanent crops (MADR, 2006). The Prevention Plan includes recommendations for forest fire prevention and monitoring for agricultural production. The recommendations were developed by agro-ecological regions, the Colombian

¹ The National Council of Economic and Social Policy (CONPES) was created by Law 19 of 1958. It is Colombia's highest national planning authority and serves as an advisory body to the government on all aspects related to the country's economic and social development (<https://www.dnp.gov.co/conpes>).

Agricultural Institute and trade unions. In addition, the plan includes as policy instruments of the Ministry of Agriculture: (i) lines of credit with preferential interest rates, (ii) a plan for subsequent compensation, and (iii) incentives for milk storage (MADR, 2006). A second version of this plan was prepared in 2009. This plan does not provide explicit guidelines to ensure forecasts of the intensity of the "El Niño" phenomenon, and the recommendations are classified only by crop, without taking into account the geographical variation of Colombia, since not all regions are equally exposed to El Niño. (MADR, 2009).

The foregoing highlights the fact that, for the period 1994-2010, the damage to the agricultural sector was recognized, but institutional articulation remained very weak and linked mainly to the large unions of rice and cotton producers and the like, rather than to the small producers of coffee and cacao, for example. In the following years, the government's actions were in line with international compromises, but with a growing awareness of the need to work within a local context.

From national approaches to local context (2010-2015)

The plans for preventing and mitigating the effects of the "El Niño" phenomenon published in 2006 and 2009 did not take into account the other climatic extreme associated with ENSO: "La Niña". However, between 2010 and 2011, it was the "La Niña" phenomenon that caused losses in all sectors due to excessive rainfall that not only facilitated the spread of diseases in the agricultural sector, but also several landslides that affected roads and aqueducts in several areas of Colombia (FAO, 2021, p. 7). As a result, the National Planning Department asked the World Bank to carry out a public policy risk assessment after the first cross-sectoral integration effort, embodied in the 2011 document CONPES 3700 "Institutional Strategy for the Articulation of Climate Change Policies and Actions in Colombia" (Figure 1). The years that followed were characterized by the restructuring of risk management in Colombia, particularly in terms of normative changes and the diversification of instruments that were initially reactive, but later oriented towards proactive risk reduction and adaptation to climate change.

Although these provisions did not explicitly include a clear instrument for agricultural adaptation, the foundation for an expanded view of environmental, physical, and agricultural risks began to take shape. According to the 2012 World Bank study (Campos et al. 2012), several factors explain the increase in climate risks in Colombia. Before the year in which the study was published, the increase in risks was mostly associated with inadequate territorial, sectoral and private management. This poor management was explained by (i) the absence of government policies for public management of risks; (ii) failures in the application of policies and instruments for territorial planning and watershed management; and (iii) the difficulty of the private sector and citizens in assuming their role in risk management. Other factors taken into account are the country's geomorphological, hydrological and climatic diversity and the increase in the population at risk due to uncontrolled urban and rural expansion (Campos et al., op. cit.)

In response to the national context and World Bank recommendations, an update of the 1989 National System for Disaster Prevention and Preparedness was adopted. In 2012, the National System for

Disaster Risk Management was created by Law 1523 with three main objectives: (i) risk knowledge, (ii) risk reduction, and (iii) disaster management (Figure 1). More specifically, this law establishes obligations for public institutions, such as the creation of local risk management plans and the incorporation of risk in public investments. The main actors in charge of this system for disaster risk management were the director of the National Risk Management Unit (created in 2015) and a network of governors and mayors. However, the articulation of actors around climate change adaptation and risk management was left to the regional environmental management institutions, called Regional Autonomous Corporations², for which these regional organizations were not yet ready.

In summary, the regional institutions understood that they were now responsible for dealing with different types of risks and disasters, including the risks of climate change, but they lacked concrete spaces for dealing with weather forecasts, understanding technical data and communicating them regularly to the agricultural sector. Since the MTAs were already at an experimental stage, thanks to the international consortium led by FAO and CGIAR, the exercise of connecting the dots between institutions to address the climate risks of the agricultural sector was already underway.

Institutionalization: from the Paris Agreement to local agricultural risk management (2015 - present)

A normative boom, marked by Colombia's participation in COP 21, can explain the plethora of policy instruments created in Colombia after the Paris Agreement in 2015. A year after the agreement, a cross-cutting initiative to address climate change risks was implemented in 2016 for the creation of a National Climate Change System, known locally as SYSCLIMA (Figure 1). The National Climate Change System was already foreseen in CONPES document 3700 of 2011, but it was only institutionalized by Decree 298 of 24 February 2016 of the Ministry of Environment and Sustainable Development.

It is worth noting that one of the Colombian approaches to policy implementation is the institutionalization of nationwide networks, called "systems," capable of coordinating the cooperation of different actors at different levels and at different times. For example, before climate change became a major concern, a system for addressing environmental and biodiversity issues had been in place since 1993³. This new national system was later strengthened by the Climate Change Management Directives of Law 1931 of 2018. This law explicitly incorporates the National Disaster Risk Management System⁴ into the Intersectoral Commission on Climate Change, part of the SYSCLIMA structure, in order to close the previous gaps in cooperation between the Ministries of Environment and Trade. The National Disaster

² The Regional Corporations are the oldest natural resource management institutions in Colombia. They were modeled on the Tennessee Valley Authority in the mid-1950s, when flood control was the primary concern. The creation of the Ministry of the Environment in 1993 created tensions, as elements of redundancy appeared and their autonomy seemed threatened. These tensions continue to this day.

³ <https://www.minambiente.gov.co/ordenamiento-ambiental-territorial-y-sistema-nacional-ambiental-sina/>

⁴ <https://portal.gestiondelriesgo.gov.co/>

Risk Management System has links that extend to the different departments (provinces) of Colombia, which in turn extend to the level of municipalities within the departments.

So where does knowledge sharing by agricultural experts fit into all of this? None of the public policies briefly reviewed here explicitly addressed MTAs as we know them today, but they set the stage for their implementation. Prior to the Paris Agreement, the first two MTAs were established in 2014 in the departments of Córdoba and Cauca (Figure 2). Then, in 2015, two more were created in the departments of Sucre and Magdalena. After COP 21, the country reached a compromise to create 15 MTAs as part of the Nationally Determined Contributions for the benefit of one million producers.

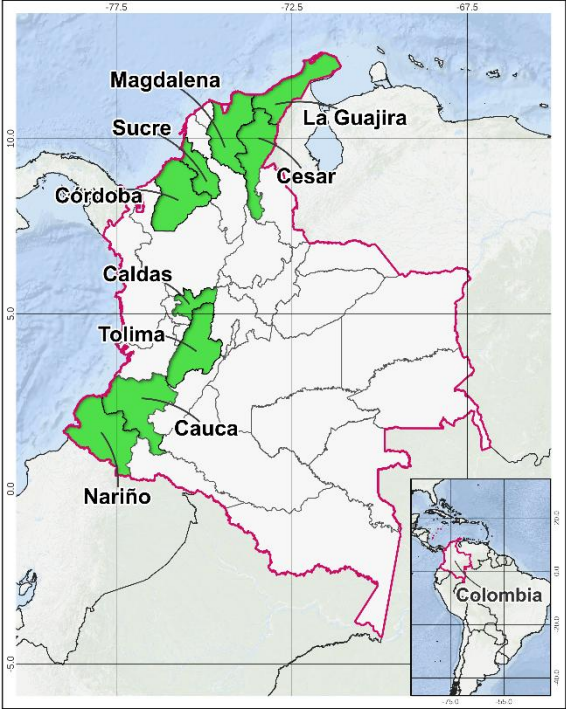


Figure 2. Distribution of the nine MTAs that are active in Colombia at the time of writing. They cover different ecosystems ranging from dry tropical forests in the north, tropical moist forests and the Andean region.

The inclusion of MTAs in the latest NDC also responds to commitments made by the Conference of the Parties at its 23rd session, held in Bonn in 2017. At that session, Parties adopted decision 4/CP.23 on "Koronivia joint work on agriculture" to include the exchange of expertise with stakeholders in the agricultural sector, a recommendation that was later followed by the Ministry of Agriculture (MADR, 2021). The same period was key for the dissemination of MTAs throughout the national territory. Between 2017 and 2019, the participation of FAO allowed the creation of 8 more MTAs in Colombia, for a total of 12 MTAs (CIAT, 2015; Giraldo et al., 2019). The 2020 NDC includes a commitment to expand the coverage of MTAs to the three regions with the greatest agricultural potential: Andean, Caribbean and Orinoquia regions. There are currently 9 MTAs in operation, funded by local budgets (Figure 2).

The institutionalization of MTAs

Two elements were key to the path towards institutionalizing MTA: First, its inclusion in the Integral Plan for Climate Change Management in the Agricultural Sector adopted by Resolution 355 of 2021 of the Ministry of Agriculture and Rural Development (Figure 1). With contributions of the FAO, the plan adopted four strategic lines: information on climate change, sustainable agricultural practices, institutional articulation, inversion and policies for low-carbon rural development and resilience for the agricultural sector. and b) a draft Resolution for the institutional creation of a MTA at a national level, already in operation.

Second, in order to integrate the regional MTAs in Colombia into a national MTA, a draft resolution was proposed in 2022 for the creation of a national body of experts to coordinate regional actions (MADR, 2022). The draft resolution calls for the institutionalization of a national-level MTA, and instance that already exists. This draft provides the operational means to reduce the negative impacts of climate phenomena at the national level, and the adoption of guidelines for the operation of MTAs at the regional level. With regard to regional MTAs, the draft establishes a decentralized approach for governors, the highest authority of each department, to establish MTAs with the main actors in the territory in terms of climate expertise and the agricultural sector (MADR, 2022). However, at the time of writing, it is not known whether the draft will become a ministerial decree or not.

Concluding remarks

In summary, for concrete adaptation actions to be successful and sustainable over time, they need not only policy instruments, but also an institutional "ecosystem" ready to support them. For the MTAs, the immediate ecosystem is provided by the so-called "climate change nodes", which have been provided for since 2016 in the same ministerial decree that created the National Climate Change Network mentioned in the previous paragraphs (for a detailed description, see Rodríguez-Granados et al. 2020). These nodes form a network of focal points where the impacts of climate change on all sectors are analyzed and discussed by experts from institutions, academia, government, and stakeholders. In addition, the regional climate hubs actively contribute to scientific knowledge and research at the regional level.

Today, the existence of the MTAs would not be possible without the human and scientific support of the climate change nodes (F. Florez-Yepes, pers. obs.) If other countries are considering creating expert spaces to address climate change adaptation, looking at whether there is an institutional ecosystem to support them will greatly increase the chances of success.

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